



## Physical & Chemical Standards Compendium





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## Dear Customer,

Welcome to the new Reagecon Physical and Chemical Standards Compendium. Since the publication of our Physical and Chemical Standards and Reagents catalogue, substantial changes have occurred in the field of analytical chemistry. Stringent regulatory demands combined with major economic implications and increased competitiveness, places necessity for validation on every analytical test performed, either in the laboratory or in the field. Not only must the correct result be obtained, but proof must also be provided of its fitness for purpose, validity and accuracy. Such proof must then be accessible, retrievable and presented in an easily understood format. Reagecon continue to respond to these challenges by presenting to its customers, an ever increasing range of highly specified, stable, traceable and certified standards.

The use of standards such as calibrators or control materials can greatly increase the possibility for the analyst to obtain the correct result and can provide definitive proof of the correctness of such a result from a technical perspective. Such materials can also be used for method validation, instrument qualification, verification and analyst qualification.

Since the beginning of 2011, we have developed a major pipeline of new products and we now have a broader and more comprehensive range of physical and chemical standards than any other producer worldwide. We are privileged to be able to present these new ranges to you here, (in excess of 8,000 product numbers)

We hope you find this new compendium beneficial; that the products on offer match your technical specifications; represent value for money and that they will greatly enhance your ability to achieve valid and correct analytical results now and in the future.

Other rapidly occurring changes in the laboratory market place include stringent regulations pertaining to the shipment of hazardous goods, the development of e-commerce and the ever increasing requirement for Scientific Knowledge.

### HAZARDOUS GOODS

Products which are known to be hazardous are labelled by Reagecon in accordance with The Globally Harmonised System of Classification and Labelling of Chemicals (GHS). The GHS is a system for standardising and harmonising the classification and labelling of chemicals.

### RESEARCH AND DEVELOPMENT

From a strategic perspective, Research and Development continues to be a key business driver within Reagecon, with approximately 10% of our workforce engaged in this activity. Several industry or technology specific projects with various risk profiles are currently in the development pipeline. The progress of all of these projects as they reach maturity can be viewed at [www.reagecon.com](http://www.reagecon.com)

### TECHNICAL AND SCIENTIFIC LITERATURE

As a producer of high quality physical and chemical standards, Reagecon employ a large number of scientists in areas of: new product development, quality, manufacturing and technical services. Our Scientists produce a large output of original technical and scientific literature and are responsible for several publications every year relating to various aspects of analytical chemistry. A selection of these papers can be viewed and downloaded at our website: [www.reagecon.com](http://www.reagecon.com) . Several of the chapters in this compendium also contain detailed original technical notes.



## ACCREDITATION

Reagecon holds a unique position amongst producers of Standards and Reference Materials. We have achieved ISO/IEC 17025 (INAB Ref:265C) accreditation for all of the following fundamental metrological techniques:

- Calibration of laboratory balances
- Calibration of temperature controlled enclosures covering the scope of -196°C to +1200°C
- Calibration of single and multi-channel pipettes

These fundamental techniques alone or in combination continue to form the foundation cornerstone of metrology. They have a direct bearing on the measurement uncertainty of almost all Standards and Reference Materials.

## E-COMMERCE

All of Reagecon's products can be purchased online from our web based laboratory shopping facility at [www.reagecon.com](http://www.reagecon.com)

## BUSINESS DEVELOPMENT

Over 30% of our workforce are engaged in Sales, Marketing and Business Development activities. At the time of writing we have specific departments dedicated to the following geographic regions: Ireland, UK, Western Europe, Eastern Europe, Middle East, Asia Pacific (including China), North and South America. This includes Reagecon office in China and distributors operating in over 150 countries globally. The introductory text, cover notes and technical information contained within this compendium is available on our website in most of the major world languages.

## LABORATORY LOGISTICS GROUP

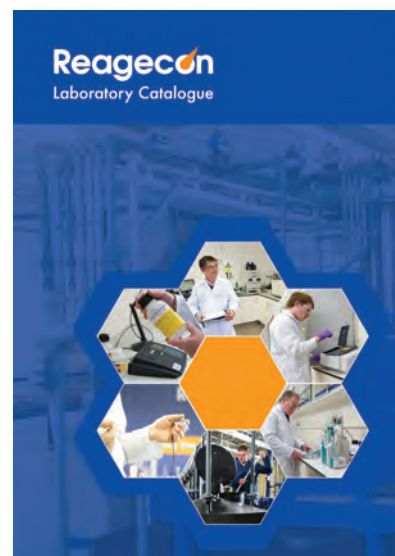
Reagecon is proud to be a partner company and shareholder in a large German based purchasing company called LLG (Laboratory Logistics Group).

At the time of writing LLG has up to 30 partner companies spread throughout Europe, Australia, Asia and the Middle East. This partnership affords Reagecon access to over 60,000 products which are contained in a large catalogue (see picture). It also confers the following additional benefits:

- Substantial stocks of laboratory consumables
- An excellent output of special promotions
- Outstanding networking opportunities with growth orientated partner companies, facilitating exchange of knowledge, trends and technical development.
- Transnational and cross cultural knowledge transfer, support, encouragement and insight into strategic thinking.



John J Barron  
Managing Director  
May 2016



## Who are Reagecon?

Reagecon is based in Shannon, Ireland and has a sales office in Shanghai, China. The company operates from a 6000 sq. meter facility that includes a large suite of Manufacturing, Quality Control and Research and Development laboratories. We employ approximately 90 people, which includes 50 graduate or post-graduate chemists.

Traditionally, Reagecon's manufactured products were on the lower end of the value chain and fitted into the classification of working/secondary standards. The development and production of such standards was consistent with our main technical competencies (method validation/accreditations ).

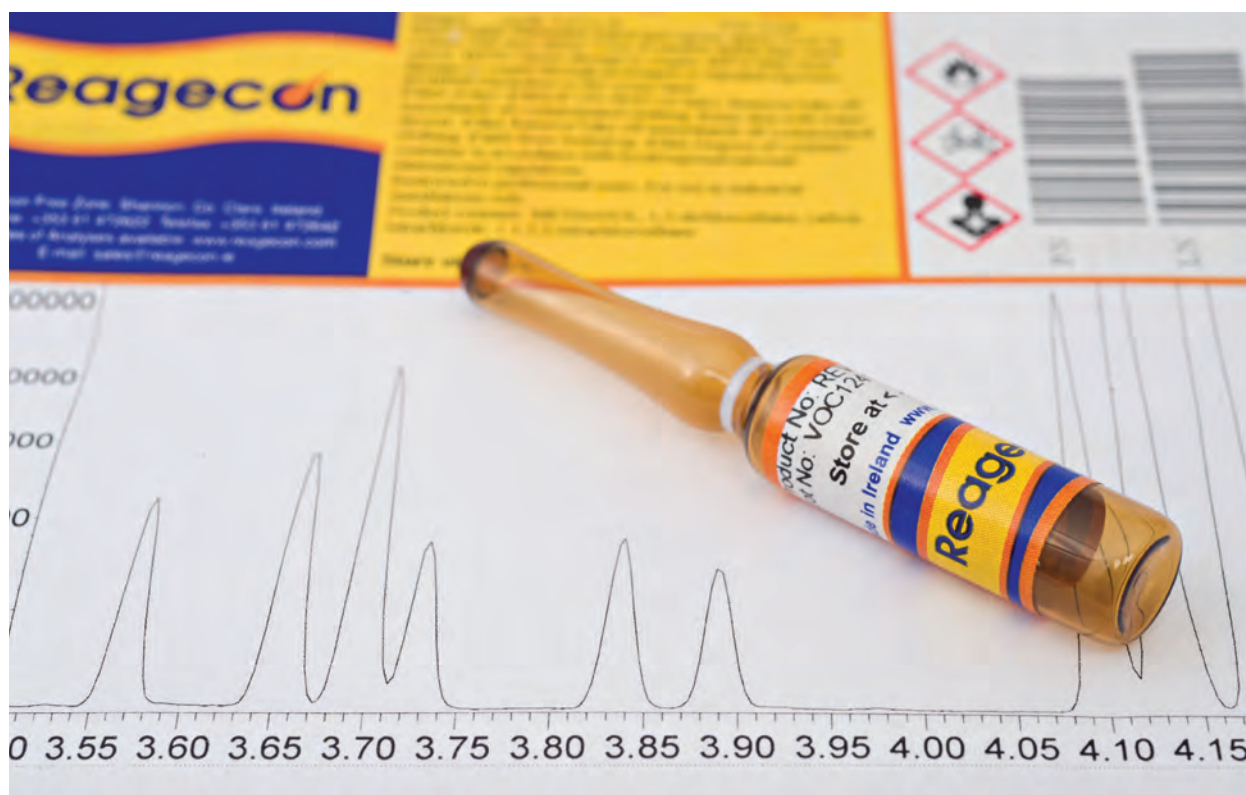
Since 2011, we have escalated dramatically the range of working and secondary standards developed and we have moved up the value chain to include primary standards and Certified Reference Materials , because of our recently developed ability to perform raw material characterisation. We are now the largest producer in the world of Physical and Chemical Standards and Certified Reference Materials.

## Applications of Physical & Chemical Standards

Physical and Chemical Standards are products that may be used for 6 main applications:

1. Calibrate scientific instrumentation in preparation for testing
2. Control the entire process during testing
3. Perform instrument qualification (IQ,OQ,PQ,MQ) prior to testing
4. Assist in method validation
5. Proficiency Testing
6. Analyst Qualifications Sets

The uses of Chemical and Physical Standards for Calibration, Control, Qualification, Validation and Proficiency are well documented in several publications produced by Reagecon. The uses of Physical and Chemical Standards as Qualification Sets is an exciting and brand new innovation from Reagecon launched recently. The principle, application, features and benefits of the technique are covered later in this compendium.





## Reagecon Technical Services

Laboratories today are facing new pressures, with increased regulatory demands requiring validity on every analytical test performed. Not only must the correct result be obtained, but proof must also be provided of its fitness for purpose, comparability and accuracy.

Irrespective of whether your laboratory is involved in analytical chemistry, life sciences, biotechnology, the clinical or pharmaceutical industries, several factors play a role in these laboratory demands and the correct performance of your instruments and equipment is crucial.

Reagecon Technical Services has over 25 years experience of providing complete support solutions to laboratories. As a technical centre of excellence, we were the first company in Ireland to gain INAB (ISO/IEC 17025) Accreditation for Volume Calibration and were the first to offer INAB Accreditation across Volume, Weighing and Temperature. Services can be provided both on your site and in our dedicated metrology laboratory in Shannon (INAB Ref:265C).

Reagecon's Technical Services Department can help you to determine all of your calibration, maintenance and service requirements. We can design a full programme to meet these requirements and manage the entire schedule for you, providing the following benefits to you:

- Managing fewer suppliers - using one company to manage calibration and service needs for all your equipment
- Easier scheduling - with the need to only contact one company for all your equipment needs
- Reduce downtime of equipment - on-site engineers can perform all services and work around your schedule in your laboratory
- Obtain the most competitive prices - reduce indirect costs by less administration of purchase orders and invoices

Customer case studies have shown that a saving of 55% in support overheads can be made by using one supplier for all of your calibration, technical service, and support requirements.

**VOLUME CALIBRATION SERVICES:** Reagecon were the first Irish company to gain ISO/IEC 17025 (INAB Ref. 265C) accreditation for calibration of pipettes and can calibrate both single and multi channel pipettes in our dedicated calibration laboratory or on our clients' premises. Most calibration providers calibrate multi-channel pipettes one channel at a time, which does not replicate the pipettes use and so does not characterise their operational performance. Reagecon use a special-purpose balance to calibrate all channels simultaneously, resulting in a calibration certificate that fully characterises the pipette's operational performance.

**WEIGHING CALIBRATION SERVICES:** Reagecon offers INAB accreditation for Weighing Calibration, with all makes and models of balances catered for (Ref. 265C). This service is provided on-site to laboratories anywhere. We can provide re-certification of your check weights for daily use.

**TEMPERATURE CALIBRATION SERVICES:** Reagecon offers an INAB Accredited calibration service for the full range of temperature controlled enclosures and is the only company in Ireland to cover the scope of -196°C to +1200°C (INAB Ref:265C).

**ELECTROCHEMISTRY INSTRUMENT CALIBRATION SERVICE:** Reagecon offers the complete Electrochemistry Calibration Service. All makes and models of pH, Conductivity and DO meters are calibrated using standards tested and certified to an ISO/IEC 17025 Test Method (INAB Ref:264T).

**GENERAL EQUIPMENT CALIBRATION SERVICE:** In addition to its INAB Accredited Calibration Services, Reagecon offers a comprehensive range of traceable services across the entire range of laboratory equipment.

For further information please contact [sales@reagecon.ie](mailto:sales@reagecon.ie)

# Accreditations at Reagecon

## Accreditation ISO 9001:2008

- Registration number 19.2769
- Accreditation held since May 1988
- Certificate of Registration of Quality Management System covering the manufacture and distribution of chemicals, reagents, consumables, apparatus, safety and scientific equipment. The provision of IQ/OQ, equipment maintenance and calibration services. The provision of Vendor Managed Inventory (VMI) services to allow customers to outsource the management and replenishment of their consumables and equipment.

## Accreditations ISO/IEC 17025 (INAB Ref:264T)

- Accredited since May 1988 for some products
- pH Buffers
- Conductivity Standards
- Analytical Volumetric Solutions
- Brix 5% - 60% wt/wt
- Refractive Index 1.33310 to 1.65812  $n_D$
- Density 0.65 - 1.034 g/ml
- Metal Standards by ICP-MS & Titrimetry
- TOC/TIC 500  $\mu\text{g/l}$  to 50.0mg/l C
- Osmolality 50 - 3000 mOsm/kg  $\text{H}_2\text{O}$

## Accreditations ISO/IEC 17025 (INAB Ref:265C)

- Weighing Devices (1mg-160kg)
- Temperature (-196°C to 1200°C)
- Volume (5  $\mu\text{L}$  - 10,000  $\mu\text{L}$ )

## Accreditations ISO Guide 34 (INAB Ref:001RM)

- Accredited since April 2014
- Accredited producer of Reference Materials (Sucrose in Water Solutions)
- Only company in Ireland with this accreditation
- Production of materials used for the calibration of scientific instruments and the validation of test methods
- ISO Guide 34 accreditations demands a set of stringent requirements that ensures all aspects of the production of reference materials are carried out with measurable and traceable quality
- The Guide's comprehensive requirements includes production planning, raw material selection and characterization, assignment of certified values, uncertainty, traceability, homogeneity and stability, as well as packaging, documentation, supply chain and logistics.





## Reagecon - Vendor Managed Services Programme

In today's market, laboratory staff are continually facing new challenges. They are trying to deliver the correct result, but also reduce overheads meet regulatory and legal requirements, increase efficiencies and maximize the operation of their business. Continuity of supply chain, elimination of wastage/obsolescence, hazardous materials management, and the correct choice of chemicals and consumables required to run an effective and efficient Laboratory present a complex set of variables to both the Laboratory and Procurement Teams. To meet these challenges Reagecon has developed a novel and innovative Vendor Managed Inventory Model that eliminates much of the complexity, overhead and cost of laboratory operations and delivers a lower total cost of ownership to you, our customer.

This model works on the principle of service-based supply, and offers you the opportunity to:

- Lower your total cost of ownership
- Reduce direct costs through consolidation and product outsourcing
- Reduce indirect costs through the elimination of thousands of POs, invoices, physical deliveries and receipts
- Improve service levels
- Benefit from on-site instant material availability
- Eliminate stock outs
- Improve efficiencies and processes
- Minimise stock holding costs
- Reduce obsolescence
- Free up laboratory staff to focus on core high value added activities

We have successfully operated this model in many global blue chip companies over a 15 year period. We believe the model offers real value, reduces direct and indirect costs and brings peace of mind.

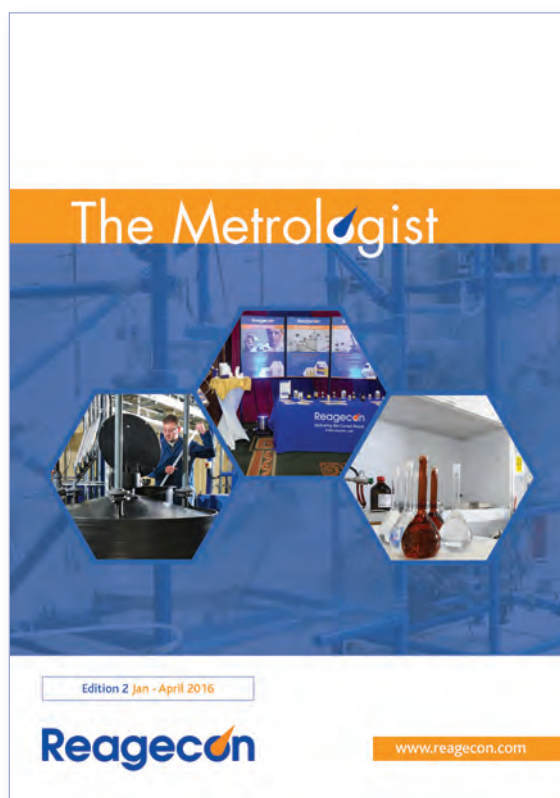
If you would like further information please contact; [sales@reagecon.ie](mailto:sales@reagecon.ie)



# The Metrologist

Reagecon has recently launched an exciting new technical publication called 'The Metrologist'. Our objectives in presenting this publication to you are as follows:

- To help you stay up to date on legal, scientific and technology issues relating to metrology in general, but more specifically on Standards, Reference Materials and Reagents.
- To introduce you to a significant pipeline of new products that are continually emerging from our very progressive R&D department.
- To provide you with technical notes on various exciting new product families focusing on applications, features and benefits of such products, which will assist you in your scientific work on a daily basis.
- Provide you with updates on innovations, promotions and service offerings from Reagecon that will enhance our overall value proposition to you. Contained in a recent edition are details of three such initiatives:
  - The Labcal™ Stability System, a new system designed to eliminate any possibility of contamination of Standards and Reagents.
  - The introduction of new outer packaging that will provide greater protection in terms of handling, storage and shipping of high value added products. All such packaging will contain Certificates of Analysis and information to help you source other Reagecon products.
  - A series of Industry Specific Catalogues that contain Standards, Reference Materials and Reagents listed and cross referenced to the compendium method relevant to each particular industry.
- Facilitate a two-way flow of information and dialogue between Reagecon and users of our products and enable us to help our channel partners to keep you up to date with developments in metrology and give you the best service possible.
- To present valuable case studies on various aspects of metrology.
- This new journal is published in Winter, Spring and Autumn of every year.



# A Unique Value Proposition for Instrument Manufacturers & OEM/Private Label Customers

## Introduction

In the past couple of years Reagecon has focused very heavily on developing a new and unique value proposition for instrument manufacturers and OEM Partners. We wish to extend our market reach and growth into this very important segment.

From the perspective of an instrument manufacturer there are several compelling reasons that Standards, Reagents or Certified Reference Materials should be offered including, but not limited to, the following:

- Continuous, repeatable revenue stream over the working life of the instrument
- Ability to offer a complete, integrated package that includes Qualification (where appropriate), Validation, Service and Consumables
- Complete control over the final result achieved by the analyst including proof of the fitness for purpose of the result, its accuracy and validity
- Control and insight over service call outs, and a consequent reduction in cost of engineers time and resources
- Continuous contact with the customer over the life of the instrument, a deeper understanding of the end user requirements and the establishment of a stakeholder relationship over and above the traditional vendor/customer relationship

## The Value Proposition

Using these considerations as a baseline, we have developed a value proposition that contains several unique innovations which will give you significant competitive advantage in terms of your consumable offering.

Not only that, but we have added several new innovations that, when combined, will make your own value proposition unique and give you significant advantage over your competitors. Our offering to you is described in significant detail in this document pictured above but can be presented in summary form as follows:

- Your products will be produced by a highly accredited producer. These accreditations include a cluster of physical accreditations unique in the world of metrology (INAB Ref:265C) that include:
  - Weighing Devices
  - Temperature
  - Volume

(A full list of Reagecons accreditations is included in an expanded section later in this document.)

- Extensive and complete regulatory compliance



Extensive manufacturing capability for aqueous and non aqueous products that include:

- Batch sizes from 10ml to 6000 litres
- Products produced either using automated or manual technology
- Product packs from 0.1ml up to 1000 litres in size
- Cold chain management
- Environmental containment (including cleanroom manufacturing)
- Ex rated manufacturing and storage capability

However, our other capabilities either singly or combined make us unique as a supplier of customised liquid chemistry and include:

#### **The Labcal™ Standards Stability System**

Reagecon has developed a novel new packaging system designed to eliminate contamination of chemically or physically sensitive materials such as high specification analytical standards, buffers and reagents. This system is unique and applicable to pack sizes of greater than 100ml and up to one litre.

**Analyst Qualification Sets (AQS) which can be used by the instrument manufacturer to:**

- Assess the analytical competence of an analyst on a particular piece of equipment
  - Lock out competitors
  - Reduce service call outs
  - Deliver significant and repeatable additional revenues
- 
- Rapid prototype kit design and production
  - We can design a kit and furnish you with a fully labelled prototype within 48 hours of request
  - Design and produce your marketing collateral for Standards and Reagents within three (3) working days
  - Offer you up to 40 Industry Specific Customised Catalogues

**From a supply chain and logistics perspective, we can offer you the following:**

- Customised options - a large range of customised products
- Flexibility - we will quote you for small annual quantities of product
- Standard freight costs - to UK, Europe, Middle East and India
- Savings - we can save you significant expense on transatlantic freight costs

For further details please email us at [sales@reagecon.ie](mailto:sales@reagecon.ie)



## Request for Customized Reagents

Reagecon can develop and produce a wide range of products not included in this compendium. We would be pleased to receive any enquiries you may have. When requesting information on a customised solution, please furnish the following information to us if possible.

- Pack size
- Number of packs required and how often you need the product
- Special handling, manufacturing, testing, packing, storage and shipping requirements (for example cold chain storage or cold chain shipping).
- Bill of Materials, manufacturing processes, health and safety considerations, test procedures and any other relevant information (you feel is applicable).
- Metrological Information such as accuracy, tolerances, specifications, stability etc.

Generally, if this list of information referred to above is available we can provide you with a 'Go/No Go' answer within 24 hours and a quote within the following 24 hours. Of course, if some or all of the listed information is unavailable, our Research and Development (R&D) and New Product Introduction (NPI) teams will be happy to provide any assistance within our technical capability.

The development or manufacture of customised product forms a very significant component of our overall revenue stream.

## Mini Catalogues

In addition to this Chemical and Physical Standards Compendium, which is produced every 2 years, Reagecon periodically produces Industry Specific Catalogues, a selection of those currently available can be seen in this compendium.

As a service to our customers and channel Partners we frequently produce mini catalogues. These are designed to keep you up to date with our Research and Development output.

An example of such a publication can be seen in the graphic below.



## Product Ranges Produced at Reagecon

- Total Organic Carbon (TOC)
- Total Inorganic Carbon (TIC)
- Volatile Organic Compound (VOC)
- Semi Volatile Organic Compound (SVOC)
- Polycyclic Aromatic Hydrocarbons
- Phenolics
- Phthalates
- Azo Dye Metabolites
- Paraffins, Isoparaffins, Aromatics, Naphthalates, Olefins, (PIANO'S)
- Oxygenates
- Thiols
- Pesticides
- Fatty Acid Methyl Esters (FAME's)
- Fatty Acid Ethyl Esters (FAEE's)
- Refractive Index (RI)
- Brix
- Sucrose in water
- Density
- Viscosity
- Melting Point
- ICP-MS/ICP-OES
- Atomic Absorption
- Titrants/Indicators
- Total Acid Number (TAN)
- Total Base Number (TBN)
- Hydrocarbons
- Solvent Residues
- Cryoscope
- PBBs
- PCBs
- PBDEs (Flame Retardants)



- Osmolality
- Colour
  - Saybolt
  - Hazen
  - ASTM
  - Gardner
- Turbidity
- Spectrophotometry
  - Wavelength
  - Linearity
  - Stray light
  - Band width
- pH
- Conductivity
- Ion Selective Electrode
- Ionic Strength Adjusters
- Flame Photometry
- Ion Chromatography
- Redox
- Pharmacopoeia
  - European
  - Chinese
  - United States
  - Japanese
  - Indian
- Eluents/Mobile Phases
- Dissolution Solutions
- pH Electrode Care & Maintenance



Examples of all of these product families can be viewed in detail in this compendium

## Techniques & Instruments Employed

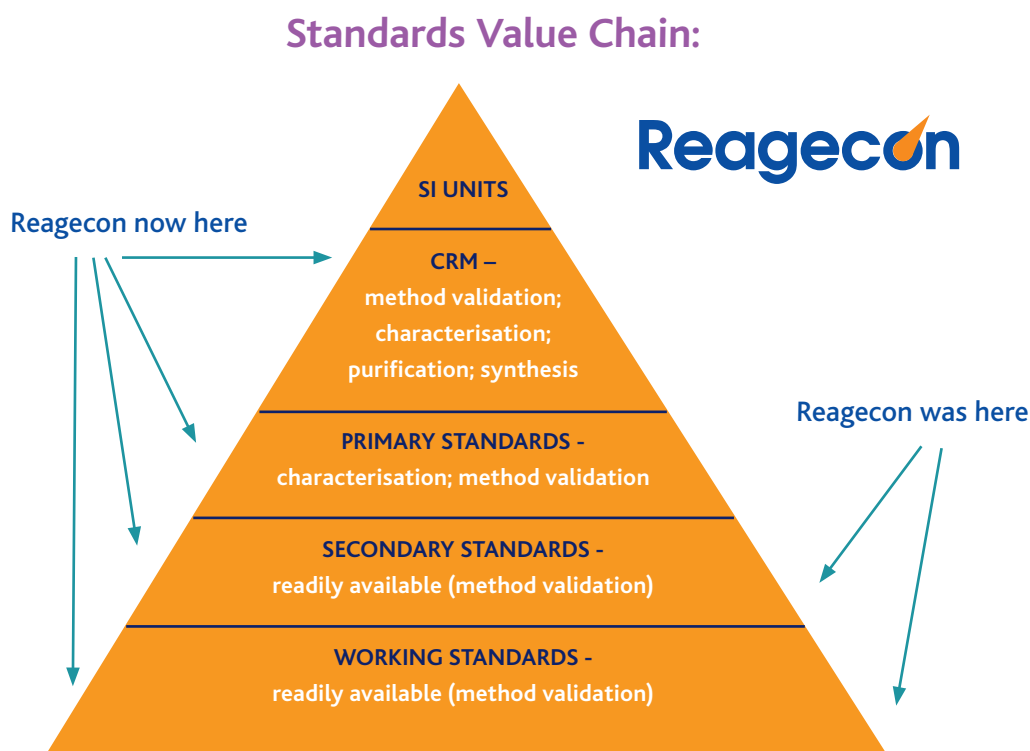
Reagecon has an extensive range of scientific instrumentation. We have at least one and in some cases several of the instruments listed.

- Gas Chromatography (GC)
    - Flame Ionisation Detection (GC-FID)
    - Mass Spectroscopy (GC-MS)
  - Liquid Chromatography
    - Mass Spectroscopy (HPLC-MS)
    - Ultra Violet Detection
    - Preparative
    - Reverse Phase
  - Ion Chromatography (IC)
  - Flame Atomic Absorption Spectroscopy (FAAS)
  - Induced Coupling Plasma-Mass Spectroscopy (ICP-MS)
  - Bingham Pycnometry
  - Vibrational Densitometer
  - Refractometer
  - Polarimeter
  - Osmometer
  - Total Organic Carbon Analysers
    - Membrane Exclusion
    - Carbon Oxidisation
  - Rotational Viscometer
  - Ubbelodhe Master Viscometer
  - Cryoscope
  - Coulometer
  - Auto Titrator
  - Spectrophotometer
  - Fourier Transform Infrared Spectroscope (FTIS)
- Colourimeter
    - Hunter Solid/Liquid
    - Tintometer
  - Volumetric Karl Fisher
  - Turbidimeter
  - Conductometer
  - pH Meter
  - Differential Scanning Calorimeter
  - Chemical Oxygen Demand (COD)
  - Biological Oxygen Demand Assay Unit
  - Ex-rated Solvent Facility
  - Radley Combinatorial Chemistry Synthesiser
  - Buchi Rotary Evaporator
  - Melting Point Apparatus
  - TBN/TAN Titrator
  - Class ISO7 (Class 10,000) Cleanroom
  - Solvent Manufacturing Plant
  - Spectrofluorometer
  - Wave Dispersive XRF



# The Reagecon Hierarchy of Standards

Traditionally, Reagecon's manufactured products fitted into the classification of working/secondary standards. The development and production of such standards was consistent with our main technical competencies (method validation/accreditation).



Since 2011, we have escalated dramatically the range of working and secondary standards that we offer. Because of our recently developed ability to perform raw material characterization we are now also producing primary standards and certified reference materials. In the past the production of standards at the higher end of the value chain such as Primary Standards and Certified Reference Materials was the preserve of government funded agencies such as the National Institute of Science and Technology (NIST) in Washington, DC. Now, due to affordable technology, a number of privately funded companies have developed and are marketing primary standards and Certified Reference Materials. These companies generally have well-developed characterisation, purification and synthesis capability. Reagecon has grasped these opportunities with enthusiasm and are a leading producer of such materials.

As a producer of Metrological Standards we are concerned with enabling the end user (analyst) to achieve an analytical result that is fit for purpose and to provide proof of the correctness of that result. These two objectives are achieved by optimizing the following:

- Accreditations
- Accuracy
- Sensitivity
- Reproducibility
- Comparability
- Traceability
- Precision
- Limit of Detection (LOD)
- Measurement uncertainty

As a Metrology Company, it is a basic requirement that we have detailed knowledge and skills in the Chemical and Biological Sciences, Physics, Statistics, and Engineering. As a manufacturer of metrological products it is mandatory that we have skills and expertise in automation, programmable logic controllers, (PLC's), cleanroom technology and lean (5S, Kaizen, Value Stream Mapping).

Because Metrology forms such a core component of Reagecon's technology platform and is a key Competitive Advantage of the Company, in 2016, we established in Shannon a new Global Metrology Development Centre. The features and benefits of this centre are detailed in the next section.



## Global Metrology Development Centre

From a technical perspective this centre will elevate Reagecon's status and knowledge base in the science of Metrology, to that of a Reference Centre. Technically the Centre will offer the following advantages

- Reduce Measurement uncertainty for pH, Conductivity, Refractive Index and Density by a full order of magnitude.
- Propel Reagecon into the Certified Reference Material space for these products.
- Increase our ability to publish more widely in the area of Metrology and participate in collaborative studies with research Metrology Institutions.
- Increase accuracy, precision, reproducibility and other metrological parameters for pH, Conductivity Refractive Index and Density initially, then followed by Viscosity, Colour and Osmolality.

From a marketing, image and perception value the Global Metrology Centre will yield significant customer impact. The tangible benefits in terms of outputs include, but are not limited to the following:

- Provide a training facility for 300 international distributors on Metrology
- Provide a training facility for 1,000 Irish customers on new products
- Provide a training facility for our 25 Business Development staff on new products.
- Provide an area for upskilling existing staff
- Provide an area for collaboration and research with National Metrology and National Reference Centres worldwide
- Establish Reagecon as a global Metrology Centre of excellence in the Science of Metrology
- Facilitate the rapid development of Certified Reference Materials in all four sciences of pH, Conductivity, Refractive Index and Density
- Form a platform for adding other Primary Reference Methods in areas such as Viscosity, Colour and Osmolality

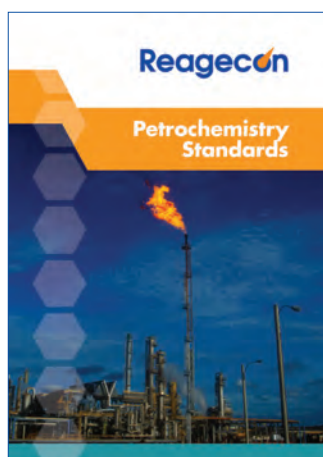
The graphic below shows some of the equipment that has been commissioned and is being used in our Metrology Centre



# Industry Specific Catalogues

Reagecon has developed several Industry Specific Catalogues and at the time of writing (May 2016), we have 37 such catalogues on offer. These catalogues allow you to pick the required compendium method and locate all of the standards and reagents required to perform your analysis. No other catalogue from any supplier offers this unique functionality. These catalogues can also be viewed at [www.reagecon.com](http://www.reagecon.com). Using these Industry Specific Catalogues will allow easy and simple selection of certified standards, control solutions and necessary reagents all from one source, reducing vendors, saving time, maximising spend and delivering genuine value.

## Petrochemistry



- Asphalt
- Biofuels
- Coke
- Fuel Oil
- Lubricating Oils
- Gasoline
- Greases
- Kerosene
- Naphtha
- Other Petroleum
- Waxes

## Food



- Cereals
- Coffee & Tea
- Dairy
- Vegetables
- Oils & Fats
- Flavours & Fragrances
- Fruits
- Ingredients
- Meat & Fish
- Sugars

## Agriculture



- Animal Feeds
- Fertilizers
- Plants
- Soil

## Beverages



- Beer
- Nonalcoholic Beverages & Concentrates
- Spirits
- Wine

## Pharmaceutical



- Cosmetics
- Chinese Pharmacopoeia
- European Pharmacopoeia
- Japanese Pharmacopoeia
- United States Pharmacopoeia
- Indian Pharmacopoeia

## Industrial Manufacturing



## Environmental & Water



- APHA, AWWA, WEF Standard Methods

## Pulp & Paper



- TAPPI

## Textiles



# Volatile Organic Compound Standards (VOCs)



## Summary of Features & Benefits:

### Commercial Benefits

- Ready to use (dilute for use as calibration and/or quality control standards)
- Extensive range of organic compound mixes and single compound standards available
- Can be used with a variety of instruments including GC, GC-MS, HPLC and LC-MS
- Designed specifically for use in EPA or EU analytical methods
- Presented in high quality amber ampoules
- Customised formulations available

### Technical Benefits

- Produced in accordance with EPA methods
- Consistency of product - Independent, Traceable, Certified
- Ideal for use in EPA 500, 600 and 8000 series methods
- Certificates of Analysis and Safety Data Sheets available online

These products are prepared gravimetrically on a weight/volume basis. Both solute and solvent are prepared using equipment calibrated by Reagecon engineers. Reagecon holds IEC/ISO 17025 accreditation for calibration of laboratory balances and pipettes (INAB Ref:265C). The resulting equipment Calibration Certificates are issued in accordance with the requirements of ISO/IEC 17025. The results are then reported and certified in  $\mu\text{g}/\text{ml}$  on the basis of weight and the density measurement of the standard. Reagecon is IEC/ISO 17025 (INAB Ref:264T) Accredited for density measurement using an Oscillating U-Tube Method in accordance with the ASTM D4052 method. The concentration of each standard is verified using a high performance calibrated Gas Chromatograph - Mass Spectrometer (GC-MS Instrument). The calibration of the GC-MS instrument is completed using high purity ISO Guide 34 accredited VOC standards similar in VOC concentration value to these products. The mass spectrum of each of the analytes is confirmed by comparison with the National Institute of Standards and Technology (NIST) mass spectral library.



## Volatile Organic Compounds (VOCs) Mixed Standards

Description	US EPA Methods	Pack in Ampoule	2,000µg/ml in Purge & Trap Methanol	200µg/ml in Purge & Trap Methanol
1,1-Dichlorethene (dichloroethylene)	502.2	1ml	REVOC001	REVOC002
trans-1,2-Dichloroethene	524.2		(54 compound mix)	(54 compound mix)
Dichloromethane (methylene chloride)	8021			
1,1-Dichloroethane	8021A			
cis-1,2-Dichloroethane	8021B			
2,2-Dichloropropane	8260B			
Bromochloromethane				
Chloroform				
1,1,1-Trichloroethane				
1,1-Dichloropropene				
Carbon Tetrachloride				
1,2-Dichloroethane				
Benzene				
Trichloroethene				
1,2-Dichloropropane				
Dibromomethane				
Bromodichloromethane				
trans-1,3-Dichloropropene				
Toluene				
cis-1,3-Dichloropropene				
1,3-Dichloropropane				
Tetrachloroethene				
Dibromochloromethane				
Dibromoethane				
Chlorobenzene				
1,1,1,2-Tetrachloroethane				
Ethylbenzene				
m-Xylene				
p-Xylene				
o-Xylene				
Styrene				
Bromoform				
Isopropylbenzene				
1,1,2,2-Tetrachloroethane				
1,2,3-Trichloropropane				
Bromobenzene				
n-Propylbenzene				
2-Chlorotoluene				
1,2,4-Trimethylbenzene				
4-Chlorotoluene				
tert-Butylbenzene				
1,3,5-Trimethylbenzene				
sec-Butylbenzene				
1,3-Dichlorobenzene				
4-Isopropyltoluene				
1,4-Dichlorobenzene				
1,2-Dichlorobenzene				
n-Butylbenzene				
1,2-Dibromo-3-chloropropane				
1,2,3-Trichlorobenzene				
Hexachlorobutadiene				
Naphthalene				
1,2,4-Trichlorobenzene				
1,1,2-Trichloroethane				

Description	US EPA Methods	Pack in Ampoule	2,000µg/ml in Purge & Trap Methanol	200µg/ml in Purge & Trap Methanol
Bromoform	502.2	1ml	REVOC003 (15 compound mix)	REVOC004 (15 compound mix)
Chlorobenzene	524.2			
Carbon Tetrachloride	8021			
Chloroform	8021A			
Dibromochloromethane	8021B			
1,1-Dichloroethane	624			
1,2-Dichloroethane	8240B			
1,1-Dichlorethene	8260B			
trans-1,2-Dichloroethene				
1,2-Dichloropropane				
Dichloromethane				
1,1,1,2-Tetrachloroethane				
Tetrachloroethene				
1,1,2-Trichloroethane				
Trichloroethene				
Bromobenzene	502.2	1ml	REVOC005 (21 compound mix)	REVOC006 (21 compound mix)
Bromochloromethane	524.2			
Bromodichloromethane	8021			
n-Butylbenzene	8021A			
2-Chlorotoluene	8021B			
4-Chlorotoluene	8260B			
Dibromoethane				
1,2-Dichlorobenzene				
1,3-Dichlorobenzene				
cis-1,2-Dichloroethane				
1,3-Dichloropropane				
1,1-Dichloropropene				
cis-1,3-Dichloropropene				
trans-1,3-Dichloropropene				
Ethylbenzene				
Isopropylbenzene				
Styrene				
1,1,1,2-Tetrachloroethane				
1,1,1-Trichloroethane				
1,2,3-Trichloropropane				
p-Xylene				
Benzene	502.2	1ml	REVOC007 (17 compound mix)	REVOC008 (17 compound mix)
sec-Butylbenzene	524.2			
tert-Butylbenzene	8021			
1,2-Dibromo-3-chloropropane	8021A			
1,4-Dichlorobenzene	8021B			
2,2-Dichloropropane	8260B			
Hexachlorobutadiene				
4-Isopropyltoluene				
Naphthalene				
n-Propylbenzene				
Toluene				
1,2,3-Trichlorobenzene				
1,2,4-Trichlorobenzene				
1,2,4-Trimethylbenzene				
1,3,5-Trimethylbenzene				
o-Xylene				
m-Xylene				

Description	US EPA Methods	Pack in Ampoule	2,000µg/ml in Purge & Trap Methanol	200µg/ml in Purge & Trap Methanol
Bromodichloromethane	501	1ml	REVOC009 (4 compound mix)	REVOC010 (4 compound mix)
Bromoform				
Chloroform				
Dibromochloromethane				
Benzene	602	1 ml	REVOC018 (7 compound mix)	REVOC019 (7 compound mix)
Chlorobenzene				
1,2-Dichlorobenzene				
1,3-Dichlorobenzene				
1,4-Dichlorobenzene				
Ethylbenzene				
Toluene				
Benzene	602	1ml	REVOC020 (6 compound mix for BTEX)	REVOC021 (6 compound mix for BTEX)
Ethylbenzene				
Toluene				
m-Xylene				
p-Xylene				
o-Xylene				

## Volatile Organic Compounds (VOCs) Mixed Standards

Product No.	Description - Each at 2,000µg/ml in Purge & Trap Methanol	US EPA Methods	Packed in Ampoule
REVOC011 (9 compound mix)	Bromochloromethane	502.2	1ml
	Bromoform	524.2	
	Carbon Tetrachloride	8021	
	Chloroform	8021A	
	Dibromomethane	8021B	
	1,1-Dichloroethane		
	2,2-Dichloropropane		
	Tetrachloroethene		
	1,1,1-Trichloroethane		
REVOC012 (16 compound mix)	1,2-Dibromo-3-chloropropane	502.2	1ml
	Dibromoethane	524.2	
	1,2-Dichloroethane	8021	
	1,2-Dichloropropane	8021A	
	1,3-Dichloropropane	8021B	
	1,1-Dichloropropene		
	trans-1,3-Dichloropropene		
	cis-1,3-Dichloropropene		
	Hexachlorobutadiene		
	1,1,1,2-Tetrachloroethane		
	1,1,2,2-Tetrachloroethane		
	1,1,2-Trichloroethane		
	Trichloroethene		
	1,2,3-Trichloropropane		
	Naphthalene		
1,2,4-Trimethylbenzene			

## Volatile Organic Compounds (VOCs) Mixed Standards

Product No.	Description - Each at 2,000µg/ml in Purge & Trap Methanol	US EPA Methods	Packed in Ampoule
REVOC013 (12 compound mix)	Benzene	502.2	1ml
	Bromobenzene	524.2	
	n-Butylbenzene	8021	
	Ethylbenzene	8021A	
	4-Isopropyltoluene	8021B	
	Styrene		
	Toluene		
	1,2,3-Trichlorobenzene		
	1,2,4-Trichlorobenzene		
	1,3,5-Trimethylbenzene		
	1,2,4-Trimethylbenzene		
	m-Xylene		
	REVOC014 (12 compound mix)	sec-Butylbenzene	
tert-Butylbenzene		524.2	
Chlorobenzene		8021	
2-Chlorotoluene		8021A	
4-Chlorotoluene		8021B	
1,2-Dichlorobenzene			
1,3-Dichlorobenzene			
1,4-Dichlorobenzene			
Isopropylbenzene			
n-Propylbenzene			
o-Xylene			
p-Xylene			
REVOC015 (28 compound mix)	1,2,4-Trimethylbenzene	503.1	1ml
	1,2-Dichlorobenzene		
	1,3,5-Trimethylbenzene		
	1,3-Dichlorobenzene		
	1,4-Dichlorobenzene		
	2-Chlorotoluene		
	Benzene		
	Bromobenzene		
	n-Butylbenzene		
	tert-Butylbenzene		
	sec-Butylbenzene		
	Chlorobenzene		
	4-Chlorotoluene		
	Ethylbenzene		
	Hexachlorobutadiene		
	Isopropylbenzene		
	4-Isopropyltoluene		
	Naphthalene		
	n-Propylbenzene		
	Styrene		
	Tetrachloroethene		
	Toluene		
	1,2,3-Trichlorobenzene		
	1,2,4-Trichlorobenzene		
	Trichloroethene		
	m-Xylene		
	p-Xylene		
	o-Xylene		



Product No.	Description - Each at 2,000µg/ml in Purge & Trap Methanol	US EPA Methods	Packed in Ampoule
REVOC016 (2 compound mix)	1,2-Dibromo-3-chloropropane	504	1ml
	Dibromoethane	8011	
REVOC017 (3 compound mix)	1,2-Dibromo-3-chloropropane	504.1	1ml
	Dibromoethane		
	1,2,3-Trichloropropane		
REVOC022 (10 compound mix)	Benzene	8020	1ml
	Chlorobenzene	8020A	
	1,3-Dichlorobenzene		
	1,4-Dichlorobenzene		
	1,2-Dichlorobenzene		
	Ethylbenzene		
	m-Xylene		
	p-Xylene		
	o-Xylene		
Toluene			



Product No.	Description - Each at 2,000µg/ml in Purge & Trap Methanol	US EPA Methods	Packed in Ampoule
REVOC023 (53 compound mix)	1,1-Dichlorethene (dichloroethylene)	8021	1ml
	Dichloromethane (methylene chloride)	8021A	
	trans-1,2-Dichloroethene	8021B	
	1,1-Dichloroethane	8260B	
	cis-1,2-Dichloroethane		
	2,2-Dichloropropane		
	Chloroform		
	1,1,1-Trichloroethane		
	1,1-Dichloropropene		
	Carbon Tetrachloride		
	1,2-Dichloroethane		
	Benzene		
	Trichloroethene		
	1,2-Dichloropropane		
	Dibromomethane		
	Bromodichloromethane		
	trans-1,3-Dichloropropene		
	Toluene		
	cis-1,3-Dichloropropene		
	1,3-Dichloropropane		
	Tetrachloroethene		
	Dibromochloromethane		
	Dibromoethane		
	Chlorobenzene		
	1,1,1,2-Tetrachloroethane		
	Ethylbenzene		
	m-Xylene		
	p-Xylene		
	o-Xylene		
	Styrene		
	Bromoform		
	Isopropylbenzene		
	1,1,2,2-Tetrachloroethane		
	1,2,3-Trichloropropane		
	Bromobenzene		
	n-Propylbenzene		
	2-Chlorotoluene		
	1,2,4-Trimethylbenzene,		
	4-Chlorotoluene		
	tert-Butylbenzene		
	1,3,5-Trimethylbenzene		
	sec-Butylbenzene		
	1,3-Dichlorobenzene		
	4-Isopropyltoluene		
	1,4-Dichlorobenzene		
	1,2-Dichlorobenzene		
	n-Butylbenzene		
	1,2-Dibromo-3-chloropropane		
	1,2,3-Trichlorobenzene		
	Hexachlorobutadiene		
	Naphthalene		
	1,2,4-Trichlorobenzene		
	1,1,2-Trichloroethane		

Product No. Pack in 1ml Ampoule	Description - Each at 200µg/ml in Purge & Trap Methanol
REVOC0025 (20 compound mix)	1,1,1-Trichloroethane
	1,1-Dichlorethene (dichloroethylene)
	1,1-Dichloroethane
	1,2-Dichlorobenzene
	1,2-Dichloropropane
	1,3-Dichlorobenzene
	1,4-Dichlorobenzene
	Benzene
	Bromodichloromethane
	Bromoform
	Carbon Tetrachloride
	Chlorobenzene
	Chloroform
	Dibromochloromethane
	Dichloromethane (methylene chloride)
	Ethylbenzene
	Styrene
	Tetrachloroethene
Toluene	
Trichloroethene	

Product No. Pack in 1ml Ampoule	Description - Each at 1000µg/ml in Purge & Trap Methanol
REVOC0026 (18 compound mix)	1,2,3-Trichlorobenzene
	1,2,4-Trichlorobenzene
	1,2-Dichlorobenzene
	1,3-Dichlorobenzene
	1,4-Dichlorobenzene
	Benzene
	Bromodichloromethane
	Bromoform
	Carbon Tetrachloride
	Chloroform
	Dibromochloromethane
	Ethylbenzene
	Isopropylbenzene
	m-Xylene
	o-Xylene
	p-Xylene
	Styrene
	Toluene

Product No. Pack in 1ml Ampoule	Description - Each at 20000µg/ml in Purge & Trap Methanol
REVOC0028 (13 compound mix)	1,2,3-Trichlorobenzene
	1,2,4-Trichlorobenzene
	1,2,4-Trimethylbenzene
	1,3,5-Trimethylbenzene
	4-Isopropyltoluene
	Benzene
	Bromobenzene
	Ethylbenzene
	m-Xylene
	Naphthalene
	n-Butylbenzene
	Styrene
	Toluene

Product No. Pack in 1ml Ampoule	Description - Each at 20000µg/ml in Purge & Trap Methanol
REVOC0030 (12 compound mix)	1,2-Dichlorobenzene
	1,3-Dichlorobenzene
	1,4-Dichlorobenzene
	2-Chlorotoluene
	4-Chlorotoluene
	Chlorobenzene
	Isopropylbenzene
	n-Propylbenzene
	o-Xylene
	p-Xylene
	sec-Butylbenzene
	tert-Butylbenzene

Product No. Pack in 1ml Ampoule	Description - Each at 20000µg/ml in Purge & Trap Methanol
REVOC0031 (12 compound mix)	1,2,3-Trichlorobenzene
	1,2,4-Trichlorobenzene
	1,2,4-Trimethylbenzene
	1,3,5-Trimethylbenzene
	4-Isopropyltoluene
	Benzene
	Bromobenzene
	Ethylbenzene
	Naphthalene
	n-Butylbenzene
	Styrene
	Toluene

Product No. Pack in 1ml Ampoule	Description - Each at 1000µg/ml in Purge & Trap Methanol
REVOC0033 (11 compound mix)	1,2-Dichlorobenzene
	1,3-Dichlorobenzene
	1,4-Dichlorobenzene
	2-Chlorotoluene
	4-Chlorotoluene
	Chlorobenzene
	Isopropylbenzene
	n-Propylbenzene
	sec-Butylbenzene
	tert-Butylbenzene
	o-Xylene

Product No. Pack in 1ml Ampoule	Description - Each at 40µg/ml in Purge & Trap Methanol
REVOC0034 (10 compound mix)	1,1,2,2-Tetrachloroethane
	1,1,2-Trichloroethane
	1,1-Dichloroethene (dichloroethylene)
	1,2,3-Trichloropropane
	1,2-Dichloroethane
	1,2-Dichloropropane
	Chloroform
	Hexachlorobutadiene
	Tetrachloroethene
	Trichloroethene

Product No. Pack in 1ml Ampoule	Description - Each at 200µg/ml in Purge & Trap Methanol
REVOC0035 (10 compound mix)	1,1,1-Trichloroethane
	1,1-Dichloroethene
	Bromodichloromethane
	Bromoform
	Carbon Tetrachloride
	Chloroform
	Dibromochloromethane
	Dichloromethane (methylene chloride)
	Tetrachloroethene
	Trichloroethene

Product No. Pack in 1ml Ampoule	Description - Each at 20000µg/ml in Purge & Trap Methanol
REVOC0036 (9 compound mix)	1,1,1-Trichloroethane
	1,1-Dichloroethane
	2,2-Dichloropropane
	Bromodichloromethane
	Bromoform
	Carbon Tetrachloride
	Chloroform
	Dibromomethane
	Tetrachloroethene

Product No. Pack in 1ml Ampoule	Description - Each at 1000µg/ml in Purge & Trap Methanol
REVOC0037 (9 compound mix)	Benzene
	Carbon Tetrachloride
	Chloroform
	m-Xylene
	o-Xylene
	p-Xylene
	Tetrachloroethene
	Toluene
	Trichloroethene

Product No. Pack in 1ml Ampoule	Description - Each at 1000µg/ml in Purge & Trap Methanol
REVOC0038 (9 compound mix)	Benzene
	Chlorobenzene
	Ethylbenzene
	m-Xylene
	o-Xylene
	p-Xylene
	Styrene
	Toluene

Product No. Pack in 1ml Ampoule	Description - Each at 100µg/ml in Methylene Chloride
REVOC0042 (8 compound mix)	1,1,1-Trichloroethane
	Bromodichloromethane
	Bromoform
	Chloroform
	Dibromochloromethane
	Dichloromethane (methylene chloride)
	Tetrachloroethene
	Trichloroethene

Product No. Pack in 1ml Ampoule	Description - Each at 100µg/ml in Purge & Trap Methanol
REVOC0043 (5 compound mix)	Bromoform
	Carbon Tetrachloride
	Chloroform
	Tetrachloroethene
	Trichloroethene

Product No. Pack in 1ml Ampoule	Description - Each at 40µg/ml in Purge & Trap Methanol
REVOC0046 (3 compound mix)	1,1,1-Trichloroethane
	1,1-Dichloroethane
	trans-1,2-Dichloroethene

Product No. Pack in 1ml Ampoule	Description - Each at 1000µg/ml in Purge & Trap Methanol
REVOC0047 (3 compound mix)	1,1-Dichloroethane
	1,2-Dichloroethane
	Dichloromethane (methylene chloride)

Product No. Pack in 1ml Ampoule	Description - Each at 1000µg/ml in Purge & Trap Methanol
REVOC0048 (3 compound mix)	1,2,4-Trichlorobenzene
	1,4-Dichlorobenzene
	Chlorobenzene

Product No. Pack in 1ml Ampoule	Description - Each at 1000µg/ml in Purge & Trap Methanol
REVOC0049 (2 compound mix)	Tetrachloroethene
	Trichloroethene

Product No. Pack in 1ml Ampoule	Description - Each at 200µg/ml in Purge & Trap Methanol
REVOC0051 (2 compound mix)	Benzene
	Toluene

Product No. Pack in 1ml Ampoule	Description - Each at 2µg/ml in Purge & Trap Methanol
REVOC0052 (2 compound mix)	Benzene
	Toluene

Product No. Pack in 1ml Ampoule	Description - Each at 100µg/ml in Purge & Trap Methanol
REVOC0053 (2 compound mix)	Benzene
	Toluene

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**CERTIFICATE OF ANALYSIS**

**PRODUCT:** VOC Mixed Standard-18 Compound Mix @ 200µg/ml in Purge and  
Trap Methanol  
**PRODUCT No.:** REVOC004  
**MATRIX:** Methanol  
**LOT NO.:** VOC00415E1  
**DATE OF PREPARATION:** 28<sup>th</sup> May 2015  
**EXPIRY DATE:** 28<sup>th</sup> May 2018  
**PREPARATION OF STANDARD:**

All standard components have been pre-qualified/verified before use. All preparation has been performed in a cleanroom environment under strictly monitored and controlled conditions. All analytical measuring devices and instrumentation have been pre-calibrated. The actual concentrations reported below are based on this preparation methodology and compound purities.

Compound	Purity %	Labelled µg/ml	Actual µg/ml
Bromoflurum	97.7	200	20012.5
Chlorobenzene	99.7	200	19922.5
Carbon Tetrachloride	99.3	200	20112.5
Chloroform	99.3	200	20022.5
Dichloromethane	98.8	200	20212.5
1,1-Dichloroethane	98.4	200	20212.5
trans-1,2-Dichloroethane	99.3	200	100022.5
1,2-Dichloropropane	99.2	200	20022.5
Dichloromethane	98.8	200	20112.5
1,1,2,2-Tetrachloroethane	99.3	200	20212.5
Tetrachloroethane	99.3	200	20112.5
1,1,2-Trichloroethane	99.4	200	20022.5
Trichloroethane	99.5	200	20112.5

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**TRACEABILITY IN THE PRODUCTION OF THIS STANDARD**

This product was prepared gravimetrically on a weight/volume basis. The solute was weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO 17025 accreditation for calibration of non-automatic weighing machines (205C). The resulting Balance Certificate of Calibration was issued in accordance with the requirements of ISO/IEC 17025. The balance was calibrated under monitored environmental conditions and atmospheric pressure. Tests were performed for capacity, readability, repeatability, eccentricity and linearity. Dilution of the final product to volume was performed using internally calibrated Class A volumetric glassware.

**BALANCE ID No.:** ERD066      **CALIBRATION DATE OF BALANCE:** 28<sup>th</sup> May 2015  
**CALIBRATION AUTHORITY OF BALANCE:** Reagecon Diagnostics Ltd, ISO 17025 Accreditation No. 285C  
**WEIGHTS No.:** RTS68      **CALIBRATION DATE OF WEIGHTS:** 0<sup>th</sup> April 2015  
**CALIBRATION AUTHORITY OF WEIGHTS:** Compagnie Calibrations (INAB No. 282)  
**QUALITY CONTROL VERIFICATION:** 29<sup>th</sup> May 2015

**STORAGE/USAGE INSTRUCTIONS:**

Please store this product in a freezer (-20°C). To open product, invert at least 10 times (do not shake) and sonicate if solid material is apparent. Break the ampoule open at the lower neck mark (caution sharp glass) and transfer to vial. Allow to return to room temperature before use. Store after opening in a freezer. Invert, sonicate and allow vial to return to room temperature before each subsequent use. Use only Class A volumetric glassware for dilutions and ensuring thorough mixing.

**DATE:** 08<sup>th</sup> July 2015

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Product No. Pack in 1ml Ampoule	Description - Each in Acetone	Concentration µg/ml
REVOC0032 (12 compound mix)	1,2-Dichloroethane	4000
	Benzene	12000
	Carbon Tetrachloride	4000
	Chlorobenzene	8000
	Chloroform	4000
	Ethylbenzene	8000
	m-Xylene	12000
	o-Xylene	12000
	p-Xylene	12000
	Tetrachloroethene	4000
	Toluene	12000
	Trichloroethene	4000
Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC0039 (9 compound mix)	1,2-Dichloroethane	3000
	Benzene	1000
	Chlorobenzene	1000
	Ethylbenzene	1000
	m-Xylene	1000
	o-Xylene	1000
	p-Xylene	1000
	Styrene	1000
	Toluene	1000
Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC0040 (9 compound mix)	1,1,1-Trichloroethane	100
	1,2-Dichloroethane	100
	Bromodichloromethane	100
	Bromoform	100
	Carbon Tetrachloride	100
	Chloroform	100
	Dibromochloromethane	100
	Tetrachloroethene	50
	Trichloroethene	50
Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC0041 (8 compound mix)	1,2-Dichloroethane	3000
	Benzene	1000
	Ethylbenzene	1000
	m-Xylene	1000
	o-Xylene	1000
	p-Xylene	1000
	Styrene	1000
	Toluene	1000

Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC0044 (5 compound mix)	1,1-Dichloroethane	6
	1,2,3-Trichloropropane	6
	Bromochloromethane	12
	n-Propylbenzene	6
	sec-Butylbenzene	8
Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC0045 (5 compound mix)	1,1-Dichloroethane	0.6
	1,2,3-Trichloropropane	0.6
	Bromochloromethane	1.2
	n-Propylbenzene	0.6
	sec-Butylbenzene	0.8
Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC0054 (9 compound mix)	1,2,3-Trichlorobenzene	100
	1,2,4-Trichlorobenzene	100
	Styrene	100
	Ethylbenzene	100
	Toluene	100
	o-Xylene	100
	m-Xylene	100
	p-Xylene	100
	Naphthalene	100
Product No. Pack in 1 ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC0056 (4 compound mix)	Trichloroethene	100
	Tetrachloroethene	100
	1,2-Dichloroethene	100
	Benzene	100
Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC0058 (8 compound mix)	Chloroform	100
	Bromodichloromethane	100
	Dibromochloromethane	100
	Bromoform	100
	1,2-Dichloroethane	100
	Trichloroethene	100
	Tetrachloroethene	100
	Tetrachloromethane	100

Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC0183 (14 compound mix)	1,1-Dichloroethylene	500
	Methylene chloride	2000
	trans-1,2-Dichloroethylene	2000
	Chloropropene	500
	cis-1,2-Dichloroethylene	2000
	Chloroform	20
	Carbon Tetrachloride	20
	1,2-Dichloroethane	2000
	Trichloroethylene	20
	Bromodichloromethane	20
	Tetrachloroethylene	20
	Dibromochloromethane	100
	Bromoform	100
	Hexachlorobutadiene	20
Product No. Pack in 1ml Ampoule	Description - Each in Toluene	Concentration µg/ml
REVOC0184 (2 compound mix)	Methyl mercury chloride	1000
	Ethyl mercury chloride	1000
Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC0185 (12 compound mix)	Chlorobenzene	100000
	1,2,4-Trichlorobenzene	200
	1,2,3-Trichlorobenzene	200
	1,3,5-Trichlorobenzene	200
	1,2,3,4-Tetrachlorobenzene	50
	1,2,3,5-Tetrachlorobenzene	50
	1,2-Dichlorobenzene	1000
	1,3-Dichlorobenzene	1000
	1,4-Dichlorobenzene	1000
	Hexachlorobenzene	20
	Pentachlorobenzene	20
	1,2,4,5-tetrachlorobenzene	50



Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC0186 (16 compound mix)	Dimethyl phthalate	1000
	Diethyl phthalate	1000
	Diisobutyl phthalate	1000
	Dibutyl phthalate	1000
	Di(methoxyethyl) phthalate	1000
	Butyl methyl phthalate	1000
	Bis(2-ethoxyethyl)phthalate	1000
	Dipentyl phthalate	1000
	Di-n-hexyl phthalate	1000
	Benzyl butyl phthalate	1000
	Bis(2-n-butoxyethyl) phthalate	1000
	Dicyclohexyl phthalate	1000
	Di(2-ethylhexyl) phthalate	1000
	Diphenyl phthalate	1000
	Di-n-octyl phthalate	1000
	Dinonyl phthalate	1000
Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC042 (6 compound mix)	Benzene	1000
	Toluene	1000
	o-Xylene	1000
	m-Xylene	1000
	p-Xylene	1000
	Ethylbenzene	1000
Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC043 (8 compound mix)	Chloroform	50
	Bromodichloromethane	50
	Dibromochloromethane	50
	Bromoform	50
	1,2-Dichloroethane	50
	Tetrachloromethane	50
	Trichloroethene	50
	Tetrachloroethene	50
Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC046 (7 compound mix)	Hexachloro-1,3-butadiene	100
	Tetrachloroethylene	100
	Trichloroethylene	100
	Trichloromethane	100
	Tetrachloromethane	100
	Dichloromethane	100
	1,2-Dichloroethane	100

Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REVOC059 (2 compound mix)	Acrolein	20000
	Acrylonitrile	20000
Product No. Pack in 1ml Ampoule	Description - Each in Carbon Disulfide	Concentration µg/ml
REVOC200 (18 compound mix)	Methanol	1000
	Ethanol	1000
	Acetone	1000
	Isopropyl alcohol	1000
	Dichloromethane	1000
	Hexane	1000
	Methyl ethyl ketone	1000
	Ethyl acetate	1000
	Cloroform	1000
	Benzene	1000
	1,4-Dioxane	1000
	Methyl isobutyl ketone	1000
	Toluene	1000
	Dimethylformamide	1000
	Chlorobenzene	1000
	Ethylbenzene	1000
o-Xylene	1000	
m-Xylene	1000	
Product No. Pack in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
RESVOC215 (16 compound mix)	Phthalic acid,bis-2-ethylhexylester	1000
	Phthalic acid, benzylbutyl ester	1000
	Phthalic acid, bis-butyl ester	1000
	Phthalic acid, bis-iso-butyl ester	1000
	Phthalic acid, bis-C6-C8-branched alkyl esters C7-rich	1000
	Phthalic acid, bis-methylglycol ester	1000
	Phthalic acid, bis-n-pentyl ester	1000
	Phthalic acid, bis-iso-pentyl ester	1000
	Phthalic acid, bis-1-octyl ester	1000
	Diisodecyl phthalate	1000
	Diisononyl phthalate	1000
	Phthalic acid, bis-hexyl ester	1000
	1,2-Benzenedicarboxylic acid dipentyl ester	1000
	1,2-Benzenedicarboxylic acid, di-C7-11	1000
	Isopentyl Pentyl Phthalate	1000
	1,2-Benzenedicarboxylic acid, dihexyl ester	1000

Product No. Pack in 5 x 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
RESVOC215A (16 compound mix)	Phthalic acid,bis-2-ethylhexylester	1000
	Phthalic acid, benzylbutyl ester	1000
	Phthalic acid, bis-butyl ester	1000
	Phthalic acid, bis-iso-butyl ester	1000
	Phthalic acid, bis-C6-C8-branched alkyl esters C7-rich	1000
	Phthalic acid, bis-methylglycol ester	1000
	Phthalic acid, bis-n-pentyl ester	1000
	Phthalic acid, bis-iso-pentyl ester	1000
	Phthalic acid, bis-1-octyl ester	1000
	Diisodecyl phthalate	1000
	Diisononyl phthalate	1000
	Phthalic acid, bis-hexyl ester	1000
	1,2-Benzenedicarboxylic acid dipentyl ester	1000
	1,2-Benzenedicarboxylic acid, di-C7-11	1000
	Isopentyl Pentyl Phthalate	1000
	1,2-Benzenedicarboxylic acid, dihexyl ester	1000
Product No. Pack in 1ml Ampoule	Description - Each at 2000µg/ml in Purge & Trap Methanol	US EPA Methods
REVOC0027 (13 compound mix)	1,2,3-Trichlorobenzene	502
	1,2,4-Trichlorobenzene	524
	1,2,4-Trimethylbenzene	
	1,3,5-Trimethylbenzene	
	4-Isopropyltoluene	
	Benzene	
	Bromobenzene	
	Ethylbenzene	
	m-Xylene	
	Naphthalene	
	n-Butylbenzene	
	Styrene	
	Toluene	

## Volatile Organic Compounds (VOCs) Single Element Component Standards

Product No.	Description	Concentration	US EPA Methods	Pack in Ampoule
REVOC101	1,1-Dichlorethene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC101N	1,1-Dichlorethene	Neat		10mg
REVOC102	Dichloromethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC102N	Dichloromethane	Neat		10mg
REVOC103	trans-1,2-Dichloroethene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC103N	trans-1,2-Dichloroethene	Neat		10mg
REVOC104	1,1-Dichloroethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC104N	1,1-Dichloroethane	Neat		10mg
REVOC105	cis-1,2-Dichloroethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC105N	cis-1,2-Dichloroethane	Neat		10mg
REVOC106	2,2-Dichloropropane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC106N	2,2-Dichloropropane	Neat		10mg
REVOC107	Bromochloromethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC107N	Bromochloromethane	Neat		10mg
REVOC108	Chloroform	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC108N	Chloroform	Neat		10mg
REVOC109	1,1,1-Trichloroethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC109N	1,1,1-Trichloroethane	Neat		10mg
REVOC110	1,1-Dichloropropene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC110N	1,1-Dichloropropene	Neat		10mg
REVOC111	Carbon Tetrachloride	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC111N	Carbon Tetrachloride	Neat		10mg
REVOC112	1,2-Dichloroethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml

Product No.	Description	Concentration	US EPA Methods	Pack in Ampoule
REVOC112N	1,2-Dichloroethane	Neat		10mg
REVOC113	Benzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC113N	Benzene	Neat		10mg
REVOC114	Trichloroethene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC114N	Trichloroethene	Neat		10mg
REVOC115	1,2-Dichloropropane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC115N	1,2-Dichloropropane	Neat		10mg
REVOC116	Dibromomethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC116N	Dibromomethane	Neat		10mg
REVOC117	Bromodichloromethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC117N	Bromodichloromethane	Neat		10mg
REVOC118	trans-1,3-Dichloropropene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC118N	trans-1,3-Dichloropropene	Neat		10mg
REVOC119	Toluene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC119N	Toluene	Neat		10mg
REVOC120	cis-1,3-Dichloropropene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC120N	cis-1,3-Dichloropropene	Neat		10mg
REVOC121	1,3-Dichloropropane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC121N	1,3-Dichloropropane	Neat		10mg
REVOC122	Tetrachloroethene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC122N	Tetrachloroethene	Neat		10mg
REVOC123	Dibromochloromethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC123N	Dibromochloromethane	Neat		10mg
REVOC124	Dibromoethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml

Product No.	Description	Concentration	US EPA Methods	Pack in Ampoule
REVOC124N	Dibromoethane	Neat		10mg
REVOC125	Chlorobenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC125N	Chlorobenzene	Neat		10mg
REVOC126	1,1,1,2-Tetrachloroethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B.	1ml
REVOC126N	1,1,1,2-Tetrachloroethane	Neat		10mg
REVOC127	Ethylbenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC127N	Ethylbenzene	Neat		10mg
REVOC128	m-Xylene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC128N	m-Xylene	Neat		10mg
REVOC129	p-Xylene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC129N	p-Xylene	Neat		10mg
REVOC130	o-Xylene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC130N	o-Xylene	Neat		10mg
REVOC131	Styrene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC131-C	Styrene	1000µg/ml in Carbon Disulphide	502.2, 524.2,	1ml
REVOC131N	Styrene	Neat		10mg
REVOC132	Bromoform	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC132N	Bromoform	Neat		10mg
REVOC133	Isopropylbenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC133N	Isopropylbenzene	Neat		10mg
REVOC134	1,1,2,2-Tetrachloroethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC134N	1,1,2,2-Tetrachloroethane	Neat		10mg
REVOC135	1,2,3-Trichloropropane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC135N	1,2,3-Trichloropropane	Neat		10mg

Product No.	Description	Concentration	US EPA Methods	Pack in Ampoule
REVOC136	Bromobenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC136N	Bromobenzene	Neat		10mg
REVOC137	n-Propylbenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC137N	n-Propylbenzene	Neat		10mg
REVOC138	2-Chlorotoluene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC138N	2-Chlorotoluene	Neat		10mg
REVOC139	1,2,4-Trimethylbenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC139N	1,2,4-Trimethylbenzene	Neat		10mg
REVOC140	4-Chlorotoluene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC140N	4-Chlorotoluene	Neat		10mg
REVOC141	tert-Butylbenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC141N	tert-Butylbenzene	Neat		10mg
REVOC142	1,3,5-Trimethylbenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC142N	1,3,5-Trimethylbenzene	Neat		10mg
REVOC143	sec-Butylbenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC143N	sec-Butylbenzene	Neat		10mg
REVOC144	1,3-Dichlorobenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC144N	1,3-Dichlorobenzene	Neat		10mg
REVOC145	4-Isopropyltoluene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC145N	4-Isopropyltoluene	Neat		10mg
REVOC146	1,4-Dichlorobenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC146N	1,4-Dichlorobenzene	Neat		10mg
REVOC147	1,2-Dichlorobenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC147N	1,2-Dichlorobenzene	Neat		10mg

Product No.	Description	Concentration	US EPA Methods	Pack in Ampoule
REVOC148	n-Butylbenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC148N	n-Butylbenzene	Neat		10mg
REVOC149	1,2-Dibromo-3-chloropropane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC149N	1,2-Dibromo-3-chloropropane	Neat		10mg
REVOC150	1,2,3-Trichlorobenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC150N	1,2,3-Trichlorobenzene	Neat		10mg
REVOC151	Hexachlorobutadiene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC151N	Hexachlorobutadiene	Neat		10mg
REVOC152	Naphthalene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC152N	Naphthalene	Neat		10mg
REVOC153	1,2,4-Trichlorobenzene	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC153N	1,2,4-Trichlorobenzene	Neat		10mg
REVOC154	1,1,2-Trichloroethane	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC154N	1,1,2-Trichloroethane	Neat		10mg
REVOC159	Vinyl Chloride	20µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC159N	Vinyl Chloride	Neat		10mg
REVOC163	Ethyl Mercaptan	1,000µg/ml in Toluene		1ml
REVOC163N	Ethyl Mercaptan	Neat		10mg
REVOC165	Vinyl Chloride	2,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC166	Acetonitrile	2,000µg/ml in Purge and Trap Methanol	8240B, 8260B	1ml
REVOC166N	Acetonitrile	Neat		10mg
REVOC168	Cyclohexane	2,000µg/ml in Purge and Trap Methanol		1ml
REVOC168N	Cyclohexane	Neat		10mg
REVOC175	Methyl Mercaptan	1,000µg/ml in Purge and Trap Methanol		1ml
REVOC175N	Methyl Mercaptan	Neat		10mg



Product No.	Description	Concentration	US EPA Methods	Pack in Ampoule
REVOC176	Tetrahydrofuran	2,000µg/ml in Purge and Trap Methanol	524.2	1ml
REVOC176N	Tetrahydrofuran	Neat		10mg
REVOC181	Chloroprene	1,000µg/ml in Purge and Trap Methanol	8240B, 8021B, 8260B	1ml
REVOC181N	Chloroprene	Neat		10mg
REVOC182	1,3-Butadiene	2,000µg/ml in Purge and Trap Methanol	8260B	1ml
REVOC182N	1,3-Butadiene	Neat		10mg
REVOC183	Ethylene Oxide	10,000µg/L in Dimethyl Sulfoxide	8240B, 8260B	1ml
REVOC183N	Ethylene Oxide	Neat		10mg
REVOC184	1,2-Dichlorobenzene	1,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC185	1,4-Dichlorobenzene	100µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021, 8021A, 8021B, 624, 8240B, 8260B	1ml
REVOC186	1,3,5-Trimethylbenzene	5,000µg/ml in Purge and Trap Methanol	502.2, 524.2, 8021B, 8260B	1ml
REVOC187	Trimethylamine	100µg/ml in Purge and Trap Methanol	524.2, 624, 8260B	1ml
REVOC187N	Trimethylamine	Neat		10mg
REVOC188	Pyridine	1,000µg/L in Methylene Chloride	524.2, 624, 8270C, 8260B	1ml
REVOC188N	Pyridine	Neat		10mg
REVOC189	Turpentine	2,000µg/ml in Purge and Trap Methanol		1ml
REVOC189N	Turpentine	Neat		10mg
REVOC300	1,2,3,4-Diepoxybutane	1000µg/ml in Purge & Trap Methanol	8240B, 8260B	1ml
REVOC300N	1,2,3,4-Diepoxybutane	Neat		10mg
REVOC301	1,2,3,4-Diepoxybutane	2000µg/ml in Purge & Trap Methanol	8240B, 8260B	1ml
REVOC302	1,4-Dioxane	1000µg/ml in Purge & Trap Methanol	8240B, 8260B	1ml
REVOC302N	1,4-Dioxane	Neat		10mg
REVOC303	1,4-Dioxane	2000µg/ml in Purge & Trap Methanol	8240B, 8260B	1ml
REVOC304	1-Propanol	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC304N	1-Propanol	Neat		10mg
REVOC305	1-Propanol	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml

Product No.	Description	Concentration	US EPA Methods	Pack in Ampoule
REVOC306	2-Butanone (MEK)	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8240B,	1ml
REVOC306N	2-Butanone (MEK)	Neat		10mg
REVOC307	2-Butanone (MEK)	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8240B,	1ml
REVOC308	2-Chloroethanol	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC308N	2-Chloroethanol	Neat		10mg
REVOC309	2-Chloroethanol	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC310	2-Chloroethyl vinyl ether	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8240, 8260B	1ml
REVOC310N	2-Chloroethyl vinyl ether	Neat		10mg
REVOC311	2-Chloroethyl vinyl ether	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8240, 8260B	1ml
REVOC312	2-Hexanone	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC312N	2-Hexanone	Neat		10mg
REVOC313	2-Hexanone	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC314	2-Hydroxypropionitrile	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC314N	2-Hydroxypropionitrile	Neat		10mg
REVOC315	2-Hydroxypropionitrile	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC316	2-Nitropropane	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC316N	2-Nitropropane	Neat		10mg
REVOC317	2-Nitropropane	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC318	2-Pentanone	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC318N	2-Pentanone	Neat		10mg
REVOC319	2-Pentanone	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC320	2-Picoline	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC320N	2-Picoline	Neat		10mg
REVOC321	2-Picoline	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC322	2-Propanol	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml

Product No.	Description	Concentration	US EPA Methods	Pack in Ampoule
REVOC322N	2-Propanol	Neat		10mg
REVOC323	2-Propanol	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC324	2-Propanol	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC325	2-Propanol	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC326	3-Chloropropionitrile	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC326N	3-Chloropropionitrile	Neat		10mg
REVOC327	3-Chloropropionitrile	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC328	4-Methyl-2-pentanone (MIBK)	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC328N	4-Methyl-2-pentanone (MIBK)	Neat		10mg
REVOC329	4-Methyl-2-pentanone (MIBK)	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC330	Acrolein (Propenal)	1000µg/ml in Distilled Water	524.2, 624, 8260B	1ml
REVOC330N	Acrolein (Propenal)	Neat		10mg
REVOC331	Acrolein (Propenal)	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC332	Acrolein (Propenal)	2000µg/ml in Distilled Water	524.2, 624, 8260B	1ml
REVOC333	Acrolein (Propenal)	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC334	Acrylonitrile	1000µg/ml in Purge & Trap Methanol	524.2, 603, 624, 8240B, 8260B	1ml
REVOC334N	Acrylonitrile	Neat		10mg
REVOC335	Acrylonitrile	2000µg/ml in Purge & Trap Methanol	524.2, 603, 624, 8240B, 8260B	1ml
REVOC336	Allyl alcohol	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC336N	Allyl alcohol	Neat		10mg
REVOC337	Allyl alcohol	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC338	Allyl chloride	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC338N	Allyl chloride	Neat		10mg
REVOC339	Allyl chloride	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml

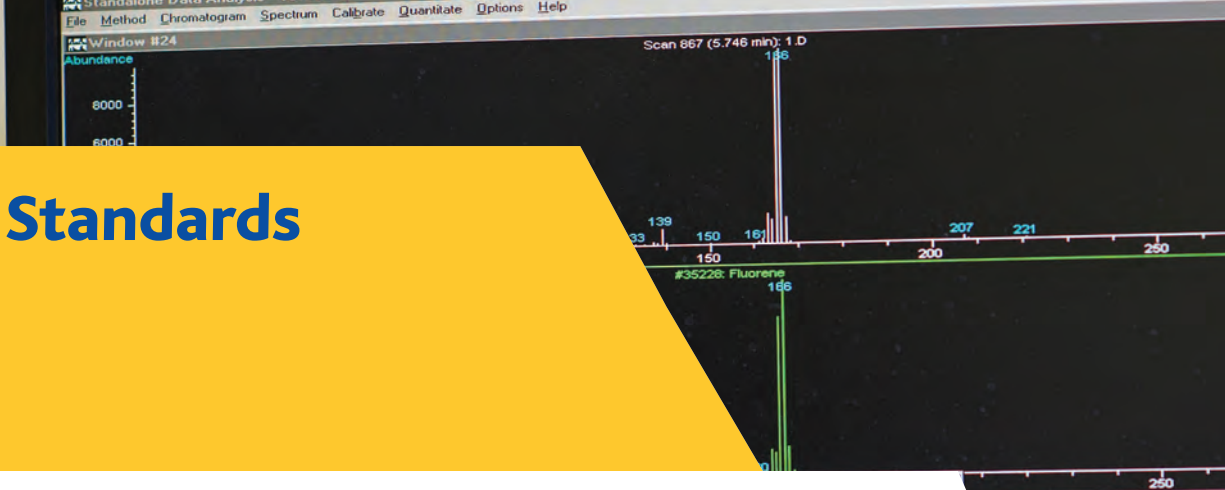
Product No.	Description	Concentration	US EPA Methods	Pack in Ampoule
REVOC340	Benzyl chloride	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC340N	Benzyl chloride	Neat		10mg
REVOC341	Benzyl chloride	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC342	Bromoacetone	1000µg/ml in Purge & Trap Methanol	8021B, 8240B	1ml
REVOC342N	Bromoacetone	Neat		10mg
REVOC343	Bromoacetone	2000µg/ml in Purge & Trap Methanol	8021B, 8240B	1ml
REVOC344	Bromomethane	1000µg/ml in Purge & Trap Methanol	502.2, 524.2, 624, 8260B	1ml
REVOC344N	Bromomethane	Neat		10mg
REVOC345	Bromomethane	2000µg/ml in Purge & Trap Methanol	502.2, 524.2, 624, 8260B	1ml
REVOC346	Chloroethane	1000µg/ml in Purge & Trap Methanol	502.2, 524.2, 624, 8260B	1ml
REVOC346N	Chloroethane	Neat		10mg
REVOC347	Chloroethane	2000µg/ml in Purge & Trap Methanol	502.2, 524.2, 624, 8260B	1ml
REVOC348	Chloromethane	1000µg/ml in Purge & Trap Methanol	502.2, 524.2, 624, 8260B	1ml
REVOC348N	Chloromethane	Neat		10mg
REVOC349	Chloromethane	2000µg/ml in Purge & Trap Methanol	502.2, 524.2, 624, 8260B	1ml
REVOC350	Chloroprene	1000µg/ml in Purge & Trap Methanol	8240B, 8021B, 8260B	1ml
REVOC351	Chloroprene	2000µg/ml in Purge & Trap Methanol	8240B, 8021B, 8260B	1ml
REVOC352	cis-1,4-Dichloro-2-butene	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC352N	cis-1,4-Dichloro-2-butene	Neat		10mg
REVOC353	cis-1,4-Dichloro-2-butene	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC354	Crotonaldehyde	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC354N	Crotonaldehyde	Neat		10mg
REVOC355	Crotonaldehyde	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC356	Dichlorodifluoromethane	1000µg/ml in Purge & Trap Methanol	502.2, 524.2, 8240B, 8021B, 8260B	1ml
REVOC356N	Dichlorodifluoromethane	Neat		10mg
REVOC357	Dichlorodifluoromethane	2000µg/ml in Purge & Trap Methanol	502.2, 524.2, 8240B, 8021B, 8260B	1ml

Product No.	Description	Concentration	US EPA Methods	Pack in Ampoule
REVOC358	Epichlorohydrin	1000µg/ml in Purge & Trap Methanol	8240B, 8260B	1ml
REVOC358N	Epichlorohydrin	Neat		10mg
REVOC359	Epichlorohydrin	2000µg/ml in Purge & Trap Methanol	8240B, 8260B	1ml
REVOC360	Ethanol	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC360N	Ethanol	Neat		10mg
REVOC361	Ethanol	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC362	Ethyl acetate	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC362N	Ethyl acetate	Neat		10mg
REVOC363	Ethyl acetate	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC364	Ethyl methacrylate	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC364N	Ethyl methacrylate	Neat		10mg
REVOC365	Ethyl methacrylate	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC366	Ethylene oxide	1000µg/ml in Purge & Trap Methanol	8240B, 8260B	1ml
REVOC367	Ethylene oxide	2000µg/ml in Purge & Trap Methanol	8240B, 8260B	1ml
REVOC368	Hexachloroethane	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC368N	Hexachloroethane	Neat		10mg
REVOC369	Hexachloroethane	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC370	Iodomethane	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC370N	Iodomethane	Neat		10mg
REVOC371	Iodomethane	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC372	Isobutyl alcohol	1000µg/ml in Purge & Trap Methanol	8240B, 8260B	1ml
REVOC372N	Isobutyl alcohol	Neat		10mg
REVOC373	Isobutyl alcohol	2000µg/ml in Purge & Trap Methanol	8240B, 8260B	1ml
REVOC374	Malononitrile	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC374N	Malononitrile	Neat		10mg
REVOC375	Malononitrile	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml

Product No.	Description	Concentration	US EPA Methods	Pack in Ampoule
REVOC376	Methacrylonitrile	1000µg/ml in Purge & Trap Methanol	524.2, 624, 6240B, 8260B	1ml
REVOC376N	Methacrylonitrile	Neat		10mg
REVOC377	Methacrylonitrile	2000µg/ml in Purge & Trap Methanol	524.2, 624, 6240B, 8260B	1ml
REVOC378	Methyl methacrylate	1000µg/ml in Purge & Trap Methanol	524.2, 624, 6240B, 8260B	1ml
REVOC378N	Methyl methacrylate	Neat		10mg
REVOC379	Methyl methacrylate	2000µg/ml in Purge & Trap Methanol	524.2, 624, 6240B, 8260B	1ml
REVOC380	Nitrobenzene	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC380N	Nitrobenzene	Neat		10mg
REVOC381	Nitrobenzene	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC382	N-Nitroso-di-n-butylamine	1000µg/ml in Acetone	8260B	1ml
REVOC382N	N-Nitroso-di-n-butylamine	Neat		10mg
REVOC383	N-Nitroso-di-n-butylamine	1000µg/ml in Purge & Trap Methanol	8260B	1ml
REVOC384	N-Nitroso-di-n-butylamine	2000µg/ml in Acetone	8260B	1ml
REVOC385	N-Nitroso-di-n-butylamine	2000µg/ml in Purge & Trap Methanol	8260B	1ml
REVOC386	Pentachloroethane	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC386N	Pentachloroethane	Neat		10mg
REVOC387	Pentachloroethane	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B, 8270C	1ml
REVOC388	Propargyl alcohol	1000µg/ml in Purge & Trap Methanol	524.2, 624, 6240B, 8260B	1ml
REVOC388N	Propargyl alcohol	Neat		10mg
REVOC389	Propargyl alcohol	2000µg/ml in Purge & Trap Methanol	524.2, 624, 6240B, 8260B	1ml
REVOC390	Propionitrile (ethyl cyanide)	1000µg/ml in Purge & Trap Methanol	524.2, 624, 6240B, 8260B	1ml
REVOC390N	Propionitrile (ethyl cyanide)	Neat		10mg
REVOC391	Propionitrile (ethyl cyanide)	2000µg/ml in Purge & Trap Methanol	524.2, 624, 6240B, 8260B	1ml
REVOC392	Pyridine	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8270C, 8260B	1ml
REVOC393	Pyridine	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8270C, 8260B	1ml

Product No.	Description	Concentration	US EPA Methods	Pack in Ampoule
REVOC394	trans-1,4-Dichloro-2-butene	1000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC394N	trans-1,4-Dichloro-2-butene	Neat		10mg
REVOC395	trans-1,4-Dichloro-2-butene	2000µg/ml in Purge & Trap Methanol	524.2, 624, 8260B	1ml
REVOC396	Trichlorofluoromethane	1000µg/ml in Purge & Trap Methanol	502.2, 524.2, 624, 6021B, 6240B, 8260B	1ml
REVOC396N	Trichlorofluoromethane	Neat		10mg
REVOC397	Trichlorofluoromethane	2000µg/ml in Purge & Trap Methanol	502.2, 524.2, 624, 6021B, 6240B, 8260B	1ml
REVOC398	Vinyl acetate	1000µg/ml in Purge & Trap Methanol	8240B, 8260B	1ml
REVOC398N	Vinyl acetate	Neat		10mg
REVOC399	Vinyl acetate	2000µg/ml in Purge & Trap Methanol	8240B, 8260B	1ml
REVOC400	Vinyl chloride	1000µg/ml in Purge & Trap Methanol	502.2, 524.2, 624, 8021B, 8240B, 8260B	1ml
REVOC401	Vinyl chloride	2000µg/ml in Purge & Trap Methanol	502.2, 524.2, 624, 8021B, 8240B, 8260B	1ml

# Phenol Standards



## Summary of Features & Benefits:

### Commercial Benefits

- Ready to use (dilute for use as calibration and/or quality control standards)
- Extensive range of organic compound mixes and single compound standards available
- Can be used with a variety of instruments including GC, GC-MS, HPLC and LC-MS
- Designed specifically for use in EPA or EU analytical methods
- Presented in high quality amber ampoules
- Customised formulations available

### Technical Benefits

- Produced in accordance with EPA methods
- Consistency of product - Independent, Traceable, Certified
- Ideal for use in EPA 500, 600 and 8000 series methods
- Certificates of Analysis and Safety Data Sheets available online

These products are prepared gravimetrically on a weight/volume basis. Both solute and solvent are prepared using equipment calibrated by Reagecon engineers. Reagecon holds IEC/ISO 17025 accreditation for calibration of laboratory balances and pipettes (INAB Ref:265C). The resulting equipment Calibration Certificates are issued in accordance with the requirements of ISO/IEC 17025. The results are then reported and certified in  $\mu\text{g/ml}$  on the basis of weight and the density measurement of the standard. Reagecon is IEC/ISO 17025 (INAB Ref:264T) Accredited for density measurement using an Oscillating U-Tube Method in accordance with the ASTM D4052 method. The concentration of each standard is verified using a high performance calibrated Gas Chromatograph - Mass Spectrometer (GC-MS Instrument). The calibration of the GC-MS instrument is completed using high purity ISO Guide 34 accredited Phenol standards from a secondary source similar in Phenol concentration value to these products. The mass spectrum of each of the analytes is confirmed by comparison with the National Institute of Standards and Technology (NIST) mass spectral library.





## Phenol Mixed Standards

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPHE001 (11 Compound Mix)	2-Chlorophenol	Each analyte at 2,000µg/ml in	604	1ml
	2,4-Dichlorophenol	high-purity Dichloromethane		
	2,4-Dimethylphenol	(Methylene Chloride)		
	2-Methyl-4,6-dinitrophenol (DNOC)			
	2-Nitrophenol			
	4-Nitrophenol			
	Pentachlorophenol			
	Phenol			
	2,4,6-Trichlorophenol			
	4-Chloro-3-methylphenol			
	2,4-Dinitrophenol			
REPHE002 (7 Compound Mix)	2,6-Dichlorophenol	Each analyte at 2,000µg/ml in	604	1ml
	2-Methylphenol	high-purity Dichloromethane		
	3-Methylphenol	(Methylene Chloride)		
	4-Methylphenol			
	2,4,5-Trichlorophenol			
	2,3,4,6-Tetrachlorophenol			
	2-sec-Butyl-4,6-dinitrophenol (Dinoseb)			
REPHE003 (11 Compound Mix)	2-Chlorophenol	Each analyte at 2,000µg/ml in	604	1ml
	2,4-Dichlorophenol	high-purity Methanol	625	
	2,4-Dimethylphenol			
	2-Methyl-4,6-dinitrophenol (DNOC)			
	2-Nitrophenol			
	4-Nitrophenol			
	Pentachlorophenol			
	Phenol			
	2,4,6-Trichlorophenol			
	4-Chloro-3-methylphenol			
	2,4-Dinitrophenol			
REPHE004 (5 Compound Mix)	4-Chloro-3-methylphenol	Each analyte at 2,000µg/ml in	604	1ml
	2-Chlorophenol	high-purity Methanol	625	
	4-Nitrophenol			
	Pentachlorophenol			
	Phenol			

## Phenol Mixed Standards

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPHE005 (18 Compound Mix)	2-Chlorophenol	Each analyte at 2,000µg/ml in high-purity Isopropanol	8270	1ml
	2,4-Dichlorophenol			
	2,4-Dimethylphenol			
	2-Methyl-4,6-dinitrophenol (DNOC)			
	2-Nitrophenol			
	4-Nitrophenol			
	Pentachlorophenol			
	Phenol			
	2,4,6-Trichlorophenol			
	4-Chloro-3-methylphenol			
	2,4-Dinitrophenol			
	2,6-Dichlorophenol			
	2-Methylphenol			
	3-Methylphenol			
	4-Methylphenol			
	2,4,5-Trichlorophenol			
	2,3,4,6-Tetrachlorophenol			
	2-sec-Butyl-4,6-dinitrophenol (Dinoseb)			
REPHE006 (13 Compound Mix)	4-Chloro-3-methylphenol	Each analyte at 2,000µg/ml in high-purity Methanol	8270	1ml
	2-Chlorophenol			
	2,4-Dichlorophenol			
	2,6-Dichlorophenol			
	2,4-Dimethylphenol			
	2,4-Dinitrophenol			
	2-Methyl-4,6-dinitrophenol (DNOC)			
	2-Nitrophenol			
	4-Nitrophenol			
	Pentachlorophenol			
	Phenol			
	2,3,4,6-Tetrachlorophenol			
	2,4,6-Trichlorophenol			

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPHE007 (11 Compound Mix)	4-Chloro-3-methylphenol	Each analyte at 2,000µg/ml in high-purity Methanol	8270	1ml
	2-Chlorophenol			
	2,4-Dichlorophenol			
	2,4-Dimethylphenol			
	2-Methyl-4,6-dinitrophenol (DNOC)			
	2,4-Dinitrophenol			
	2-Nitrophenol			
	4-Nitrophenol			
	Pentachlorophenol			
	Phenol			
	2,4,6-Trichlorophenol			
REPHE008 (5 Compound Mix)	4-Chloro-3-methylphenol	Each analyte at 2,000µg/ml in high-purity Dichloromethane (Methylene Chloride)	8270	1ml
	2-Chlorophenol			
	4-Nitrophenol			
	Pentachlorophenol			
	Phenol			
REPHE009 (6 Compound Mix)	4-Chloro-3-methylphenol	Each analyte at 2,000µg/ml in high-purity Dichloromethane (Methylene Chloride)	8270	1ml
	2,4-Dinitrophenol			
	2-Nitrophenol			
	Pentachlorophenol			
	Phenol			
	2,4,6-Trichlorophenol			
REPHE010 (6 Compound Mix)	2-Methylphenol	Each analyte at 2,000µg/ml in high-purity Dichloromethane (Methylene Chloride)	1311	1ml
	3-Methylphenol			
	4-Methylphenol			
	Pentachlorophenol			
	2,4,6-Trichlorophenol			
	2,4,5-Trichlorophenol			

## Phenol Mixed Standards

Product No. Packed in 1ml Ampoule	Description - Each at 100µg/ml in Purge & Trap Methanol
REPHE015 (17 compound mix)	2,3,4,6-Tetrachlorophenol
	2,4,5-Trichlorophenol
	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2,4-Dinitrophenol
	2,6-Dichlorophenol
	2-Chlorophenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	2-Methylphenol
	2-Nitrophenol
	3-Methylphenol
	4-Chloro-3-methylphenol
	4-Methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 5000µg/ml in Methylene Chloride
REPHE016 (14 compound mix)	2,4,5-Trichlorophenol
	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2,4-Dinitrophenol
	2-Chlorophenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	2-Methylphenol
	2-Nitrophenol
	4-Chloro-3-methylphenol
	4-Methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Methylene Chloride
REPHE017 (14 compound mix)	2,4,5-Trichlorophenol
	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol

Product No. Packed in 1ml Ampoule	Description - Each at 1000µg/ml in Methylene Chloride
REPHE018 (14 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2,4-Dinitrophenol
	2,6-Dichlorophenol
	2-Chlorophenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	2-Methylphenol
	2-Nitrophenol
	4-Chloro-3-methylphenol
	4-Methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 1000µg/ml in Purge & Trap Methanol
REPHE020 (12 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2,4-Dinitrophenol
	2-Chlorophenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	2-Nitrophenol
	3-Methylphenol
	4-Chloro-3-methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Methylene Chloride
REPHE023 (12 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2,4-Dinitrophenol
	2-Chlorophenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	2-Methylphenol
	2-Nitrophenol
	4-Chloro-3-methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Isopropanol
REPHE024 (11 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2,4-Dinitrophenol
	2-Chlorophenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	2-Nitrophenol
	4-Chloro-3-methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 500µg/ml in Purge & Trap Methanol
REPHE026 (11 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2,4-Dinitrophenol
	2-Chlorophenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	2-Nitrophenol
	4-Chloro-3-methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

## Phenol Mixed Standards

Product No. Packed in 1ml Ampoule	Description - Each at 20µg/ml in Purge & Trap Methanol
REPHE028 (11 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2,4-Dinitrophenol
	2-Chlorophenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	2-Nitrophenol
	4-Chloro-3-methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 1000µg/ml in Purge & Trap Methanol
REPHE029 (11 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2,4-Dinitrophenol
	2-Chlorophenol
	2-Methyl-4,6- dinitrophenol (DNOC)
	2-Nitrophenol
	4-Chloro-3-methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 500µg/ml in Purge & Trap Methanol
REPHE030 (11 compound mix)	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2,4-Dinitrophenol
	2-Chlorophenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	2-Nitrophenol
	2-sec-Butyl-4,6-dinitrophenol (Dinoseb)
	4-Chloro-3-methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Methylene Chloride
REPHE031 (11 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2,4-Dinitrophenol
	2-Chlorophenol
	2-Nitrophenol
	2-sec-Butyl-4,6- dinitrophenol (Dinoseb)
	4-Chloro-3-methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 1000µg/ml in Methylene Chloride
REPHE034 (11 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2,4-Dinitrophenol
	2-Chlorophenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	2-Nitrophenol
	4-Chloro-3-methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Methylene Chloride
REPHE037 (9 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2,4-Dimethylphenol
	2-Chlorophenol
	2-Methylphenol
	2-Nitrophenol
	4-Chloro-3-methylphenol
	4-Methylphenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Purge & Trap Methanol
REPHE038 (8 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2-Chlorophenol
	2-Methylphenol
	3-Methylphenol
	4-Methylphenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 100µg/ml in Purge & Trap Methanol
REPHE039 (8 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2-Chlorophenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	3-Methylphenol
	4-Methylphenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Isopropanol
REPHE040 (7 compound mix)	2,3,4,6-Tetrachlorophenol
	2,4,5-Trichlorophenol
	2,6-Dichlorophenol
	2-Methylphenol
	2-sec-Butyl-4,6- dinitrophenol (Dinoseb)
	3-Methylphenol
	4-Methylphenol

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Methylene Chloride
REPHE041 (6 compound mix)	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	2-Nitrophenol
	4-Chloro-3-methylphenol
	Pentachlorophenol
	Phenol

## Phenol Mixed Standards

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Purge & Trap Methanol
REPHE042 (5 compound mix)	2-Chlorophenol
	4-Chloro-3-methylphenol
	4-Nitrophenol
	Pentachlorophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Methylene Chloride
REPHE045 (5 compound mix)	2,4-Dimethylphenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	2-Nitrophenol
	4-Nitrophenol
	Phenol

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Methylene Chloride
REPHE046 (5 compound mix)	2,4,5-Trichlorophenol
	2-Methylphenol
	2-sec-Butyl-4,6-dinitrophenol (Dinoseb)
	3-Methylphenol
	4-Methylphenol

Product No. Packed in 1ml Ampoule	Description - Each at 100µg/ml in Purge & Trap Methanol
REPHE047 (4 compound mix)	2,3,4,6-Tetrachlorophenol
	2,4,6-Trichlorophenol
	2,4-Dichlorophenol
	Pentachlorophenol

Product No. Packed in 1ml Ampoule	Description - Each at 4000µg/ml in Methylene Chloride
REPHE048 (4 compound mix)	2,4-Dinitrophenol
	2-Methyl-4,6-dinitrophenol (DNOC)
	4-Nitrophenol
	Pentachlorophenol

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Ethanol
REPHE050 (3 compound mix)	2,3,4,6-Tetrachlorophenol
	2,4,6-Trichlorophenol
	Pentachlorophenol



Product No. Packed in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REPHE022 (12 compound mix)	2,4,6-Trichlorophenol	100
	2,4-Dichlorophenol	100
	2,4-Dimethylphenol	100
	2,4-Dinitrophenol	500
	2-Chlorophenol	100
	2-Methyl-4,6-dinitrophenol (DNOC)	500
	2-Methylphenol	100
	2-Nitrophenol	100
	4-Chloro-3-methylphenol	100
	4-Nitrophenol	500
	Pentachlorophenol	500
	Phenol	100

Product No. Packed in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REPHE025 (11 compound mix)	2,4,6-Trichlorophenol	500
	2,4-Dichlorophenol	500
	2,4-Dimethylphenol	500
	2,4-Dinitrophenol	1500
	2-Chlorophenol	500
	2-Methyl-4,6-dinitrophenol (DNOC)	2500
	2-Nitrophenol	500
	4-Chloro-3-methylphenol	2500
	4-Nitrophenol	2500
	Pentachlorophenol	2500
	Phenol	600

Product No. Packed in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REPHE027 (11 compound mix)	2,4,6-Trichlorophenol	1500
	2,4-Dichlorophenol	500
	2,4-Dimethylphenol	500
	2,4-Dinitrophenol	1500
	2-Chlorophenol	500
	2-Methyl-4,6-dinitrophenol (DNOC)	2500
	2-Nitrophenol	500
	4-Chloro-3-methylphenol	2500
	4-Nitrophenol	2500
	Pentachlorophenol	2500
	Phenol	500

## Phenol Mixed Standards

Product No. Packed in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml
REPHE044 (5 compound mix)	2,4,6-Trichlorophenol	40
	2,4-Dichlorophenol	40
	3-Methylphenol	40
	4-Nitrophenol	10
	Pentachlorophenol	40

Product No. Packed in 5 x 1ml Ampoule	Description - Each in Acetone	Concentration µg/ml
REPHE121	Bisphenol A	1
	4-tert-Octylphenol	1
	Nonylphenol	5
	4-Nonyl Phenol Monoethoxylate	5
	4-Nonyl Phenol Diethoxylate	5
	4-tert-Octylphenol Monoethoxylate	1
	4-tert Octylphenol Diethoxylate	1

Product No. Packed in 1ml Ampoule	Description - Each in Methylene Chloride	Concentration µg/ml	US EPA Methods
REPHE019 (13 compound mix)	2,4,6-Trichlorophenol	1000	526
	2,4-Dichlorophenol	1000	528
	2,4-Dimethylphenol	1000	
	2,4-Dinitrophenol	5000	
	2,6-Dichlorophenol	1000	
	2-Chlorophenol	1000	
	2-Methyl-4,6-dinitrophenol (DNOC)	1000	
	2-Methylphenol	1000	
	2-Nitrophenol	1000	
	4-Chloro-3-methylphenol	1000	
	4-Nitrophenol	1000	
	Pentachlorophenol	1000	
	Phenol	1000	

Product No. Packed in 1ml Ampoule	Description - Each in Purge & Trap Methanol	Concentration µg/ml	US EPA Methods
REPHE021 (12 compound mix)	2,4-Dichlorophenol	1000	525
	2,4-Dimethylphenol	1000	
	2,4-Dinitrophenol	5000	
	2,6-Dichlorophenol	1000	
	2-Chlorophenol	1000	
	2-Methyl-4,6-dinitrophenol (DNOC)	5000	
	2-Methylphenol	1000	
	2-Nitrophenol	1000	
	4-Chloro-3-methylphenol	1000	
	4-Nitrophenol	1000	
	Pentachlorophenol	1000	
	Phenol	1000	

Product No. Packed in 1ml Ampoule	Description - Each in Methylene Chloride	Concentration µg/ml	US EPA Methods
REPHE032 (11 compound mix)	2,4,6-Trichlorophenol	1500	604
	2,4-Dichlorophenol	500	625
	2,4-Dimethylphenol	500	
	2,4-Dinitrophenol	1500	
	2-Chlorophenol	500	
	2-Nitrophenol	500	
	2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	2500	
	4-Chloro-3-methylphenol	2000	
	4-Nitrophenol	2500	
	Pentachlorophenol	2500	
	Phenol	500	

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Methylene Chloride	US EPA Methods
REPHE033 (11 compound mix)	2,4-Dichlorophenol	8270B
	2,4-Dimethylphenol	
	2,4-Dinitrophenol	
	2-Chlorophenol	
	2-Methyl-4,6-dinitrophenol (DNOC)	
	2-Nitrophenol	
	2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	
	4-Chloro-3-methylphenol	
	4-Nitrophenol	
	Pentachlorophenol	
Phenol		

## Phenol Mixed Standards

Product No. Packed in 1ml Ampoule	Description - Each at 100µg/ml in Purge & Trap Methanol	US EPA Methods
REPHE035 (10 compound mix)	2,4,6-Trichlorophenol	625
	2,4-Dichlorophenol	
	2,4-Dimethylphenol	
	2,4-Dinitrophenol	
	2,6-Dichlorophenol	
	2-Chlorophenol	
	4-Chloro-3-methylphenol	
	4-Nitrophenol	
	Pentachlorophenol	
	Phenol	

Product No. Packed in 1ml Ampoule	Description - Each at 2000µg/ml in Isopropanol	US EPA Methods
REPHE036 (9 compound mix)	2,3,4,6-Tetrachlorophenol	8040
	2,4,5-Trichlorophenol	
	2,4-Dimethylphenol	
	2,4-Dinitrophenol	
	2,6-Dichlorophenol	
	2-Chlorophenol	
	2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	
	3-Methylphenol	
	4-Methylphenol	

Product No. Packed in 1ml Ampoule	Description - Each at 1000µg/ml in Methylene Chloride	US EPA Methods
REPHE049 (4 compound mix)	2,4,6-Trichlorophenol	525
	2,6-Dichlorophenol	
	2-Methyl-4,6-dinitrophenol (DNOC)	
	Phenol	

## Phenols Single Compound Standards

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPHE101	2-Chlorophenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE102	2,4-Dichlorophenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE103	2,4-Dimethylphenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE104	4-Chloro-3-methylphenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE105	2-Methyl-4,6-dinitrophenol(DNOC)	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE106	2,4-Dinitrophenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE107	2-Nitrophenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE108	4-Nitrophenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE109	Pentachlorophenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE110	Phenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE119	Phenol	100µg/ml in Methylene Chloride	604, 8270, 1311	1ml
REPHE111	2,4,6-Trichlorophenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE112	2,4,5-Trichlorophenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE113	2,3,4,6-Tetrachlorophenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE114	2,6-Dichlorophenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE115	2-Methylphenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE116	3-Methylphenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE117	4-Methylphenol	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE118	Dinoseb	2000µg/ml in high-purity Methanol	604, 8270, 1311	1ml
REPHE120	Pentachlorophenol	10µg/ml in Cyclohexane	528, 604, 8270	10ml
REPHE124	2,4-Dichlorophenol	1000 µg/ml in high-purity Methanol	528, 604, 8270	1ml
REPHE125	Picric Acid	1000µg/ml in Acetonitrile and Water (1:1)		1ml

## Phenols Surrogate Standards

Product No.	Description in 1:1 Dichloromethane:Acetone	Concentration µg/ml	US EPA Methods	Pack Size
REPHE001-S	2-Fluorobiphenyl	1000	625	1ml
	Nitrobenzene D5	1000		
	p-Terphenyl-D14	1000		
	Methyl Orange	2500		
REPHE005-S	2-Fluorobiphenyl	5000	625	1ml
	Nitrobenzene D5	5000		
	p-Terphenyl-D14	5000		
	Methyl Orange	12500		

# Polycyclic Aromatic Hydrocarbon Standards (PAHs)



## Summary of Features & Benefits:

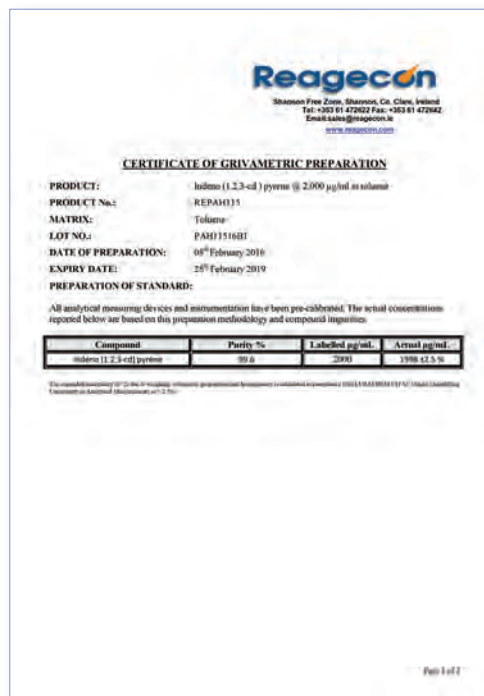
### Commercial Benefits

- Ready to use (dilute for use as calibration and/or quality control standards)
- Extensive range of organic compound mixes and single compound standards available
- Can be used with a variety of instruments including GC, GC-MS, HPLC and LC-MS
- Designed specifically for use in EPA or EU analytical methods
- Presented in high quality amber ampoules
- Customised formulations available

### Technical Benefits

- Produced in accordance with EPA methods
- Consistency of product - Independent, Traceable, Certified
- Ideal for use in EPA 500, 600 and 8000 series methods
- Certificates of Analysis and Safety Data Sheets available online

These products are prepared gravimetrically on a weight/volume basis. Both solute and solvent are prepared using equipment calibrated by Reagecon engineers. Reagecon holds IEC/ISO 17025 accreditation for calibration of laboratory balances and pipettes (INAB Ref:265C). The resulting equipment Calibration Certificates are issued in accordance with the requirements of ISO/IEC 17025. The results are then reported and certified in µg/ml on the basis of weight and the density measurement of the standard. Reagecon is IEC/ISO 17025 (INAB Ref:264T) Accredited for density measurement using an Oscillating U-Tube Method in accordance with the ASTM D4052 method. The concentration of each standard is verified using a high performance calibrated Gas Chromatograph - Mass Spectrometer (GC-MS Instrument). The calibration of the GC-MS instrument is completed using high purity ISO Guide 34 accredited PAH standards similar in PAH concentration value to these products. The mass spectrum of each of the analytes is confirmed by comparison with the National Institute of Standards and Technology (NIST) mass spectral library.



## Polycyclic Aromatic Hydrocarbons (PAHs) Multi Compound Standards

Product No.	Description	Concentration $\mu\text{g ml}$	Matrix	Pack size
REPAH001 (16 compound mix)	Acenaphthene	2000	Benzene: Dichloromethane (Methylene Chloride)	1ml
	Anthracene			
	Benzo(a)anthracene			
	Chrysene			
	Fluoroanthene			
	Fluorene			
	Naphthalene			
	Phenanthrene			
	Pyrene			
	Benzo(a)pyrene			
	Benzo(b)fluoroanthene			
	Benzo(g,h,i)perylene			
	Dibenzo(a,h)anthracene			
	Benzo(k)fluoroanthene			
	Indeno(1,2,3-cd)pyrene			
	Acenaphthylene			
Product No.	Description	Concentration $\mu\text{g ml}$	Matrix	Pack size
REPAH002 (16 compound mix)	Acenaphthene	1000	Benzene: Dichloromethane (Methylene Chloride)	1ml
	Anthracene			
	Benzo(a)anthracene			
	Chrysene			
	Fluoroanthene			
	Fluorene			
	Naphthalene			
	Phenanthrene			
	Pyrene			
	Benzo(a)pyrene			
	Benzo(b)fluoroanthene			
	Benzo(g,h,i)perylene			
	Dibenzo(a,h)anthracene			
	Benzo(k)fluoroanthene			
	Indeno(1,2,3-cd)pyrene			
	Acenaphthylene			

## Polycyclic Aromatic Hydrocarbons (PAHs) Multi Compound Standards

Product No.	Description	Concentration µg ml	Matrix	Pack size
REPAH017 (16 compound mix)	Acenaphthene	100	Acetonitrile	1ml
	Anthracene	100		
	Acenaphthylene	50		
	Benzo(a)anthracene	1		
	Benzo(a)pyrene	5		
	Benzo(b)fluoroanthene	1		
	Benzo(g,h,i)perylene	5		
	Dibenzo(a,h)anthracene	1		
	Benzo(k)fluoroanthene	50		
	Chrysene	10		
	Fluoroanthene	3		
	Fluorene	10		
	Indeno(1,2,3-cd)pyrene	10		
	Naphthalene	1000		
	Phenanthrene	50		
	Pyrene	50		
Product No.	Description	Concentration µg ml	Matrix	Pack size
REPAH004 (16 compound mix)	Acenaphthene	1000	Toluene	1ml
	Anthracene			
	Benzo(a)anthracene			
	Chrysene			
	Fluoroanthene			
	Fluorene			
	Naphthalene			
	Phenanthrene			
	Pyrene			
	Benzo(a)pyrene			
	Benzo(b)fluoroanthene			
	Benzo(g,h,i)perylene			
	Dibenzo(a,h)anthracene			
	Benzo(k)fluoroanthene			
	Indeno(1,2,3-cd)pyrene			
	Acenaphthylene			



Product No.	Description	Concentration µg ml	Matrix	Pack size
REPAH005 (16 compound mix)	Acenaphthene	100	Acetone	1ml
	Anthracene			
	Benzo(a)anthracene			
	Chrysene			
	Fluoroanthene			
	Fluorene			
	Naphthalene			
	Phenanthrene			
	Pyrene			
	Benzo(a)pyrene			
	Benzo(b)fluoroanthene			
	Benzo(g,h,i)perylene			
	Dibenzo(a,h)anthracene			
	Benzo(k)fluoroanthene			
	Indeno(1,2,3-cd)pyrene			
	Acenaphthylene			
Product No.	Description	Concentration µg ml	Matrix	Pack size
REPAH006 (16 compound mix)	Acenaphthene	2000	Toluene	1ml
	Anthracene			
	Benzo(a)anthracene			
	Chrysene			
	Fluoroanthene			
	Fluorene			
	Naphthalene			
	Phenanthrene			
	Pyrene			
	Benzo(a)pyrene			
	Benzo(b)fluoroanthene			
	Benzo(g,h,i)perylene			
	Dibenzo(a,h)anthracene			
	Benzo(k)fluoroanthene			
	Indeno(1,2,3-cd)pyrene			
	Acenaphthylene			

## Polycyclic Aromatic Hydrocarbons (PAHs) Multi Compound Standards

Product No.	Description	Concentration $\mu\text{g ml}$	Matrix	Pack size
REPAH007 (16 compound mix)	Acenaphthene	500	Toluene	1ml
	Anthracene			
	Benzo(a)anthracene			
	Chrysene			
	Fluoroanthene			
	Fluorene			
	Naphthalene			
	Phenanthrene			
	Pyrene			
	Benzo(a)pyrene			
	Benzo(b)fluoroanthene			
	Benzo(g,h,i)perylene			
	Dibenzo(a,h)anthracene			
	Benzo(k)fluoroanthene			
	Indeno(1,2,3-cd)pyrene			
	Acenaphthylene			
Product No.	Description	Concentration $\mu\text{g ml}$	Matrix	Pack size
REPAH010 (16 compound mix)	Acenaphthene	100	Acetonitrile	1ml
	Anthracene	10		
	Acenaphthylene	100		
	Benzo(a)anthracene	10		
	Benzo(a)pyrene	10		
	Benzo(b)fluoroanthene	10		
	Benzo(g,h,i)perylene	10		
	Dibenzo(a,h)anthracene	10		
	Benzo(k)fluoroanthene	10		
	Chrysene	10		
	Fluoroanthene	10		
	Fluorene	10		
	Indeno(1,2,3-cd)pyrene	10		
	Naphthalene	100		
	Phenanthrene	10		
	Pyrene	10		

Product No.	Description	Concentration µg ml	Matrix	Pack size
REPAH011 (16 compound mix)	Acenaphthene	100	Acetonitrile	1ml
	Anthracene	10		
	Acenaphthylene	200		
	Benzo(a)anthracene	10		
	Benzo(a)pyrene	10		
	Benzo(b)fluoroanthene	20		
	Benzo(g,h,i)perylene	20		
	Dibenzo(a,h)anthracene	20		
	Benzo(k)fluoroanthene	10		
	Chrysene	10		
	Fluoroanthene	20		
	Fluorene	20		
	Indeno(1,2,3-cd)pyrene	10		
	Naphthalene	100		
	Phenanthrene	10		
	Pyrene	10		
Product No.	Description	Concentration µg ml	Matrix	Pack size
REPAH012 (16 compound mix)	Acenaphthene	100	Acetonitrile	1ml
	Anthracene	400		
	Acenaphthylene	40		
	Benzo(a)anthracene	1000		
	Benzo(a)pyrene	400		
	Benzo(b)fluoroanthene	2000		
	Benzo(g,h,i)perylene	20		
	Dibenzo(a,h)anthracene	20		
	Benzo(k)fluoroanthene	400		
	Chrysene	1000		
	Fluoroanthene	10		
	Fluorene	20		
	Indeno(1,2,3-cd)pyrene	20		
	Naphthalene	40		
	Phenanthrene	10		
	Pyrene	10		

## Polycyclic Aromatic Hydrocarbons (PAHs) Multi Compound Standards

Product No.	Description	Concentration µg ml	Matrix	Pack size
REPAH014 (16 compound mix)	Acenaphthene	1000	Acetonitrile	1ml
	Anthracene	63		
	Acenaphthylene	1000		
	Benzo(a)anthracene	1		
	Benzo(a)pyrene	5		
	Benzo(b)fluoroanthene	1		
	Benzo(g,h,i)perylene	5		
	Dibenzo(a,h)anthracene	13		
	Benzo(k)fluoroanthene	1		
	Chrysene	63		
	Fluoroanthene	3		
	Fluorene	100		
	Indeno(1,2,3-cd)pyrene	13		
	Naphthalene	1000		
	Phenanthrene	50		
	Pyrene	63		
Product No.	Description	Concentration µg ml	Matrix	Pack size
REPAH015 (16 compound mix)	Acenaphthene	100	Acetonitrile	1ml
	Anthracene	100		
	Acenaphthylene	100		
	Benzo(a)anthracene	10		
	Benzo(a)pyrene	10		
	Benzo(b)fluoroanthene	10		
	Benzo(g,h,i)perylene	10		
	Dibenzo(a,h)anthracene	10		
	Benzo(k)fluoroanthene	5		
	Chrysene	10		
	Fluoroanthene	10		
	Fluorene	100		
	Indeno(1,2,3-cd)pyrene	10		
	Naphthalene	100		
	Phenanthrene	100		
	Pyrene	10		

Product No.	Description	Concentration µg ml	Matrix	Pack size
REPAH016 (16 compound mix)	Acenaphthene	20	Acetonitrile	1ml
	Anthracene	1		
	Acenaphthylene	15		
	Benzo(a)anthracene	4		
	Benzo(a)pyrene	5		
	Benzo(b)fluoroanthene	4		
	Benzo(g,h,i)perylene	4		
	Dibenzo(a,h)anthracene	4		
	Benzo(k)fluoroanthene	5		
	Chrysene	4		
	Fluoroanthene	8		
	Fluorene	5		
	Indeno(1,2,3-cd)pyrene	5		
	Naphthalene	20		
	Phenanthrene	4		
	Pyrene	9		
Product No.	Description	Concentration µg ml	Matrix	Pack size
REPAH020 (16 compound mix)	Acenaphthene	100	Methylene Chloride	1ml
	Anthracene	100		
	Acenaphthylene	200		
	Benzo(a)anthracene	100		
	Benzo(a)pyrene	100		
	Benzo(b)fluoroanthene	200		
	Benzo(g,h,i)perylene	200		
	Dibenzo(a,h)anthracene	200		
	Benzo(k)fluoroanthene	100		
	Chrysene	100		
	Fluoroanthene	200		
	Fluorene	200		
	Indeno(1,2,3-cd)pyrene	100		
	Naphthalene	1000		
	Phenanthrene	100		
	Pyrene	100		

## Polycyclic Aromatic Hydrocarbons (PAHs) Multi Component Standards

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH021 (16 compound mix)	Acenaphthene	1000	Methylene Chloride	1ml
	Anthracene	1000		
	Acenaphthylene	1000		
	Benzo(a)anthracene	100		
	Benzo(a)pyrene	100		
	Benzo(b)fluoroanthene	100		
	Benzo(g,h,i)perylene	100		
	Dibenzo(a,h)anthracene	100		
	Benzo(k)fluoroanthene	50		
	Chrysene	100		
	Fluoroanthene	100		
	Fluorene	1000		
	Indeno(1,2,3-cd)pyrene	100		
	Naphthalene	1000		
	Phenanthrene	1000		
	Pyrene	100		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH027 (13 compound mix)	Anthracene	50	Acetonitrile	1ml
	Benzo(a)anthracene	50		
	Benzo(a)pyrene	50		
	Benzo(b)fluoroanthene	100		
	Benzo(g,h,i)perylene	100		
	Dibenzo(a,h)anthracene	100		
	Benzo(k)fluoroanthene	50		
	Chrysene	50		
	Fluoroanthene	100		
	Fluorene	100		
	Indeno(1,2,3-cd)pyrene	50		
	Phenanthrene	50		
	Pyrene	50		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH032 (9 compound mix)	Acenaphthylene	400	Acetonitrile	1ml
	Benzo(g,h,i)perylene	200		
	Dibenzo(a,h)anthracene	200		
	Fluoroanthene	100		
	Fluorene	200		
	Indeno(1,2,3-cd)pyrene	100		
	Naphthalene	400		
	Phenanthrene	100		
	Pyrene	100		

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH033 (8 compound mix)	Anthracene	100	Acetonitrile	1ml
	Benzo(a)anthracene	10		
	Benzo(a)pyrene	10		
	Benzo(b)fluoroanthene	10		
	Benzo(g,h,i)perylene	10		
	Chrysene	10		
	Fluoroanthene	10		
	Phenanthrene	100		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH034 (7 compound mix)	Anthracene	100	Acetonitrile	1ml
	Acenaphthylene	100		
	Dibenzo(a,h)anthracene	5		
	Benzo(k)fluoroanthene	10		
	Indeno(1,2,3-cd)pyrene	10		
	Naphthalene	100		
	Pyrene	10		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH035 (6 compound mix)	Benzo(a)pyrene	100	Acetonitrile	1ml
	Benzo(b)fluoroanthene	100		
	Benzo(g,h,i)perylene	100		
	Benzo(k)fluoroanthene	100		
	Fluoroanthene	100		
	Indeno(1,2,3-cd)pyrene	100		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH036 (6 compound mix)	Benzo(a)pyrene	10	Acetonitrile	1ml
	Benzo(b)fluoroanthene	10		
	Benzo(g,h,i)perylene	10		
	Benzo(k)fluoroanthene	10		
	Fluoroanthene	10		
	Indeno(1,2,3-cd)pyrene	10		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH037 (6 compound mix)	Benzo(a)pyrene	2	Acetonitrile	1ml
	Benzo(b)fluoroanthene	2		
	Benzo(g,h,i)perylene	2		
	Dibenzo(a,h)anthracene	2		
	Fluoroanthene	2		
	Indeno(1,2,3-cd)pyrene	2		

## Polycyclic Aromatic Hydrocarbons (PAHs) Multi Component Standards

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH038 (5 compound mix)	Anthracene	200	Acetonitrile	1ml
	Benzo(a)pyrene	200		
	Chrysene	200		
	Phenanthrene	200		
	Pyrene	200		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH039 (5 compound mix)	Benzo(a)pyrene	100	Methylene Chloride	1ml
	Benzo(b)fluoranthene	100		
	Benzo(g,h,i)perylene	100		
	Benzo(k)fluoranthene	100		
	Indeno(1,2,3-cd)pyrene	100		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH040 (5 compound mix)	Benzo(a)anthracene	2000	Methylene Chloride	1ml
	Benzo(a)pyrene	2000		
	Fluorene	2000		
	Naphthalene	2000		
	Phenanthrene	2000		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH041 (5 compound mix)	Acenaphthene	100	Acetonitrile	1ml
	Anthracene	100		
	Benzo(a)pyrene	100		
	Chrysene	100		
	Pyrene	100		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH013 (16 compound mix)	Acenaphthene	10	Acetonitrile	1ml
	Anthracene	10		
	Acenaphthylene	10		
	Benzo(a)anthracene	10		
	Benzo(a)pyrene	10		
	Benzo(b)fluoranthene	10		
	Benzo(g,h,i)perylene	10		
	Dibenzo(a,h)anthracene	10		
	Benzo(k)fluoranthene	10		
	Chrysene	10		
	Fluoranthene	10		
	Fluorene	10		
	Indeno(1,2,3-cd)pyrene	10		
	Naphthalene	10		
	Phenanthrene	10		
	Pyrene	10		



Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH018 (16 compound mix)	Acenaphthene	20	Methylene Chloride	1ml
	Anthracene	20		
	Acenaphthylene	20		
	Benzo(a)anthracene	20		
	Benzo(a)pyrene	20		
	Benzo(b)fluoroanthene	20		
	Benzo(g,h,i)perylene	20		
	Dibenzo(a,h)anthracene	20		
	Benzo(k)fluoroanthene	20		
	Chrysene	20		
	Fluoroanthene	20		
	Fluorene	20		
	Indeno(1,2,3-cd)pyrene	20		
	Naphthalene	20		
	Phenanthrene	20		
	Pyrene	20		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH019 (16 compound mix)	Acenaphthene	100	Methylene Chloride	1ml
	Anthracene	100		
	Acenaphthylene	100		
	Benzo(a)anthracene	100		
	Benzo(a)pyrene	100		
	Benzo(b)fluoroanthene	100		
	Benzo(g,h,i)perylene	100		
	Dibenzo(a,h)anthracene	100		
	Benzo(k)fluoroanthene	100		
	Chrysene	100		
	Fluoroanthene	100		
	Fluorene	100		
	Indeno(1,2,3-cd)pyrene	100		
	Naphthalene	100		
	Phenanthrene	100		
	Pyrene	100		

## Polycyclic Aromatic Hydrocarbons (PAHs) Multi Component Standards

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH022 (15 compound mix)	Acenaphthene	10	Acetonitrile	1ml
	Acenaphthylene	10		
	Benzo(a)anthracene	10		
	Benzo(a)pyrene	10		
	Benzo(b)fluoranthene	10		
	Benzo(g,h,i)perylene	10		
	Dibenzo(a,h)anthracene	10		
	Benzo(k)fluoranthene	10		
	Chrysene	10		
	Fluoranthene	10		
	Fluorene	10		
	Indeno(1,2,3-cd)pyrene	10		
	Naphthalene	10		
	Phenanthrene	10		
	Pyrene	10		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH023 (15 compound mix)	Anthracene	10	Acetonitrile	1ml
	Acenaphthylene	10		
	Benzo(a)anthracene	10		
	Benzo(a)pyrene	10		
	Benzo(b)fluoranthene	10		
	Benzo(g,h,i)perylene	10		
	Dibenzo(a,h)anthracene	10		
	Benzo(k)fluoranthene	10		
	Chrysene	10		
	Fluoranthene	10		
	Fluorene	10		
	Indeno(1,2,3-cd)pyrene	10		
	Naphthalene	10		
	Phenanthrene	10		
	Pyrene	10		

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH028 (13 compound mix)	Acenaphthene	50	Acetonitrile	1ml
	Anthracene	50		
	Acenaphthylene	50		
	Benzo(a)anthracene	50		
	Benzo(a)pyrene	50		
	Benzo(g,h,i)perylene	50		
	Dibenzo(a,h)anthracene	50		
	Benzo(k)fluoroanthene	50		
	Chrysene	50		
	Fluoroanthene	50		
	Fluorene	50		
	Indeno(1,2,3-cd)pyrene	50		
	Naphthalene	50		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH029 (10 compound mix)	Benzo(a)anthracene	100	Acetonitrile	1ml
	Benzo(a)pyrene	100		
	Benzo(b)fluoroanthene	100		
	Benzo(g,h,i)perylene	100		
	Dibenzo(a,h)anthracene	100		
	Benzo(k)fluoroanthene	100		
	Chrysene	100		
	Fluoroanthene	100		
	Indeno(1,2,3-cd)pyrene	100		
	Pyrene	100		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH030 (10 compound mix)	Benzo(a)anthracene	2000	Methylene Chloride	1ml
	Benzo(a)pyrene	2000		
	Benzo(b)fluoroanthene	2000		
	Dibenzo(a,h)anthracene	2000		
	Benzo(k)fluoroanthene	2000		
	Fluoroanthene	2000		
	Indeno(1,2,3-cd)pyrene	2000		
	Naphthalene	2000		
	Phenanthrene	2000		
	Pyrene	2000		

## Polycyclic Aromatic Hydrocarbons (PAHs) Multi Component Standards

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH031 (10 compound mix)	Benzo(a)anthracene	2000	Methylene Chloride	1ml
	Benzo(a)pyrene	2000		
	Benzo(b)fluoroanthene	2000		
	Dibenzo(a,h)anthracene	2000		
	Chrysene	2000		
	Fluoroanthene	2000		
	Indeno(1,2,3-cd)pyrene	2000		
	Naphthalene	2000		
	Phenanthrene	2000		
	Pyrene	2000		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH003 (16compound mix)	Acenaphthene	1000	Methanol:Acetone 1:1	1ml
	Anthracene	100		
	Benzo(a)anthracene	100		
	Chrysene	100		
	Fluoroanthene	200		
	Fluorene	200		
	Naphthalene	1000		
	Phenanthrene	100		
	Pyrene	100		
	Benzo(a)pyrene	100		
	Benzo(b)fluoroanthene	200		
	Benzo(g,h,i)perylene	200		
	Dibenzo(a,h)anthracene	200		
	Benzo(k)fluoroanthene	100		
	Indeno(1,2,3-cd)pyrene	100		
	Acenaphthylene	2000		

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH008 (16 compound mix)	Acenaphthene	1000	Acetonitrile	1ml
	Anthracene	50		
	Benzo(a)anthracene	1		
	Chrysene	50		
	Fluoroanthene	50		
	Fluorene	100		
	Naphthalene	1000		
	Phenanthrene	50		
	Pyrene	50		
	Benzo(a)pyrene	5		
	Benzo(b)fluoroanthene	1		
	Benzo(g,h,i)perylene	5		
	Dibenzo(a,h)anthracene	10		
	Benzo(k)fluoroanthene	1		
	Indeno(1,2,3-cd)pyrene	10		
	Acenaphthylene	1000		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH024 (13 compound mix)	Anthracene	100	Acetone	1ml
	Acenaphthylene	100		
	Benzo(a)anthracene	100		
	Benzo(a)pyrene	100		
	Benzo(b)fluoroanthene	100		
	Benzo(g,h,i)perylene	100		
	Dibenzo(a,h)anthracene	100		
	Benzo(k)fluoroanthene	100		
	Chrysene	100		
	Fluorene	100		
	Indeno(1,2,3-cd)pyrene	100		
	Phenanthrene	100		
	Pyrene	100		

## Polycyclic Aromatic Hydrocarbons (PAHs) Internal Standards & Surrogates

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH025 (13 compound mix)	Anthracene	1000	Acetone	1ml
	Acenaphthylene	1000		
	Benzo(a)anthracene	1000		
	Benzo(a)pyrene	1000		
	Benzo(b)fluoroanthene	1000		
	Benzo(g,h,i)perylene	1000		
	Dibenzo(a,h)anthracene	1000		
	Benzo(k)fluoroanthene	1000		
	Chrysene	1000		
	Fluorene	1000		
	Indeno(1,2,3-cd)pyrene	1000		
	Phenanthrene	1000		
	Pyrene	1000		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH026 (13 compound mix)	Anthracene	500	Acetone	1ml
	Acenaphthylene	500		
	Benzo(a)anthracene	500		
	Benzo(a)pyrene	500		
	Benzo(b)fluoroanthene	500		
	Benzo(g,h,i)perylene	500		
	Dibenzo(a,h)anthracene	500		
	Benzo(k)fluoroanthene	500		
	Chrysene	500		
	Fluorene	500		
	Indeno(1,2,3-cd)pyrene	500		
	Phenanthrene	500		
	Pyrene	500		
Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH042 (10 compound mix)	Benzo(a)anthracene	25	Acetonitrile	1ml
	Benzo(b)fluoroanthene	25		
	Benzo(j)fluoroanthene	20		
	Benzo(k)fluoroanthene	10		
	Benzo(g,h,i)perylene	50		
	Benzo(a)pyrene	25		
	Dibenzo(a,h)anthracene	50		
	Fluoroanthene	50		
	Indeno(1,2,3-cd)pyrene	100		
	Naphthalene	100		

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH001-I	Acenaphthylene D10	4000	Dichloromethane:Benzene	1ml
	Chrysene D12	4000		
	1,4-Dichlorobenzene D4	4000		
	Naphthalene D8	4000		
	Perylene D12	4000		
REPAH002-I	Acenaphthylene D10	4000	Dichloromethane	1ml
	Chrysene D12	4000		
	1,4-Dichlorobenzene D4	4000		
	Naphthalene D8	4000		
	Perylene D12	4000		
REPAH001-S	2-Fluorobiphenyl	2000	Dichloromethane	1ml
	1-Fluoronnaphthalene	2000		
REPAH009	Acenaphthene	1000	Toluene	1ml
	Anthracene	1000		
	Benzo(a)anthracene	1000		
	Chrysene	1000		
	Fluoroanthene	1000		
	Fluorene	1000		
	Naphthalene	1000		
	Phenanthrene	1000		
	Pyrene	1000		
	Benzo(a)pyrene	1000		
	Benzo(b)fluoroanthene	1000		
	Benzo(g,h,i)perylene	1000		
	Dibenzo(a,h)anthracene	1000		
	Benzo(k)fluoroanthene	1000		
	Indeno(1,2,3-cd)pyrene	1000		
	Acenaphthylene	1000		
	Benzo(j)fluoroanthene	1000		
Benzo(e)pyrene	1000			
REPAH045	Benzo(a)pyrene	100	Acetonitrile	10ml
	Benzo(b)fluoroanthene	100		
	Benzo(k)fluoroanthene	100		
	Benzo(g,h,i)perylene	100		
	Indeno(1,2,3-cd)pyrene	100		

## Polycyclic Aromatic Hydrocarbons (PAHs) Single Component Standards

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH101	Acenaphthene	2000	Toluene	1ml
REPAH102	Anthracene	2000	Toluene	1ml
REPAH103	Benzo(a)anthracene	2000	Toluene	1ml
REPAH104	Chrysene	2000	Toluene	1ml
REPAH105	Fluoroanthene	2000	Toluene	1ml
REPAH106	Fluorene	2000	Toluene	1ml
REPAH107	Naphthalene	2000	Toluene	1ml
REPAH108	Phenanthrene	2000	Toluene	1ml
REPAH109	Pyrene	2000	Toluene	1ml
REPAH110	Benzo(a)pyrene	2000	Toluene	1ml
REPAH112	Benzo(g,h,i)perylene	2000	Toluene	1ml
REPAH113	Dibenzo(a,h)anthracene	2000	Toluene	1ml
REPAH114	Benzo(a)pyrene	100	Acetonitrile	1ml
REPAH115	Indeno(1,2,3-cd)pyrene	2000	Toluene	1ml
REPAH116	Acenaphthylene	2000	Toluene	1ml
REPAH118	Benzo(a)anthracene	10	Acetonitrile	1ml
REPAH119	Benzo(a)pyrene	100	Toluene	1ml
REPAH150	2-Acetylaminofluorene	1000	Purge & Trap Methanol	1ml
REPAH151	2-Acetylaminofluorene	2000	Purge & Trap Methanol	1ml
REPAH152	7,12-Dimethylbenz(a)-anthracene	1000	Methylene Chloride: Benzene (50:50)	1ml
REPAH153	7,12-Dimethylbenz(a)-anthracene	2000	Methylene Chloride: Benzene (50:50)	1ml
REPAH154	Dibenz(a,j)acridine	1000	Methylene Chloride	1ml
REPAH155	Dibenz(a,j)acridine	2000	Methylene Chloride	1ml
REPAH156	Dibenzo(a,e)pyrene	1000	Methylene Chloride: Benzene (50:50)	1ml
REPAH157	Dibenzo(a,e)pyrene	2000	Methylene Chloride: Benzene (50:50)	1ml
REPAH158	Fluoranthene	1000	Methylene Chloride	1ml
REPAH159	Fluoranthene	2000	Methylene Chloride	1ml
REPAH9001-I	2-Fluoro-6-methylnaphthalene	100	Isooctane	1ml
REPAH9002-I	5-Fluoroacenaphthylene	100	Toluene	1ml
REPAH9003-I	4-Fluorodiphenylmethane	100	Toluene	1ml
REPAH9004-I	2-Fluorofluorene	100	Toluene	1ml
REPAH9005-I	2-Fluorodiphenylmethane	100	Toluene	1ml
REPAH9006-I	4,4'-Difluorodiphenylmethane	100	Toluene	1ml
REPAH9007-I	2-Fluorophenanthrene	100	Toluene	1ml
REPAH9008-I	3-Fluorophenanthrene	100	Toluene	1ml
REPAH9009-I	4-Fluorophenanthrene	100	Toluene	1ml
REPAH9010-I	3-Fluoro-6-methylphenanthrene	50	Isooctane	1ml



Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH9011-I	3-Fluorofluoranthene	100	Toluene	1ml
REPAH9012-I	1-Fluoropyrene	100	Toluene	1ml
REPAH9013-I	1-Fluorochrysene	100	Toluene	1ml
REPAH9014-I	3-Fluorochrysene	100	Toluene	1ml
REPAH9015-I	9-Fluoro-5-methylchrysene	50	Isooctane	1ml
REPAH9016-I	9-Fluorobenzo[k]fluoranthene	100	Toluene	1ml
REPAH7001	5-Fluoro-3-methylbenzo[b]thiophene	100	Isooctane	1ml
REPAH7002	5-Fluoro-2,3-dimethylbenzothiophene	100	Isooctane	1ml
REPAH7003	2-Fluorodibenzothiophene	100	Toluene	1ml
REPAH7101	1-Methylnaphthalene-d10	1000	Isooctane	1ml
REPAH7102	2-Methylnaphthalene-d10	1000	Isooctane	1ml
REPAH7103	1,8-Dimethylnaphthalene-d12	1000	Isooctane	1ml
REPAH7104	2,6-Dimethylnaphthalene-d12	1000	Isooctane	1ml
REPAH7105	9-Methylanthracene-d12	1000	Isooctane	1ml
REPAH7106	1-Methylpyrene-d9	100	Toluene	1ml
REPAH1102	Triphenylene-d12	1000	Toluene	1ml
REPAH1103	Benzo[e]pyrene-d12	100	Toluene	1ml
REPAH1104	Benzo[b]fluoranthene-d12	100	Toluene	1ml
REPAH1105	Benzo[k]fluoranthene-d12	100	Toluene	1ml
REPAH1106	Benzo[ghi]perylene-d12	100	Toluene	1ml
REPAH1107	Benzo[ghi]perylene-d12	200	Toluene	1ml
REPAH1108	Indeno[1,2,3-cd]pyrene-d12	100	Toluene	1ml
REPAH1109	Dibenz[a,h]anthracene-d14	100	Isooctane	1ml
REPAH1110	Dibenz[a,h]anthracene-d14	100	Toluene	1ml
REPAH1111	Coronene-d12	100	Toluene	1ml
REPAH1112	Dibenzo[a,i]pyrene-d14	100	Toluene	1ml
REPAH1113	Biphenyl-d10	1000	Toluene	1ml
REPAH1114	o-Terphenyl-d14	100	Toluene	1ml
REPAH1115	m-Terphenyl-d14	100	Toluene	1ml
REPAH1116	p-Terphenyl-d14	100	Toluene	1ml
REPAH1117	p-Terphenyl-d14	1000	Toluene	1ml
REPAH1118	2,2'-Binaphthyl-d14	100	Toluene	1ml
REPAH1201	Carbazole-d8	1000	Toluene	1ml
REPAH1202	Acridine-d9	1000	Toluene	1ml
REPAH1301	1-Nitronaphthalene-d7	1000	Toluene	1ml
REPAH1302	2-Methyl-1-nitronaphthalene-d9	100	Isooctane	1ml
REPAH1303	2-Nitrofluorene-d9	100	Toluene	1ml
REPAH1304	2-Nitrofluorene-d9	1000	Toluene	1ml

## Polycyclic Aromatic Hydrocarbons (PAHs) Single Component Standards

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH1305	9-Nitrophenanthrene-d9	10	Toluene	1ml
REPAH1306	9-Nitroanthracene-d9	100	Toluene	1ml
REPAH1307	1-Nitropyrene-d9	100	Toluene	1ml
REPAH1308	3-Nitrofluoranthene-d9	100	Toluene	1ml
REPAH1309	1-Nitrotriphenylene-d11	100	Isooctane	1ml
REPAH1310	6-Nitrochrysene-d11	100	Toluene	1ml
REPAH1311	6-Nitrobenzo[a]pyrene-d11	100	Toluene	1ml
REPAH1401	1-Aminonaphthalene-d7	1000	Toluene	1ml
REPAH1402	2-Aminonaphthalene-d7	1000	Isooctane	1ml
REPAH1001	1-Nitronaphthalene	100	Toluene	1ml
REPAH1002	2-Nitronaphthalene	100	Toluene	1ml
REPAH1003	1-Methyl-4-nitronaphthalene	100	Methanol	1ml
REPAH1004	1-Methyl-5-nitronaphthalene	100	Methanol	1ml
REPAH1005	1-Methyl-6-nitronaphthalene	100	Methanol	1ml
REPAH1006	2-Methyl-1-nitronaphthalene	100	Methanol	1ml
REPAH1007	2-Methyl-4-nitronaphthalene	100	Methanol	1ml
REPAH1008	1,5-Dinitronaphthalene	100	Toluene	1ml
REPAH5001	1-Methylfluorene	1000	Toluene	1ml
REPAH5002	2-Methylfluorene	1000	Toluene	1ml
REPAH5003	4-Methylfluorene	1000	Isooctane	1ml
REPAH5004	9-Methylfluorene	1000	Isooctane	1ml
REPAH5005	1,7-Dimethylfluorene	500	Isooctane	1ml
REPAH5006	9-Ethylfluorene	1000	Isooctane	1ml
REPAH5007	9-n-Propylfluorene	1000	Isooctane	1ml
REPAH5008	9-n-Butylfluorene	1000	Isooctane	1ml
REPAH5009	9,9-Di-n-octylfluorene	1000	Isooctane	1ml
REPAH5010	9,9'-Bifluorenylidene	1000	Toluene	1ml
REPAH4101	11H-Benzo[a]fluorene	1000	Toluene	1ml
REPAH4103	11H-Benzo[b]fluorene	200	Toluene	1ml
REPAH4104	7H-Benzo[c]fluorene	200	Toluene	1ml
REPAH4105	9-Phenylfluorene	1000	Isooctane	1ml
REPAH4201	2-Nitrofluorene	100	Toluene	1ml
REPAH4202	2,7-Dinitrofluorene	100	Toluene	1ml
REPAH4203	2-Nitro-9-fluorenone	100	Toluene	1ml
REPAH4401	Phenanthrene	1000	Isooctane	1ml
REPAH5101	1-Methylphenanthrene	1000	Isooctane	1ml
REPAH5102	2-Methylphenanthrene	1000	Isooctane	1ml
REPAH5103	3-Methylphenanthrene	1000	Isooctane	1ml
REPAH5104	4-Methylphenanthrene	500	Isooctane	1ml
REPAH5105	9-Methylphenanthrene	1000	Isooctane	1ml

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH5201	1,2-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5202	1,3-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5203	1,4-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5204	1,5-Dimethylphenanthrene	50	Isooctane	1ml
REPAH5205	1,6-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5206	1,7-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5207	1,8-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5208	1,9-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5209	2,3-Dimethylphenanthrene	50	Isooctane	1ml
REPAH5210	2,4-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5211	2,5-Dimethylphenanthrene	50	Isooctane	1ml
REPAH5212	2,6-Dimethylphenanthrene	50	Isooctane	1ml
REPAH5213	2,7-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5214	2,9-Dimethylphenanthrene	50	Isooctane	1ml
REPAH5215	2,10-Dimethylphenanthrene	50	Isooctane	1ml
REPAH5216	3,4-Dimethylphenanthrene	50	Isooctane	1ml
REPAH5217	3,5-Dimethylphenanthrene	50	Isooctane	1ml
REPAH5218	3,6-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5219	3,9-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5220	3,10-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5221	4,9-Dimethylphenanthrene	50	Isooctane	1ml
REPAH5222	4,10-Dimethylphenanthrene	50	Isooctane	1ml
REPAH5223	9,10-Dimethylphenanthrene	500	Isooctane	1ml
REPAH5224	3-Ethylphenanthrene	500	Isooctane	1ml
REPAH5225	9-Ethylphenanthrene	1000	Isooctane	1ml
REPAH5301	1,2,4-Trimethylphenanthrene	200	Isooctane	1ml
REPAH5302	1,2,5-Trimethylphenanthrene	50	Isooctane	1ml
REPAH5303	1,2,7-Trimethylphenanthrene	50	Isooctane	1ml
REPAH5304	1,2,6-Trimethylphenanthrene	500	Isooctane	1ml
REPAH5305	1,2,8-Trimethylphenanthrene	500	Isooctane	1ml
REPAH5306	1,2,9-Trimethylphenanthrene	500	Isooctane	1ml
REPAH5307	1,3,4-Trimethylphenanthrene	200	Isooctane	1ml
REPAH5308	2,6,9-Trimethylphenanthrene	200	Isooctane	1ml
REPAH5309	2,6,9-Trimethylphenanthrene	1000	Isooctane	1ml
REPAH5310	9-n-Propylphenanthrene	1000	Isooctane	1ml
REPAH5401	1,2,6,9-Tetramethylphenanthrene	500	Isooctane	1ml
REPAH5402	9-n-Butylphenanthrene	500	Isooctane	1ml
REPAH5403	Retene	500	Isooctane	1ml
REPAH5404	1,9-Dimethyl-5-ethylphenanthrene	50	Isooctane	1ml

## Polycyclic Aromatic Hydrocarbons (PAHs) Single Component Standards

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH5405	1,9-Dimethyl-7-ethylphenanthrene	50	Isooctane	1ml
REPAH1501	4H-Cyclopenta[def]phenanthrene	500	Isooctane	1ml
REPAH1502	1H-Cyclopenta[l]phenanthrene	500	Isooctane	1ml
REPAH1503	Benzo[c]phenanthrene	200	Toluene	1ml
REPAH1504	2-Methylcyclopenta[l]phenanthrene	500	Isooctane	1ml
REPAH1505	Triphenylene	200	Toluene	1ml
REPAH1506	3-Methylphenanthro[3,4-c]phenanthrene	100	Toluene	1ml
REPAH1701	1-Methoxyphenanthrene	1000	Isooctane	1ml
REPAH1702	2-Methoxyphenanthrene	1000	Isooctane	1ml
REPAH1703	3-Methoxyphenanthrene	1000	Isooctane	1ml
REPAH1704	4-Methoxyphenanthrene	1000	Isooctane	1ml
REPAH1705	9-Methoxyphenanthrene	1000	Isooctane	1ml
REPAH1801	2-Nitrophenanthrene	1000	Isooctane	1ml
REPAH1802	3-Nitrophenanthrene	300	Isooctane	1ml
REPAH1803	9-Nitrophenanthrene	1000	Isooctane	1ml
REPAH1804	5-Nitrobenzo[c]phenanthrene	100	Toluene	1ml
REPAH1805	1-Nitrotriphenylene	50	Isooctane	1ml
REPAH1901	Anthracene	1000	Isooctane	1ml
REPAH5501	1-Methylanthracene	1000	Isooctane	1ml
REPAH5502	2-Methylanthracene	1000	Isooctane	1ml
REPAH5504	9-Methylanthracene	1000	Isooctane	1ml
REPAH5601	1,2-Dimethylanthracene	200	Toluene	1ml
REPAH5602	1,3-Dimethylanthracene	200	Toluene	1ml
REPAH5603	1,4-Dimethylanthracene	200	Toluene	1ml
REPAH5604	1,5-Dimethylanthracene	200	Toluene	1ml
REPAH5605	2,3-Dimethylanthracene	200	Toluene	1ml
REPAH5606	2,7-Dimethylanthracene	200	Toluene	1ml
REPAH5607	9,10-Dimethylanthracene	200	Toluene	1ml
REPAH5608	2-Ethylanthracene	1000	Isooctane	1ml
REPAH5701	1,2,4-Trimethylanthracene	200	Toluene	1ml
REPAH5702	1,2,3,4-Tetramethylanthracene	200	Toluene	1ml
REPAH5703	2,3,6,7-Tetramethylanthracene	200	Toluene	1ml
REPAH5704	2,3,9,10-Tetramethylanthracene	200	Toluene	1ml
REPAH5705	2-tert-Butylanthracene	1000	Isooctane	1ml
REPAH5801	1-Methylbenz[a]anthracene	50	Toluene	1ml
REPAH5802	5-Methylbenz[a]anthracene	200	Toluene	1ml
REPAH5803	6-Methylbenz[a]anthracene	200	Toluene	1ml

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH5804	7-Methylbenz[a]anthracene	50	Toluene	1ml
REPAH5805	10-Methylbenz[a]anthracene	200	Toluene	1ml
REPAH5806	3,9-Dimethylbenz[a]anthracene	200	Toluene	1ml
REPAH5807	7,12-Dimethylbenz[a]anthracene	200	Toluene	1ml
REPAH2001	Dibenz[a,c]anthracene	100	Toluene	1ml
REPAH2002	Tetrabenz[a,c,h,j]anthracene	200	Toluene	1ml
REPAH2101	2-Nitroanthracene	200	Toluene	1ml
REPAH2102	9-Nitroanthracene	100	Toluene	1ml
REPAH2103	9-Methyl-10-nitroanthracene	100	Toluene	1ml
REPAH2104	9,10-Dinitroanthracene	100	Toluene	1ml
REPAH2201	7-Nitrobenz[a]anthracene	100	Toluene	1ml
REPAH2202	7-Nitrodibenz[a,h]anthracene	100	Toluene	1ml
REPAH2301	1,2,3,10b-Tetrahydrofluoranthene	200	Toluene	1ml
REPAH5901	1-Methylfluoranthene	200	Toluene	1ml
REPAH5902	2-Methylfluoranthene	200	Toluene	1ml
REPAH5903	3-Methylfluoranthene	200	Toluene	1ml
REPAH5904	3-Ethylfluoranthene	200	Toluene	1ml
REPAH2401	Benzo[a]fluoranthene	200	Toluene	1ml
REPAH2402	Benzo[ghi]fluoranthene	200	Toluene	1ml
REPAH2403	2-Phenylfluoranthene	200	Toluene	1ml
REPAH2502	Dibenzo[a,e]fluoranthene	200	Toluene	1ml
REPAH2506	Indeno[1,2,3-cd]fluoranthene	200	Toluene	1ml
REPAH2601	Naphtho[1,2-b]fluoranthene	200	Toluene	1ml
REPAH2602	Naphtho[1,2-k]fluoranthene	200	Toluene	1ml
REPAH2603	Naphtho[2,3-b]fluoranthene	200	Toluene	1ml
REPAH2604	Naphtho[2,3-j]fluoranthene	200	Toluene	1ml
REPAH2605	Naphtho[2,3-k]fluoranthene	200	Toluene	1ml
REPAH2701	1-Nitrofluoranthene	100	Toluene	1ml
REPAH2702	2-Nitrofluoranthene	100	Toluene	1ml
REPAH2703	3-Nitrofluoranthene	100	Toluene	1ml
REPAH6001	1-Methylpyrene	200	Toluene	1ml
REPAH6002	4-Methylpyrene	200	Toluene	1ml
REPAH6003	4,5-Dimethylpyrene	200	Toluene	1ml
REPAH6004	2,7-Dimethylpyrene	200	Toluene	1ml
REPAH6005	1-Ethylpyrene	200	Toluene	1ml
REPAH6006	1-n-Propylpyrene	1000	Toluene	1ml
REPAH6007	1-n-Butylpyrene	200	Toluene	1ml
REPAH6101	6-Methylbenzo[a]pyrene	200	Toluene	1ml
REPAH6102	7-Methylbenzo[a]pyrene	200	Toluene	1ml
REPAH6103	7,10-Dimethylbenzo[a]pyrene	50	Toluene	1ml
REPAH2801	Dibenzo[a,e]pyrene	200	Toluene	1ml
REPAH2802	Dibenzo[a,h]pyrene	200	Toluene	1ml
REPAH2803	Dibenzo[a,i]pyrene	200	Toluene	1ml

Product No.	Description	Concentration µg/ml	Matrix	Pack size
REPAH2804	Dibenzo[a,l]pyrene	200	Toluene	1ml
REPAH2805	Dibenzo[e,l]pyrene	200	Toluene	1ml
REPAH2901	Cyclopenta[cd]pyrene	50	Toluene	1ml
REPAH2902	Naphtho[2,3-a]pyrene	200	Toluene	1ml
REPAH2903	Naphtho[2,3-e]pyrene	200	Toluene	1ml
REPAH2904	2,3-Peri-naphthylene-pyrene	200	Toluene	1ml
REPAH2905	2,3,7,8-Di-(peri-naphthylene)-pyrene	200	Toluene	1ml
REPAH3001	1-Hydroxypyrene	200	Toluene	1ml
REPAH3003	3-Hydroxybenzo[a]pyrene	50	Toluene	1ml
REPAH3101	1-Nitropyrene	100	Toluene	1ml
REPAH3102	2-Nitropyrene	100	Toluene	1ml
REPAH3103	4-Nitropyrene	100	Toluene	1ml
REPAH3104	1,3-Dinitropyrene	100	Toluene	1ml
REPAH3105	1,6-Dinitropyrene	100	Toluene	1ml
REPAH3106	1,8-Dinitropyrene	100	Toluene	1ml
REPAH6201	1-Methylchrysene	200	Toluene	1ml
REPAH6202	2-Methylchrysene	200	Toluene	1ml
REPAH6203	3-Methylchrysene	200	Toluene	1ml
REPAH6204	4-Methylchrysene	200	Toluene	1ml
REPAH6205	5-Methylchrysene	200	Toluene	1ml
REPAH6206	6-Methylchrysene	200	Toluene	1ml
REPAH6301	6-Ethylchrysene	1000	Toluene	1ml
REPAH6302	1,3,6-Trimethylchrysene	1000	Isooctane	1ml
REPAH6303	6-n-Propylchrysene	1000	Toluene	1ml
REPAH6304	6-n-Butylchrysene	1000	Toluene	1ml
REPAH3201	Benzo[a]chrysene	100	Toluene	1ml
REPAH3202	Benzo[b]chrysene	200	Toluene	1ml
REPAH3203	Benzo[c]chrysene	200	Toluene	1ml
REPAH3204	Benzo[g]chrysene	200	Toluene	1ml
REPAH3205	Dibenzo[g,p]chrysene	200	Toluene	1ml
REPAH3301	Anthanthrene	200	Toluene	1ml
REPAH6401	6-Methylanthanthrene	200	Toluene	1ml
REPAH3302	6-Nitroanthanthrene	100	Toluene	1ml
REPAH6501	1-n-Hexylperylene	200	Toluene	1ml
REPAH3401	Benzo[b]perylene	200	Toluene	1ml
REPAH3402	Dibenzo[b,ghi]perylene	200	Toluene	1ml
REPAH3403	Dibenzo[e,ghi]perylene	200	Toluene	1ml
REPAH3404	Naphtho[8,1,2-bcd]perylene	200	Toluene	1ml
REPAH3405	Naphtho[1,2,3,4-ghi]perylene	200	Toluene	1ml
REPAH3501	1-Nitroperylene	100	Toluene	1ml
REPAH3502	3-Nitroperylene	100	Toluene	1ml
REPAH6601	2,9-Dimethylpicene	100	Toluene	1ml

## Polycyclic Aromatic Hydrocarbons (PAHs) Single Component Standards

Product No.	Description	Concentration/ $\mu\text{g ml}$	Matrix	Pack size
REPAH3601	Coronene	100	Toluene	1ml
REPAH6701	1-Methylcoronene	200	Toluene	1ml
REPAH3603	Dibenzo[a,j]coronene	200	Toluene	1ml
REPAH3605	Naphtho[2,3-a]coronene	30	1,2,4- Trichlorobenzene	1ml
REPAH3701	1-Nitrocoronene	100	Toluene	1ml
REPAH3901	9-Chloro-9H-fluorene	50	Isooctane	1ml
REPAH3902	2-Chloroanthracene	50	Isooctane	1ml
REPAH3903	9-Chlorophenanthrene	50	Isooctane	1ml
REPAH3904	6-Chlorobenzo[a]pyrene	50	Isooctane	1ml
REPAH3905	1-Chloropyrene	50	Isooctane	1ml
REPAH3906	3-Chlorofluoranthene	50	Isooctane	1ml
REPAH3801	Benzanthrone	1000	Isooctane	1ml
REPAH3804	Isoviolanthrone	200	Toluene	1ml
REPAH3805	Violanthrone	200	Toluene	1ml

If your requirement is for Polycyclic Aromatic Hydrocarbons in Neat form please email us at [sales@reagecon.ie](mailto:sales@reagecon.ie)

# Pesticide Standards



## Summary of Features & Benefits:

### Commercial Benefits

- Ready to use (dilute for use as calibration and/or quality control standards)
- Extensive range of organic compound mixes and single compound standards available
- Can be used with a variety of instruments including GC, GC-MS, HPLC and LC-MS
- Designed specifically for use in EPA or EU analytical methods
- Presented in high quality amber ampoules
- Customised formulations available

### Technical Benefits

- Produced in accordance with EPA methods
- Consistency of product - Independent, Traceable, Certified
- Ideal for use in EPA 500, 600 and 8000 series methods
- Certificates of Analysis and Safety Data Sheets available online

These products are prepared gravimetrically on a weight/volume basis. Both solute and solvent are prepared using equipment calibrated by Reagecon engineers. Reagecon holds IEC/ISO 17025 accreditation for calibration of laboratory balances and pipettes (INAB Ref:265C). The resulting equipment Calibration Certificates are issued in accordance with the requirements of ISO/IEC 17025. The results are then reported and certified in  $\mu\text{g/ml}$  on the basis of weight and the density measurement of the standard. Reagecon is IEC/ISO 17025 (INAB Ref:264T) Accredited for density measurement using an Oscillating U-Tube Method in accordance with the ASTM D4052 method. The concentration of each standard is verified using a high performance calibrated Liquid Chromatograph - Mass Spectrometer (LC-MS Instrument) or Gas Chromatograph - Mass Spectrometer (GC-MS Instrument). The calibration of both of these instruments are completed using high purity ISO Guide 34 accredited Pesticide standards similar in Pesticide concentration value to these products. The mass spectrum of each of the analytes is confirmed by comparison with the National Institute of Standards and Technology (NIST) mass spectral library.





Product No.	Description in Acetone	Concentration	US EPA Methods	Packed in Ampoule
REPET001 (16 Compound Mix)	Alachlor	50µg/ml	505	1ml
	Aldrin	5µg/ml		
	Atrazine	250µg/ml		
	Lindane (HCH-gamma)	5µg/ml		
	alpha-Chlorodane	5µg/ml		
	gamma-Chlorodane	5µg/ml		
	Dieldrin	5µg/ml		
	Endrin	5µg/ml		
	Heptachlor	5µg/ml		
	Heptachlor Epoxide	5µg/ml		
	Hexachlorobenzene	5µg/ml		
	Hexachlorocyclopentadiene	5µg/ml		
	Methoxychlor	25µg/ml		
	cis-Nonachlor	5µg/ml		
	trans-Nonachlor	5µg/ml		
	Simazine	250µg/ml		

Product No.	Description in Acetone	Concentration	US EPA Methods	Packed in Ampoule
REPET002 (16 Compound Mix Organochloride Pesticides)	Alachlor	50µg/ml	505	1ml
	Aldrin	5µg/ml		
	Atrazine	250µg/ml		
	Lindane (HCH-gamma)	5µg/ml		
	alpha-Chlorodane	5µg/ml		
	gamma-Chlorodane	5µg/ml		
	Dieldrin	10µg/ml		
	Endrin	10µg/ml		
	Heptachlor	5µg/ml		
	Heptachlor Epoxide	5µg/ml		
	Hexachlorobenzene	5µg/ml		
	Hexachlorocyclopentadiene	15µg/ml		
	Methoxychlor	50µg/ml		
	cis-Nonachlor	10µg/ml		
	trans-Nonachlor	10µg/ml		
	Simazine	500µg/ml		

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET003 (18 Compound Mix Chlorinated Pesticides)	Aldrin	Each analyte at	508	1ml
	Lindane (HCH-gamma)	1000µg/ml in high purity		
	HCH-alpha	Methyl-tert Butyl Ether		
	HCH-beta			
	HCH-delta			
	4,4'-DDD			
	4,4'-DDE			
	4,4'-DDT			
	Dieldrin			
	Endosulfan I (alpha)			
	Endosulfan II (beta)			
	Endosulfan sulfate			
	Endrin			
	Endrin aldehyde			
	Endrin ketone			
	Heptachlor			
	Heptachlor Epoxide			
	Methoxychlor			

Product No.	Description in Methyl-tert Butyl Ether	Concentration	US EPA Methods	Packed in Ampoule
REPET004 (18 Compound Mix Chlorinated Pesticides)	Aldrin	5µg/ml	508	1ml
	Lindane (HCH-gamma)	5µg/ml		
	HCH-alpha	5µg/ml		
	HCH-beta	5µg/ml		
	HCH-delta	5µg/ml		
	4,4'-DDD	10µg/ml		
	4,4'-DDE	10µg/ml		
	4,4'-DDT	10µg/ml		
	Dieldrin	10µg/ml		
	Endosulfan I (alpha)	5µg/ml		
	Endosulfan II (beta)	10µg/ml		
	Endosulfan sulfate	10µg/ml		
	Endrin	10µg/ml		
	Endrin aldehyde	10µg/ml		
	Endrin ketone	5µg/ml		
	Heptachlor	5µg/ml		
	Heptachlor Epoxide	5µg/ml		
	Methoxychlor	50µg/ml		

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET005 (12 Compound Mix Pesticides)	alpha-Chlorodane	Each analyte at 1000µg/ml	508	1ml
	gamma-Chlorodane	in high-purity Methy-tert		
	Chlorbenzilate	Butyl Ether		
	Chlorneb			
	Chlorothalonil			
	DCPA			
	Etridiazole			
	Hexachlorobenzene			
	cis-Permethrin			
	trans-Permethrin			
	Propachlor			
	Trifluralin			

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET006 (20 Compound Mix Pesticides)	Alachlor	Each analyte at 1000µg/ml	508.1	1ml
	Aldrin	in high-purity Ethyl Acetate		
	Butachlor			
	Lindane (HCH-gamma)			
	HCH-alpha			
	HCH-beta			
	HCH-delta			
	4,4'-DDD			
	4,4'-DDE			
	4,4'-DDT			
	Dieldrin			
	Endosulfan I (alpha)			
	Endosulfan II (beta)			
	Endosulfan sulfate			
	Endrin			
	Endrin aldehyde			
	Endrin ketone			
	Heptachlor			
	Heptachlor Epoxide			
	Methoxychlor			

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET007 (16 Compound Mix Pesticides)	alpha-Chlorodane	Each analyte at 500µg/ml	508.1	1ml
	gamma-Chlorodane	in high-purity Ethyl Acetate		
	Chlorbenzilate			
	Chlorneb			
	Chlorothalonil			
	Cyanazine			
	DCPA			
	Etridiazole			
	Hexachlorobenzene			
	Hexachlorocyclopentadiene			
	Metolachlor			
	Metribuzin			
	cis-Permethrin			
	trans-Permethrin			
	Propachlor			
	Trifluralin			

Product No.	Description in Benzene	Concentration	US EPA Methods	Packed in Ampoule
REPET008 (16 Compound Mix Pesticides)	Aldrin	100µg/ml	608	1ml
	Lindane (HCH-gamma)	100µg/ml	625	
	HCH-alpha	100µg/ml		
	HCH-beta	100µg/ml		
	HCH-delta	100µg/ml		
	4,4'-DDD	600µg/ml		
	4,4'-DDE	200µg/ml		
	4,4'-DDT	600µg/ml		
	Dieldrin	200µg/ml		
	Endosulfan I (alpha)	200µg/ml		
	Endosulfan II (beta)	200µg/ml		
	Endosulfan sulfate	600µg/ml		
	Endrin	200µg/ml		
	Endrin aldehyde	600µg/ml		
	Heptachlor	100µg/ml		
	Heptachlor Epoxide	100µg/ml		

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET009 (18 Compound Mix Pesticides)	Aldrin	Each analyte at 2000µg/ml in high-purity Benzene	608	1ml
	Lindane (HCH-gamma)		617	
	HCH-alpha		8080A	
	HCH-beta		8081A	
	HCH-delta			
	4,4'-DDD			
	4,4'-DDE			
	4,4'-DDT			
	Dieldrin			
	Endosulfan I (alpha)			
	Endosulfan II (beta)			
	Endosulfan sulfate			
	Endrin			
	Endrin aldehyde			
	Endrin ketone			
	Heptachlor			
	Heptachlor Epoxide			
	Methoxychlor			

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET010 (18 Compound Mix Pesticides)	Aldrin	Each analyte at 1000µg/ml in high-purity Toluene:Hexane 1:1	617	1ml
	Lindane (HCH-gamma)			
	HCH-alpha			
	HCH-beta			
	HCH-delta			
	4,4'-DDD			
	4,4'-DDE			
	4,4'-DDT			
	Dieldrin			
	Endosulfan I (alpha)			
	Endosulfan II (beta)			
	Endosulfan sulfate			
	Endrin			
	Endrin ketone			
	Endrin aldehyde			
	Heptachlor			
	Heptachlor Epoxide			
	Methoxychlor			

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPETO11 (3 Compound Mix Pesticides)	Isopropalin	Each analyte at 1000µg/ml	627	1ml
	Profuralin	in high-purity Hexane		
	Trifluralin			

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPETO12 (14 Compound Mix Pesticides)	Aldrin	Each analyte at 100µg/ml	Not applicable	1ml
	Dieldrin	in high-purity Acetone		
	Endrin			
	HCH-alpha			
	HCH-beta			
	HCH-delta			
	Lindane (HCH-gamma)			
	4,4'-DDT			
	2,4'-DDT			
	Heptachlor			
	Heptachlor Epoxide			
	alpha-Chlorodane			
	gamma-Chlorodane			
	Hexachlorobenzene			

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPETO13 (2 Compound Mix Pesticides)	Napropamid	Each analyte at 1000µg/ml	632.1	1ml
	Propanil	in 9:1 Acetonitrile:Acetone		

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPETO14 (7 Compound Mix Pesticides)	Bromacil	Each analyte at 1000µg/ml	633	1ml
	DEET	in high-purity Acetone		
	Hexazinone			
	Metribuzin			
	Terbacil			
	Triadimefon			
	Tricyclazone			

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET015 (5 Compound) Mix Pesticides)	Fenarimol	Each analyte at 1000µg/ml	633.1	1ml
	MGK 624-A	in high-purity Methanol		
	MGK 624-B			
	MGK 326			
	Pronamide			

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET016 (6 Compound) Mix Pesticides)	Butylate	Each analyte at 1000µg/ml	634	1ml
	Cycloate	in high-purity Methanol		
	EPTC			
	Molinate			
	Pebulate			
	Vernolate			

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET018 (8 Compound) Mix Pesticides)	Alachlor	Each analyte at 100µg/ml	Not applicable	1ml
	Chlorpyrifos	in high-purity Cyclohexane		
	Chlorfenvinphos			
	Trifluralin			
	Atrazine			
	Symazine			

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET024 (18 Compound Mix Pesticides)	Atrazine	Each analyte at 100µg/ml in high-purity Methanol	Not applicable	1ml
	Simazine			
	Desisopropyl atrazine			
	Desethyl atrazine			
	Desethyl terbutylazine			
	Propazine			
	Metribuzin			
	Terbutylazine			
	Prometryn			
	Terbutryn			
	Pendimethalin			
	Trifluralin			
	Propachlor			
	Acetochlor			
	Alachlor			
	Metolachlor			
	Chlorpyrifos			
Chlorfenvinphos				

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET025 (22 Compound Mix Pesticides)	Atrazine	Each analyte at 10µg/ml in high-purity Acetonitrile	Not applicable	1ml
	Atrazine-desethyl			
	Atrazine-desisopropyl			
	Carbofuran			
	Chloridazon			
	Cyanazine			
	Dimethoate			
	Diuron			
	Hexazinone			
	Isoproturon			
	Linuron			
	Metamitron			
	Methabenzthiazuron			
	Metribuzin			
	Pirimicarb			
	Prochloraz			
	Propiconazole			
	Propyzamide			
	Simazine			
	Terbutylazine			
	Terbutylazine-desethyl			
	Triadimenol			



Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET026 (4 Compound Mix Pesticides)	Aldrin	Each analyte at 100µg/ml	617	1ml
	Dieldrin	in high-purity Methanol	505	
	Endrin			
	Heptachlor			

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
REPET027 (7 Compound Mix Pesticides)	Cypermethrin	Each analyte at 100µg/ml	Not applicable	1ml
	Deltamethrin	in high-purity n-Hexane		
	Fenvalerate			
	Fenpropathrin			
	Lambda-cyhalothrin			
	Cyfluthrin			
	Bifenthrin			

## Toxaphene/Chlordane High & Low Concentration Standards

Product No.	Description	Concentration	US EPA Methods	Packed in Ampoule
RECLC001	Technical Chlordane	200ug/ml in high purity Hexane	625, 8270C	1ml
RECLC001-H	Technical Chlordane	1000ug/ml in high purity Hexane	625, 8270C	1ml
RETOX001	Toxaphene	200ug/ml in high purity Hexane	625, 8270C	1ml
RETOX001-H	Toxaphene	1,000ug/ml in high purity Hexane	625, 8270C	1ml

## Pesticide Single Component Standards

Product No.	Description	Concentration µg/ml	Packed in Ampoule
REPET101	4,4'-DDD	1000ug/ml in Purge & Trap Methanol	1ml
REPET101N	4,4'-DDD	Neat	10mg
REPET102	4,4'-DDE	1000ug/ml in Purge & Trap Methanol	1ml
REPET102N	4,4'-DDE	Neat	10mg
REPET103	4,4'-DDT	1000ug/ml in Purge & Trap Methanol	1ml
REPET103N	4,4'-DDT	Neat	10mg
REPET104	Alachlor	1000ug/ml in Purge & Trap Methanol	1ml
REPET104N	Alachlor	Neat	10mg
REPET105	Aldrin	1000ug/ml in Purge & Trap Methanol	1ml
REPET105N	Aldrin	Neat	10mg
REPET106	alpha-Chlorodane	1000ug/ml in Purge & Trap Methanol	1ml
REPET106N	alpha-Chlorodane	Neat	10mg
REPET107	Ametryn	1000ug/ml in Purge & Trap Methanol	1ml
REPET107N	Ametryn	Neat	10mg
REPET108	Atraton	1000ug/ml in Purge & Trap Methanol	1ml
REPET108N	Atraton	Neat	10mg
REPET109	Atrazine	1000ug/ml in Acetone	1ml
REPET109N	Atrazine	Neat	10mg
REPET110	Bromacil	1000ug/ml in Purge & Trap Methanol	1ml
REPET110N	Bromacil	Neat	10mg
REPET111	Butachlor	1000ug/ml in Purge & Trap Methanol	1ml
REPET111N	Butachlor	Neat	10mg
REPET112	Carboxin	1000ug/ml in Acetone	1ml
REPET112N	Carboxin	Neat	10mg
REPET113	Chlordane	1000ug/ml in Hexane	1ml
REPET113N	Chlordane	Neat	10mg
REPET114	Chlorobenzilate	1000ug/ml in Purge & Trap Methanol	1ml
REPET114N	Chlorobenzilate	Neat	10mg
REPET115	Chloroneb	1000ug/ml in Purge & Trap Methanol	1ml
REPET115N	Chloroneb	Neat	10mg
REPET116	Chlorothalonil	1000ug/ml in Purge & Trap Methanol	1ml
REPET116N	Chlorothalonil	Neat	10mg
REPET117	Chlorpropham	1000ug/ml in Purge & Trap Methanol	1ml
REPET117N	Chlorpropham	Neat	10mg
REPET118	cis-Nonachlor	1000ug/ml in Purge & Trap Methanol	1ml
REPET118N	cis-Nonachlor	Neat	10mg
REPET119	cis-Permethrin	1000ug/ml in Purge & Trap Methanol	1ml
REPET119N	cis-Permethrin	Neat	10mg
REPET120	Cyanazine	1000ug/ml in Purge & Trap Methanol	1ml

Product No.	Description	Concentration µg/ml	Packed in Ampoule
REPET120N	Cyanazine	Neat	10mg
REPET121	DCPA (Propanil)	1000ug/ml in Purge & Trap Methanol	1ml
REPET121N	DCPA (Propanil)	Neat	10mg
REPET122	Diazinon	1000ug/ml in Acetone	1ml
REPET122N	Diazinon	Neat	10mg
REPET123	Dichlorvos	1000ug/ml in Purge & Trap Methanol	1ml
REPET123N	Dichlorvos	Neat	10mg
REPET124	Dieldrin	1000ug/ml in Purge & Trap Methanol	1ml
REPET124N	Dieldrin	Neat	10mg
REPET125	Diphenamid	1000ug/ml in Acetone	1ml
REPET125N	Diphenamid	Neat	10mg
REPET126	Disulfoton Sulfone	1000ug/ml in Acetone	1ml
REPET126N	Disulfoton Sulfone	Neat	10mg
REPET127	Disulfoton Sulfoxide	1000ug/ml in Acetone	1ml
REPET127N	Disulfoton Sulfoxide	Neat	10mg
REPET128	Disulfoton	1000ug/ml in Acetone	1ml
REPET128N	Disulfoton	Neat	10mg
REPET129	Endosulfan I	1000ug/ml in Purge & Trap Methanol	1ml
REPET129N	Endosulfan I	Neat	10mg
REPET130	Endosulfan II	1000ug/ml in Purge & Trap Methanol	1ml
REPET130N	Endosulfan II	Neat	10mg
REPET131	Endosulfan Sulfate	1000ug/ml in Purge & Trap Methanol	1ml
REPET131N	Endosulfan Sulfate	Neat	10mg
REPET132	Endrin	1000ug/ml in Purge & Trap Methanol	1ml
REPET132N	Endrin	Neat	10mg
REPET133	Endrin Aldehyde	1000ug/ml in Purge & Trap Methanol	1ml
REPET133N	Endrin Aldehyde	Neat	10mg
REPET134	EPTC	1000ug/ml in Purge & Trap Methanol	1ml
REPET134N	EPTC	Neat	10mg
REPET135	Ethoprop	1000ug/ml in Purge & Trap Methanol	1ml
REPET135N	Ethoprop	Neat	10mg
REPET136	Etridiazole	1000ug/ml in Purge & Trap Methanol	1ml
REPET136N	Etridiazole	Neat	10mg
REPET137	Fenamiphos	1000ug/ml in Acetone	1ml
REPET137N	Fenamiphos	Neat	10mg
REPET138	Fenarimol	1000ug/ml in Purge & Trap Methanol	1ml
REPET138N	Fenarimol	Neat	10mg
REPET139	gamma-Chlorodane	1000ug/ml in Purge & Trap Methanol	1ml
REPET139N	gamma-Chlorodane	Neat	10mg
REPET140	HCH-alpha	1000ug/ml in Purge & Trap Methanol	1ml
REPET140N	HCH-alpha	Neat	10mg
REPET141	HCH-beta	1000ug/ml in Purge & Trap Methanol	1ml

Product No.	Description	Concentration µg/ml	Packed in Ampoule
REPET141N	HCH-beta	Neat	10mg
REPET142	HCH-delta	1000ug/ml in Purge & Trap Methanol	1ml
REPET142N	HCH-delta	Neat	10mg
REPET143	Heptachlor	1000ug/ml in Purge & Trap Methanol	1ml
REPET143N	Heptachlor	Neat	10mg
REPET144	Heptachlor Epoxide	1000ug/ml in Purge & Trap Methanol	1ml
REPET144N	Heptachlor Epoxide	Neat	10mg
REPET145	Hexachlorobenzene	1000ug/ml in Benzene	1ml
REPET145N	Hexachlorobenzene	Neat	10mg
REPET146	Hexachlorocyclopentadiene	1000ug/ml in Purge & Trap Methanol	1ml
REPET146N	Hexachlorocyclopentadiene	Neat	10mg
REPET147	Hexazinone	1000ug/ml in Purge & Trap Methanol	1ml
REPET147N	Hexazinone	Neat	10mg
REPET148	Lindane (HCH-gamma)	1000ug/ml in Purge & Trap Methanol	1ml
REPET148N	Lindane (HCH-gamma)	Neat	10mg
REPET149	Methoxychlor	1000ug/ml in Purge & Trap Methanol	1ml
REPET149N	Methoxychlor	Neat	10mg
REPET150	Methyl Paraoxon	1000ug/ml in Purge & Trap Methanol	1ml
REPET150N	Methyl Paraoxon	Neat	10mg
REPET151	Metolachlor	1000ug/ml in Purge & Trap Methanol	1ml
REPET151N	Metolachlor	Neat	10mg
REPET152	Metribuzin	1000ug/ml in Purge & Trap Methanol	1ml
REPET152N	Metribuzin	Neat	10mg
REPET153	Mevinphos	1000ug/ml in Purge & Trap Methanol	1ml
REPET153N	Mevinphos	Neat	10mg
REPET154	Molinate	1000ug/ml in Purge & Trap Methanol	1ml
REPET154N	Molinate	Neat	10mg
REPET155	Napropamide	1000ug/ml in Purge & Trap Methanol	1ml
REPET155N	Napropamide	Neat	10mg
REPET156	Norflurazon	1000ug/ml in Acetone	1ml
REPET156N	Norflurazon	Neat	10mg
REPET157	Pebulate	1000ug/ml in Purge & Trap Methanol	1ml
REPET157N	Pebulate	Neat	10mg
REPET158	Prometon	1000ug/ml in Acetone	1ml
REPET158N	Prometon	Neat	10mg
REPET159	Prometryn	1000ug/ml in Purge & Trap Methanol	1ml
REPET159N	Prometryn	Neat	10mg
REPET160	Pronamide (Propyzamide)	1000ug/ml in Purge & Trap Methanol	1ml
REPET160N	Pronamide (Propyzamide)	Neat	10mg
REPET161	Propachlor	1000ug/ml in Acetone	1ml
REPET161N	Propachlor	Neat	10mg
REPET162	Propazine	1000ug/ml in Purge & Trap Methanol	1ml

Product No.	Description	Concentration µg/ml	Packed in Ampoule
REPET162N	Propazine	Neat	10mg
REPET163	Simazine	1000ug/ml in Acetone	1ml
REPET163N	Simazine	Neat	10mg
REPET164	Simetryn	1000ug/ml in Purge & Trap Methanol	1ml
REPET164N	Simetryn	Neat	10mg
REPET165	Stirofos (Tetrachlorovinphos)	1000ug/ml in Acetone	1ml
REPET165N	Stirofos (Tetrachlorovinphos)	Neat	10mg
REPET166	Tebuthiuron	1000ug/ml in Acetone	1ml
REPET166N	Tebuthiuron	Neat	10mg
REPET167	Terbacil	1000ug/ml in Purge & Trap Methanol	1ml
REPET167N	Terbacil	Neat	10mg
REPET168	Terbufos	1000ug/ml in Purge & Trap Methanol	1ml
REPET168N	Terbufos	Neat	10mg
REPET169	Terbutryn	1000ug/ml in Purge & Trap Methanol	1ml
REPET169N	Terbutryn	Neat	10mg
REPET170	Toxaphene (Camphechlor)	1000ug/ml in Purge & Trap Methanol	1ml
REPET170N	Toxaphene (Camphechlor)	Neat	10mg
REPET171	trans-Nonachlor	1000ug/ml in Purge & Trap Methanol	1ml
REPET171N	trans-Nonachlor	Neat	10mg
REPET172	trans-Permethrin	1000ug/ml in Purge & Trap Methanol	1ml
REPET172N	trans-Permethrin	Neat	10mg
REPET173	Triademefon	1000ug/ml in Purge & Trap Methanol	1ml
REPET173N	Triademefon	Neat	10mg
REPET174	Tricyclazole	1000ug/ml in Purge & Trap Methanol	1ml
REPET174N	Tricyclazole	Neat	10mg
REPET175	Trifluralin	1000ug/ml in Purge & Trap Methanol	1ml
REPET175N	Trifluralin	Neat	10mg
REPET176	Azinphos-ethyl	1000ug/ml in Acetone	1ml
REPET176N	Azinphos-ethyl	Neat	10mg
REPET177	Azinphos-methyl	1000ug/ml in Acetone	1ml
REPET177N	Azinphos-methyl	Neat	10mg
REPET178	Bromophos Methyl	1000ug/ml in Purge & Trap Methanol	1ml
REPET178N	Bromophos Methyl	Neat	10mg
REPET179	Carbophenothion	1000ug/ml in Purge & Trap Methanol	1ml
REPET179N	Carbophenothion	Neat	10mg
REPET180	Chlorpyrifos	1000ug/ml in Purge & Trap Methanol	1ml
REPET180N	Chlorpyrifos	Neat	10mg
REPET181	Chlorpyrifos-methyl	1000ug/ml in Purge & Trap Methanol	1ml
REPET181N	Chlorpyrifos-methyl	Neat	10mg
REPET182	Dimethoate	1000ug/ml in Purge & Trap Methanol	1ml
REPET182N	Dimethoate	Neat	10mg
REPET183	Ethion	1000ug/ml in Purge & Trap Methanol	1ml

Product No.	Description	Concentration µg/ml	Packed in Ampoule
REPET183N	Ethion	Neat	10mg
REPET184	Fonophos	1000ug/ml in Purge & Trap Methanol	1ml
REPET184N	Fonophos	Neat	10mg
REPET185	Malathion	1000ug/ml in Purge & Trap Methanol	1ml
REPET185N	Malathion	Neat	10mg
REPET186	Methidathion	1000ug/ml in Purge & Trap Methanol	1ml
REPET186N	Methidathion	Neat	10mg
REPET187	Parathion	1000ug/ml in Purge & Trap Methanol	1ml
REPET187N	Parathion	Neat	10mg
REPET188	Parathion-ethyl	1000ug/ml in Purge & Trap Methanol	1ml
REPET188N	Parathion-ethyl	Neat	10mg
REPET189	Pyrimiphos-ethyl	1000ug/ml in Purge & Trap Methanol	1ml
REPET189N	Pyrimiphos-ethyl	Neat	10mg
REPET190	Pyrimiphos-methyl	1000ug/ml in Purge & Trap Methanol	1ml
REPET190N	Pyrimiphos-methyl	Neat	10mg
REPET191	2,2-DDE	1000ug/ml in Purge & Trap Methanol	1ml
REPET191N	2,2-DDE	Neat	10mg
REPET192	2,4-DDE	1000ug/ml in Purge & Trap Methanol	1ml
REPET192N	2,4-DDE	Neat	10mg
REPET193	2,4-DDT	1000ug/ml in Purge & Trap Methanol	1ml
REPET193N	2,4-DDT	Neat	10mg
REPET194	2,4-DDD	1000ug/ml in Purge & Trap Methanol	1ml
REPET194N	2,4-DDD	Neat	10mg
REPET300	1,2-Diphenylhydrazine	1000µg/ml in Purge & Trap Methanol	1ml
REPET300N	1,2-Diphenylhydrazine	Neat	10mg
REPET301	1,2-Diphenylhydrazine	2000µg/ml in Purge & Trap Methanol	1ml
REPET302	1,4-Phenylenediamine	1000µg/ml in Purge & Trap Methanol	1ml
REPET302N	1,4-Phenylenediamine	Neat	10mg
REPET303	1,4-Phenylenediamine	2000µg/ml in Purge & Trap Methanol	1ml
REPET304	5,5-Diphenylhydantoin	1000µg/ml in Purge & Trap Methanol	1ml
REPET304N	5,5-Diphenylhydantoin	Neat	10mg
REPET305	5,5-Diphenylhydantoin	2000µg/ml in Purge & Trap Methanol	1ml
REPET306	Barban	1000µg/ml in Purge & Trap Methanol	1ml
REPET306N	Barban	Neat	10mg
REPET307	Barban	2000µg/ml in Purge & Trap Methanol	1ml
REPET308	Bromoxynil	1000µg/ml in Purge & Trap Methanol	1ml
REPET308N	Bromoxynil	Neat	10mg
REPET309	Bromoxynil	2000µg/ml in Purge & Trap Methanol	1ml
REPET310	Captafol	1000µg/ml in Acetone	1ml
REPET310N	Captafol	Neat	10mg
REPET311	Captafol	2000µg/ml in Acetone	1ml
REPET312	Captan	1000µg/ml in Acetone	1ml

Product No.	Description	Concentration µg/ml	Packed in Ampoule
REPET312N	Captan	Neat	10mg
REPET313	Captan	2000µg/ml in Acetone	1ml
REPET314	Carbaryl	1000µg/ml in Acetonitrile	1ml
REPET314N	Carbaryl	Neat	10mg
REPET315	Carbaryl	2000µg/ml in Acetonitrile	1ml
REPET316	Carbofuran	1000µg/ml in Purge & Trap Methanol	1ml
REPET316N	Carbofuran	Neat	10mg
REPET321	Chlordane (NOS)	2000µg/ml in Hexane	1ml
REPET321N	Chlordane (NOS)	Neat	10mg
REPET322	Chlorfenvinphos	1000µg/ml in Acetone	1ml
REPET322N	Chlorfenvinphos	Neat	10mg
REPET323	Chlorfenvinphos	2000µg/ml in Acetone	1ml
REPET324	Coumaphos	1000µg/ml in Acetone	1ml
REPET324N	Coumaphos	Neat	10mg
REPET325	Coumaphos	2000µg/ml in Acetone	1ml
REPET326	Crotoxyphos	1000µg/ml in Purge & Trap Methanol	1ml
REPET326N	Crotoxyphos	Neat	10mg
REPET327	Crotoxyphos	2000µg/ml in Purge & Trap Methanol	1ml
REPET328	Demeton O	1000µg/ml in Acetonitrile	1ml
REPET328N	Demeton O	Neat	10mg
REPET329	Demeton O	1000µg/ml in Purge & Trap Methanol	1ml
REPET330	Demeton O	2000µg/ml in Acetonitrile	1ml
REPET331	Demeton O	2000µg/ml in Purge & Trap Methanol	1ml
REPET332	Demeton-S	1000µg/ml in Acetone	1ml
REPET332N	Demeton-S	Neat	10mg
REPET333	Demeton-S	2000µg/ml in Acetone	1ml
REPET334	Diallate (cis or trans)	1000µg/ml in Acetone	1ml
REPET334N	Diallate (cis or trans)	Neat	10mg
REPET335	Diallate (cis or trans)	2000µg/ml in Acetone	1ml
REPET336	Dichlone	1000µg/ml in Purge & Trap Methanol	1ml
REPET336N	Dichlone	Neat	10mg
REPET337	Dichlone	2000µg/ml in Purge & Trap Methanol	1ml
REPET338	Dicrotophos	1000µg/ml in Purge & Trap Methanol	1ml
REPET338N	Dicrotophos	Neat	10mg
REPET339	Dicrotophos	2000µg/ml in Purge & Trap Methanol	1ml
REPET340	Dinocap	1000µg/ml in Purge & Trap Methanol	1ml
REPET340N	Dinocap	Neat	10mg
REPET341	Dinocap	2000µg/ml in Purge & Trap Methanol	1ml
REPET342	Dioxathion	1000µg/ml in Purge & Trap Methanol	1ml
REPET342N	Dioxathion	Neat	10mg
REPET343	Dioxathion	2000µg/ml in Purge & Trap Methanol	1ml
REPET344	Diphenylamine	1000µg/ml in Purge & Trap Methanol	1ml

Product No.	Description	Concentration µg/ml	Packed in Ampoule
REPET344N	Diphenylamine	Neat	10mg
REPET345	Diphenylamine	2000µg/ml in Purge & Trap Methanol	1ml
REPET346	EPN	1000µg/ml in Acetone	1ml
REPET346N	EPN	Neat	10mg
REPET347	EPN	1000µg/ml in Purge & Trap Methanol	1ml
REPET348	EPN	2000µg/ml in Acetone	1ml
REPET349	EPN	2000µg/ml in Purge & Trap Methanol	1ml
REPET350	Ethyl carbamate (urethane)	1000µg/ml in Purge & Trap Methanol	1ml
REPET350N	Ethyl carbamate (urethane)	Neat	10mg
REPET351	Ethyl carbamate (urethane)	2000µg/ml in Purge & Trap Methanol	1ml
REPET352	Ethyl methanesulfonate	1000µg/ml in Purge & Trap Methanol	1ml
REPET352N	Ethyl methanesulfonate	Neat	10mg
REPET353	Ethyl methanesulfonate	2000µg/ml in Purge & Trap Methanol	1ml
REPET354	Famphur	1000µg/ml in Purge & Trap Methanol	1ml
REPET354N	Famphur	Neat	10mg
REPET355	Famphur	2000µg/ml in Purge & Trap Methanol	1ml
REPET356	Fensulfothion	1000µg/ml in Acetone	1ml
REPET356N	Fensulfothion	Neat	10mg
REPET357	Fensulfothion	2000µg/ml in Acetone	1ml
REPET358	Fenthion	1000µg/ml in Acetone	1ml
REPET358N	Fenthion	Neat	10mg
REPET359	Fenthion	2000µg/ml in Acetone	1ml
REPET360	Fluchloralin	1000µg/ml in Purge & Trap Methanol	1ml
REPET360N	Fluchloralin	Neat	10mg
REPET361	Fluchloralin	2000µg/ml in Purge & Trap Methanol	1ml
REPET362	Isodrin	1000µg/ml in Purge & Trap Methanol	1ml
REPET362N	Isodrin	Neat	10mg
REPET363	Isodrin	2000µg/ml in Purge & Trap Methanol	1ml
REPET364	Isophorone	1000µg/ml in Purge & Trap Methanol	1ml
REPET364N	Isophorone	Neat	10mg
REPET365	Isophorone	2000µg/ml in Purge & Trap Methanol	1ml
REPET366	Isosafrole	1000µg/ml in Purge & Trap Methanol	1ml
REPET366N	Isosafrole	Neat	10mg
REPET367	Isosafrole	2000µg/ml in Purge & Trap Methanol	1ml
REPET368	Kepone	1000µg/ml in Purge & Trap Methanol	1ml
REPET368N	Kepone	Neat	10mg
REPET369	Kepone	2000µg/ml in Purge & Trap Methanol	1ml
REPET370	Leptophos	1000µg/ml in Purge & Trap Methanol	1ml
REPET370N	Leptophos	Neat	10mg
REPET371	Leptophos	2000µg/ml in Purge & Trap Methanol	1ml
REPET372	Malathion	1000µg/ml in Purge & Trap Methanol	1ml
REPET373	Malathion	2000µg/ml in Purge & Trap Methanol	1ml



Product No.	Description	Concentration µg/ml	Packed in Ampoule
REPET374	Methyl methanesulfonate	1000µg/ml in Purge & Trap Methanol	1ml
REPET374N	Methyl methanesulfonate	Neat	10mg
REPET375	Methyl methanesulfonate	2000µg/ml in Purge & Trap Methanol	1ml
REPET376	Mexacarbate	1000µg/ml in Purge & Trap Methanol	1ml
REPET376N	Mexacarbate	Neat	10mg
REPET377	Mexacarbate	2000µg/ml in Purge & Trap Methanol	1ml
REPET378	Mirex	1000µg/ml in Hexane:Toluene	1ml
REPET378N	Mirex	Neat	10mg
REPET379	Mirex	2000µg/ml in Hexane:Toluene	1ml
REPET380	Monocrotophos	1000µg/ml in Acetonitrile	1ml
REPET380N	Monocrotophos	Neat	10mg
REPET381	Monocrotophos	2000µg/ml in Acetonitrile	1ml
REPET382	Naled	1000µg/ml in Methylene Chloride	1ml
REPET382N	Naled	Neat	10mg
REPET383	Naled	2000µg/ml in Methylene Chloride	1ml
REPET384	Nitrofen	1000µg/ml in Purge & Trap Methanol	1ml
REPET384N	Nitrofen	Neat	10mg
REPET385	Nitrofen	2000µg/ml in Purge & Trap Methanol	1ml
REPET386	O,O,O-Triethyl phosphorothioate	1000µg/ml in Purge & Trap Methanol	1ml
REPET386N	O,O,O-Triethyl phosphorothioate	Neat	10mg
REPET387	O,O,O-Triethyl phosphorothioate	2000µg/ml in Purge & Trap Methanol	1ml
REPET388	Octamethyl pyrophosphoramidate	1000µg/ml in Acetone	1ml
REPET388N	Octamethyl pyrophosphoramidate	Neat	10mg
REPET389	Octamethyl pyrophosphoramidate	2000µg/ml in Acetone	1ml
REPET390	Parathion	1000µg/ml in Purge & Trap Methanol	1ml
REPET391	Parathion	2000µg/ml in Purge & Trap Methanol	1ml
REPET392	Pentachlorobenzene	1000µg/ml in Purge & Trap Methanol	1ml
REPET392N	Pentachlorobenzene	Neat	10mg
REPET393	Pentachlorobenzene	2000µg/ml in Purge & Trap Methanol	1ml
REPET394	Pentachloronitrobenzene	1000µg/ml in Purge & Trap Methanol	1ml
REPET394N	Pentachloronitrobenzene	Neat	10mg
REPET395	Pentachloronitrobenzene	2000µg/ml in Purge & Trap Methanol	1ml
REPET396	Phorate	1000µg/ml in Purge & Trap Methanol	1ml
REPET396N	Phorate	Neat	10mg
REPET397	Phorate	2000µg/ml in Purge & Trap Methanol	1ml
REPET398	Phosalone	1000µg/ml in Purge & Trap Methanol	1ml
REPET398N	Phosalone	Neat	10mg
REPET399	Phosalone	2000µg/ml in Purge & Trap Methanol	1ml
REPET400	Phosphamidon	1000µg/ml in Purge & Trap Methanol	1ml
REPET400N	Phosphamidon	Neat	10mg
REPET401	Phosphamidon	2000µg/ml in Purge & Trap Methanol	1ml
REPET402	Strychnine	1000µg/ml in Purge & Trap Methanol	1ml

Product No.	Description	Concentration µg/ml	Packed in Ampoule
REPET402N	Strychnine	Neat	10mg
REPET403	Strychnine	2000µg/ml in Purge & Trap Methanol	1ml
REPET404	Thionazine	1000µg/ml in Acetone	1ml
REPET404N	Thionazine	Neat	10mg
REPET405	Thionazine	1000µg/ml in Purge & Trap Methanol	1ml
REPET406	Thionazine	2000µg/ml in Acetone	1ml
REPET407	Thionazine	2000µg/ml in Purge & Trap Methanol	1ml

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www.reagecon.com

**CERTIFICATE OF GRAVIMETRIC PREPARATION**

PRODUCT: METOLACHLOR 1000µg/ml in METHANOL  
 PRODUCT No.: REPET151  
 MATRIX: Methanol  
 LOT No.: PET15116A1  
 DATE OF PREPARATION: 25<sup>th</sup> January 2016  
 EXPIRY DATE: 28<sup>th</sup> January 2019  
 PREPARATION OF STANDARD:

All standard components have been pre-qualified verified before use. All preparation has been performed in a cleanroom environment under strictly monitored and uncontrolled conditions. All analytical measuring devices and instrumentation have been pre-calibrated. The actual concentrations reported below are based on this preparation methodology and compound purities.

Compound	Purity %	Labelled µg/ml	Actual µg/ml
Metolachlor	97.6	1000	1000 ± 2.5 %

This product is a standard for use in the laboratory. It is not for sale. It is not to be used for calibration or for comparison purposes. It is not to be used for legal or regulatory purposes. It is not to be used for forensic purposes. It is not to be used for clinical purposes. It is not to be used for research purposes. It is not to be used for quality control purposes. It is not to be used for quality assurance purposes. It is not to be used for quality management purposes. It is not to be used for quality improvement purposes. It is not to be used for quality control purposes. It is not to be used for quality assurance purposes. It is not to be used for quality management purposes. It is not to be used for quality improvement purposes.

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**TRACEABILITY IN THE PRODUCTION OF THIS STANDARD**

This product was prepared gravimetrically on a weight-volume basis. The solute was weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO 17025 accreditation for calibration of non-automatic weighing machines (20°C). The resulting Balance Certificate of Calibration was issued in accordance with the requirements of ISO/IEC 17025. The balance was calibrated under monitored environmental conditions and atmospheric pressure. Tests were performed for capacity, readability, repeatability, eccentricity and linearity. Dilution of the final product in volume was performed using internally calibrated Class A volumetric glassware.

BALANCE ID No.: RR0386 CALIBRATION DATE OF BALANCE: 25<sup>th</sup> January 2016  
 CALIBRATION AUTHORITY OF BALANCE: Reagecon Diagnostics Ltd, ISO17025 Accreditation No. 265C  
 WEIGHTS No.: RT568 CALIBRATION DATE OF WEIGHTS: 0<sup>th</sup> April 2015  
 CALIBRATION AUTHORITY OF WEIGHTS: Complete Calibration (DNAB No. 282)

**STORAGE/USAGE INSTRUCTIONS:**  
 Please store this product in a freezer (-20°C). To open product, invert at least 10 times (do not shake) and remove if solid material is apparent. Break the ampoule open at the lower neck mark (cutting sharp glass) and insert in vial. Allow to return to room temperature before use. Store after opening in a freezer. Invert, sonicate and allow vial to return to room temperature before each subsequent use. Use only Class A volumetric glassware for dilutions and ensuring thorough mixing.

Date: 26<sup>th</sup> January 2016

This certificate must not be reproduced except in full

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# Azo Dye Metabolite Standards



## Introduction

Azo-dyes are a large class of synthetic organic dyes that contain nitrogen in the form of an azo group ( $-N=N-$ ), as part of their molecular structures. They are used in many areas such as the food, cosmetic, textile, leather, nutrition, plastic and pharmaceutical industries. During the past 50 years, the amount of azo-dyes used in foods has increased by 500%. When compared to natural dyes, synthetic food dyes provide many advantages. Synthetic dyes are cheaper, more easily available, last longer and can achieve colour and hue variations otherwise not possible using natural colourants. They also provide superior colour fastness and colour intensity.

However, since the use of synthetic food colouring has become widespread, many allergic and other immune reaction disorders, have increasingly been reported. The reductive cleavage of the azo bond leads to the formation of aromatic amines which may be mutagenic, carcinogenic or allergenic. For instance, acid red 85 and direct blue 6, are both capable of reductively splitting to produce carcinogenic benzidine. Likewise, Sudan II and disperse yellow 7 are capable of splitting to form p-phenylenediamine and aniline, while disperse orange 3 can split only to p-phenylenediamine. <sup>(1)</sup>

## Legislation

Colour Directive 94/36/EC outlines the permitted natural and synthetic colours with their approved applications and limits in different foodstuffs (Commission, 1994) and the use of azo-dyes which can be reduced into toxic amines is prohibited in Europe, US and many other countries. The safety of food colours and other food additives in the EU is evaluated by the European Food Safety Authority (EFSA). Since 2009, the expert Scientific Panel of EFSA assess all of the permitted food colours (45 in total) which had been approved for use in the EU giving priority to those synthetically produced and then to those obtained from natural sources mainly carotenoids. Since new scientific data became available, there have been changes in the legislation, many additives which were initially authorised for used in the past, are currently not permitted in food products in the EU. Unfortunately, there are reports of food adulteration by using dyes unauthorised for food which are often hazardous.

## Illegal Adulteration

There have been many notifications from several EU Member States via the Rapid Alert System for Food and Feed (RASFF) of the occurrence of Sudan I, II, III and IV, para red, rhodamine b, and orange 2 in chilli and curry powder and processed products containing chilli or curry powder, sumac, curcuma and palm oil among others. There have also been occurrences of azo dyes released from clothing and textiles, which may be accidentally ingested intradermally or orally by people wearing such clothes. Textile workers are also at risk.

## Metabolite Standards

Efficient analytical methods for the determination of food colorants are of utmost importance since their illegal presence in food threatens consumer's safety. Up to now, most methods are focused to detect dyes so far found illegally present in food. There are no methods focused in the detection of aromatic amines derived from azo dyes which may potentially appear illegally in food and show carcinogenic effects in humans.

In a study funded by and participated in by scientists in Reagecon, we have taken account of this consideration and have tried to fill this void. For example, we have provided and published a rapid, accurate and precise method for the identification and quantification of various synthetic food colourant products in paprika. As always, our principle role has been to characterise, purify, validate and offer high quality standards for these products and disseminate these into the marketplace. Further details can be found at [www.reagecon.com](http://www.reagecon.com)

<sup>(1)</sup> Report 6/14 Chemicals in textiles - risks to human health and the environment. KEM Swedish Chemicals Agency, Stockholm, 2014

Product No.	Analyte	Concentration & Matrix	Pack Size
REAZO001	2,4-Diaminoanisole	1000µg/ml in HPLC Water	1ml
REAZO002	2,4-Diaminoanisole	2000µg/ml in HPLC Water	1ml
REAZO003	2,4-Diaminotoluene	1000µg/ml in Purge & Trap Methanol	1ml
REAZO004	2,4-Diaminotoluene	2000µg/ml in Purge & Trap Methanol	1ml
REAZO005	3,3-Dichlorobenzidine	1000µg/ml in Purge & Trap Methanol	1ml
REAZO006	3,3-Dichlorobenzidine	2000µg/ml in Purge & Trap Methanol	1ml
REAZO007	3,3-Dimethoxybenzidine	1000µg/ml in Purge & Trap Methanol	1ml
REAZO008	3,3-Dimethoxybenzidine	2000µg/ml in Purge & Trap Methanol	1ml
REAZO009	3-Aminobiphenyl	1000µg/ml in Ethyl Acetate	1ml
REAZO010	3-Aminobiphenyl	2000µg/ml in Ethyl Acetate	1ml
REAZO011	4,4,-Diaminodiphenylmethane	1000µg/ml in Purge & Trap Methanol	1ml
REAZO012	4,4,-Diaminodiphenylmethane	2000µg/ml in Purge & Trap Methanol	1ml
REAZO013	4,4-Methylenebis(2-chloroaniline)	1000µg/ml in Purge & Trap Methanol	1ml
REAZO014	4,4-Methylenebis(2-chloroaniline)	2000µg/ml in Purge & Trap Methanol	1ml
REAZO015	4-Aminoazotoluene	1000µg/ml in Purge & Trap Methanol	1ml
REAZO016	4-Aminoazotoluene	2000µg/ml in Purge & Trap Methanol	1ml
REAZO017	4-Aminobiphenyl	1000µg/ml in Purge & Trap Methanol	1ml
REAZO018	4-Aminobiphenyl	2000µg/ml in Purge & Trap Methanol	1ml
REAZO019	4-Chloroaniline	1000µg/ml in Purge & Trap Methanol	1ml
REAZO020	4-Chloroaniline	2000µg/ml in Purge & Trap Methanol	1ml
REAZO021	5-Nitro-o-toluidine	1000µg/ml in Purge & Trap Methanol	1ml
REAZO022	5-Nitro-o-toluidine	2000µg/ml in Purge & Trap Methanol	1ml
REAZO023	Anilazine	1000µg/ml in Purge & Trap Methanol	1ml
REAZO024	Anilazine	2000µg/ml in Purge & Trap Methanol	1ml
REAZO025	Azobenzene	1000µg/ml in Purge & Trap Methanol	1ml
REAZO026	Azobenzene	2000µg/ml in Purge & Trap Methanol	1ml
REAZO027	Benzidine	1000µg/ml in Purge & Trap Methanol	1ml
REAZO028	Benzidine	2000µg/ml in Purge & Trap Methanol	1ml
REAZO029	Dimethylaminoazobenzene	1000µg/ml in Purge & Trap Methanol	1ml
REAZO030	Dimethylaminoazobenzene	2000µg/ml in Purge & Trap Methanol	1ml
REAZO031	o-anisidine	1000µg/ml in Purge & Trap Methanol	1ml
REAZO032	o-anisidine	2000µg/ml in Purge & Trap Methanol	1ml
REAZO033	o-Toluidine	1000µg/ml in Purge & Trap Methanol	1ml
REAZO034	o-Toluidine	2000µg/ml in Purge & Trap Methanol	1ml
REAZO035	Aniline	1000µg/ml in Purge & Trap Methanol	1ml
REAZO036	Aniline	2000µg/ml in Purge & Trap Methanol	1ml
REAZO037	p-phenylenediamine	1000µg/ml in Purge & Trap Methanol	1ml
REAZO038	p-phenylenediamine	2000µg/ml in Purge & Trap Methanol	1ml
REAZO039	2-Nitroalinine	1000µg/ml in Purge & Trap Methanol	1ml
REAZO040	2-Nitroalinine	2000µg/ml in Purge & Trap Methanol	1ml
REAZO041	3-Nitroalinine	1000µg/ml in Purge & Trap Methanol	1ml
REAZO042	3-Nitroalinine	2000µg/ml in Purge & Trap Methanol	1ml
REAZO043	4-Nitroalinine	1000µg/ml in Purge & Trap Methanol	1ml
REAZO044	4-Nitroalinine	2000µg/ml in Purge & Trap Methanol	1ml

# Fatty Acid Methyl Ester & Fatty Acid Ethyl Ester Standards (FAME & FAEEs)

Free fatty acids (also referred to as volatile fatty acids or carboxylic acids), in short carbon chains, that are volatile, are typically measured in free form as opposed to Fatty Acid Methyl Esters (FAME's) using Gas Chromatography (GC). Analysis in free form typically confers the advantage of having easier and faster sample preparation and avoids the formation of derivatisation artefacts. However, free fatty acids may be difficult to analyse because these highly polar compounds tend to form hydrogen bonds causing column adsorption problems or in the case of unsaturated fatty acids the slight difference between different compounds may be difficult to distinguish without the neutralisation step involved in esterification.

The esterification of fatty acids is an important tool for both characterising fats and oils and for determining the total fat content in foods and foodstuffs. It is also an important technique for assessing the quality and purity of biofuels. Fats are extracted using a non-polar solvent, saponised to acids and analysed by gas chromatography (GC). GC is an important technique for fats and oils analysis because accurate results can be obtained for complex as well as simple sample matrices. Several compendium from organisations such as the Association of Official Agriculture Chemists (AOAC), American Oil Chemists Society (AOCS) and the European Pharmacopoeia (EP) contain derivatisation procedures. FAME's may be produced from vegetable oils, animal fats or waste cooking oils by transesterification. In this process a glyceride reacts with an alcohol in the presence of a catalyst forming a mixture of fatty acid esters and an alcohol thus producing biodiesel. Using triglycerides as the fat source, results in the production of glycerol.

Rapeseed, sunflower, soybean and palm oils are the most common raw materials used for the production of biodiesel. Using methanol in the transesterification process has the advantage that the resulting glycerol can be separated simultaneously during the transesterification process. When using ethanol, the ethanol needs to be free of water and the oil needs to have a low water content as well, to achieve an easy glycerol separation. Where ethanol is used it is fatty acid ethyl esters (FAEE's) that are produced. The end products of the transesterification process are raw biodiesel and raw glycerol. After a cleaning step biodiesel is produced. The purified glycerol can be used in the food and cosmetic industries as well as in the electrochemical industry and as a substrate for anaerobic digestion. Reagecon offers several FAME and FAEE individual compounds and mixtures which can be used to calibrate the GC instrument prior to analysis or as Quality Control Materials during analysis. Deuterated versions are also available for use as internal standards. Such products may be offered as neat materials or in pre-prepared liquid matrices.

## Unsaturated Methyl Esters

Product No.	Description	Concentration in Matrix	Pack Size
REUFA001N	Methyl cis-9-hexadecenoate (Palmitoleate) C16:1	Neat	10mg
REUFA001S	Methyl cis-9-hexadecenoate (Palmitoleate) C16:1	10000µg/ml in Heptane	1ml
REUFA002N	Methyl trans-9-hexadecenoate C16:1	Neat	10mg
REUFA002S	Methyl trans-9-hexadecenoate C16:1	10000µg/ml in Heptane	1ml
REUFA003N	Methyl cis-6-octadecenoate (Petroselinate) C18:1	Neat	10mg
REUFA003S	Methyl cis-6-octadecenoate (Petroselinate) C18:1	10000µg/ml in Heptane	1ml
REUFA004N	Methyl trans-6-octadecenoate (Petroselaidate) C18:1	Neat	10mg
REUFA004S	Methyl trans-6-octadecenoate (Petroselaidate) C18:1	10000µg/ml in Heptane	1ml
REUFA005N	Methyl cis-9-octadecenoate (Oleate) C18:1 112-62-9	Neat	10mg
REUFA005S	Methyl cis-9-octadecenoate (Oleate) C18:1 112-62-9	10000µg/ml in Heptane	1ml
REUFA006N	Methyl trans-9-octadecenoate (Elaidate) C18:1 2462-84-2	Neat	10mg
REUFA006S	Methyl trans-9-octadecenoate (Elaidate) C18:1 2462-84-2	10000µg/ml in Heptane	1ml
REUFA007N	Methyl cis-11-octadecenoate (Vaccenate) C18:1 1937-63-9	Neat	10mg
REUFA007S	Methyl cis-11-octadecenoate (Vaccenate) C18:1 1937-63-9	10000µg/ml in Heptane	1ml
REUFA008N	Methyl 12-hydroxy-cis-9-octadecenoate (Ricinoleate) C18:1	Neat	10mg
REUFA008S	Methyl 12-hydroxy-cis-9-octadecenoate (Ricinoleate) C18:1	10000µg/ml in Heptane	1ml
REUFA010N	Methyl linoleate (Linoleate) C18:2	Neat	10mg
REUFA010S	Methyl linoleate (Linoleate) C18:2	10000µg/ml in Heptane	1ml
REUFA011N	Methyl linoelaidate (Linoelaidate) C18:2	Neat	10mg
REUFA011S	Methyl linoelaidate (Linoelaidate) C18:2	10000µg/ml in Heptane	1ml
REUFA012N	Methyl octadecadienoate (Conjugated) C18:2	Neat	10mg
REUFA012S	Methyl octadecadienoate (Conjugated) C18:2	10000µg/ml in Heptane	1ml
REUFA014N	Methyl linolenate (Linolenate) C18:3	Neat	10mg
REUFA014S	Methyl linolenate (Linolenate) C18:3	10000µg/ml in Heptane	1ml
REUFA015N	Methyl g-linolenate (Gamma Linolenate) C18:3	Neat	10mg
REUFA015S	Methyl g-linolenate (Gamma Linolenate) C18:3	10000µg/ml in Heptane	1ml
REUFA016N	Methyl trans-11-eicosenoate C20:1	Neat	10mg

## Unsaturated Methyl Esters

Product No.	Description	Concentration in Matrix	Pack Size
REUFA016S	Methyl trans-11-eicosenoate C20:1	10000µg/ml in Heptane	1ml
REUFA017N	Methyl cis-8-eicosenoate C20:1	Neat	10mg
REUFA017S	Methyl cis-8-eicosenoate C20:1	10000µg/ml in Heptane	1ml
REUFA018N	Methyl cis-11-eicosenoate C20:1	Neat	10mg
REUFA018S	Methyl cis-11-eicosenoate C20:1	10000µg/ml in Heptane	1ml
REUFA019N	Methyl cis-5-eicosenoate C20:1	Neat	10mg
REUFA019S	Methyl cis-5-eicosenoate C20:1	10000µg/ml in Heptane	1ml
REUFA020N	Methyl cis-11,14-eicosadienoate C20:2	Neat	10mg
REUFA020S	Methyl cis-11,14-eicosadienoate C20:2	10000µg/ml in Heptane	1ml
REUFA022N	Methyl cis-8,11,14-eicosatrienoate (Homogamma linolenate) C20:3	Neat	10mg
REUFA022S	Methyl cis-8,11,14-eicosatrienoate (Homogamma linolenate) C20:3	10000µg/ml in Heptane	1ml
REUFA023N	Methyl cis-11,14,17-eicosatrienoate C20:3	Neat	10mg
REUFA023S	Methyl cis-11,14,17-eicosatrienoate C20:3	10000µg/ml in Heptane	1ml
REUFA024N	Methyl arachidonate (Arachidonate) C20:4	Neat	10mg
REUFA024S	Methyl arachidonate (Arachidonate) C20:4	10000µg/ml in Heptane	1ml
REUFA025N	Methyl 5,8,11,14,17-Eicosapentaenoate C20:5	Neat	10mg
REUFA025S	Methyl 5,8,11,14,17-Eicosapentaenoate C20:5	10000µg/ml in Heptane	1ml
REUFA026N	Methyl cis-7,10,13,16,19-Docosapentaenoate (DPA) C22:5	Neat	10mg
REUFA026S	Methyl cis-7,10,13,16,19-Docosapentaenoate (DPA) C22:5	10000µg/ml in Heptane	1ml
REUFA027N	Methyl cis-13-docosenoate (Erucate) C22:1	Neat	10mg
REUFA027S	Methyl cis-13-docosenoate (Erucate) C22:1	10000µg/ml in Heptane	1ml
REUFA028N	Methyl trans-13-docosenoate (Brassicdate) C22:1	Neat	10mg
REUFA028S	Methyl trans-13-docosenoate (Brassicdate) C22:1	10000µg/ml in Heptane	1ml
REUFA029N	Methyl cis-13,16-docosadienoate C22:2	Neat	10mg
REUFA029S	Methyl cis-13,16-docosadienoate C22:2	10000µg/ml in Heptane	1ml
REUFA030N	Methyl cis-13,16,19-docosatrienoate C22:3	Neat	10mg
REUFA030S	Methyl cis-13,16,19-docosatrienoate C22:3	10000µg/ml in Heptane	1ml
REUFA031N	Methyl cis-7,10,13,16-Docosatetraenoate C22:4	Neat	10mg
REUFA031S	Methyl cis-7,10,13,16-Docosatetraenoate C22:4	10000µg/ml in Heptane	1ml
REUFA032N	Methyl cis-4,7,10,13,16,19-Docosahexenoate C22:6	Neat	10mg
REUFA032S	Methyl cis-4,7,10,13,16,19-Docosahexenoate C22:6	10000µg/ml in Heptane	1ml
REUFA033N	Methyl cis-15-tetracosenoate (Nervonate) C24:1	Neat	10mg
REUFA033S	Methyl cis-15-tetracosenoate (Nervonate) C24:1	10000µg/ml in Heptane	1ml

## Saturated Methyl Esters

Product No.	Description	Concentration in Matrix	Pack Size
RESFA001N	Methyloctanoate (Caprylate) C8:0	Neat	10mg
RESFA001S	Methyloctanoate (Caprylate) C8:0	10000µg/ml in Heptane	1ml
RESFA002N	Methylnonoate (Pelargonate) C9:0	Neat	10mg
RESFA002S	Methylnonoate (Pelargonate) C9:0	10000µg/ml in Heptane	1ml
RESFA003N	Methyldecanoate (Caprate) C10:0	Neat	10mg
RESFA003S	Methyldecanoate (Caprate) C10:0	10000µg/ml in Heptane	1ml
RESFA004N	Methylundecanoate C11:0	Neat	10mg
RESFA004S	Methylundecanoate C11:0	10000µg/ml in Heptane	1ml
RESFA005N	Methyldodecanoate (Laurate) C12:0	Neat	10mg
RESFA005S	Methyldodecanoate (Laurate) C12:0	10000µg/ml in Heptane	1ml
RESFA006N	Methyltridecanoate C13:0	Neat	10mg
RESFA006S	Methyltridecanoate C13:0	10000µg/ml in Heptane	1ml
RESFA007N	Methyltetradecanoate (Myristate) C14:0	Neat	10mg
RESFA007S	Methyltetradecanoate (Myristate) C14:0	10000µg/ml in Heptane	1ml
RESFA008N	Methylpentadecanoate C15:0	Neat	10mg
RESFA008S	Methylpentadecanoate C15:0	10000µg/ml in Heptane	1ml
RESFA009N	Methylhexadecanoate (Palmitate) C16:0	Neat	10mg
RESFA009S	Methylhexadecanoate (Palmitate) C16:0	10000µg/ml in Heptane	1ml
RESFA010N	Methylheptadecanoate (Margarate) C17:0	Neat	10mg
RESFA010S	Methylheptadecanoate (Margarate) C17:0	10000µg/ml in Heptane	1ml
RESFA011N	Methyloctadecanoate (Stearate) C18:0	Neat	10mg
RESFA011S	Methyloctadecanoate (Stearate) C18:0	10000µg/ml in Heptane	1ml
RESFA012N	Methyl 12-hydroxystearate C18:0	Neat	10mg
RESFA012S	Methyl 12-hydroxystearate C18:0	10000µg/ml in Heptane	1ml
RESFA013N	Methylnonadecanoate C19:0	Neat	10mg
RESFA013S	Methylnonadecanoate C19:0	10000µg/ml in Heptane	1ml
RESFA014N	Methyleicosanoate (Arachidate) C20:0	Neat	10mg
RESFA014S	Methyleicosanoate (Arachidate) C20:0	10000µg/ml in Heptane	1ml
RESFA015N	Methylheneicosanoate C21:0	Neat	10mg
RESFA015S	Methylheneicosanoate C21:0	10000µg/ml in Heptane	1ml
RESFA016N	Methyldocosanoate (Behenate) C22:0	Neat	10mg
RESFA016S	Methyldocosanoate (Behenate) C22:0	10000µg/ml in Heptane	1ml
RESFA017N	Methyltricosanoate C23:0	Neat	10mg
RESFA017S	Methyltricosanoate C23:0	10000µg/ml in Heptane	1ml
RESFA018N	Methyltetracosanoate (Lignocerate) C24:0	Neat	10mg
RESFA018S	Methyltetracosanoate (Lignocerate) C24:0	10000µg/ml in Heptane	1ml



## Fatty Acid Ethyl Esters

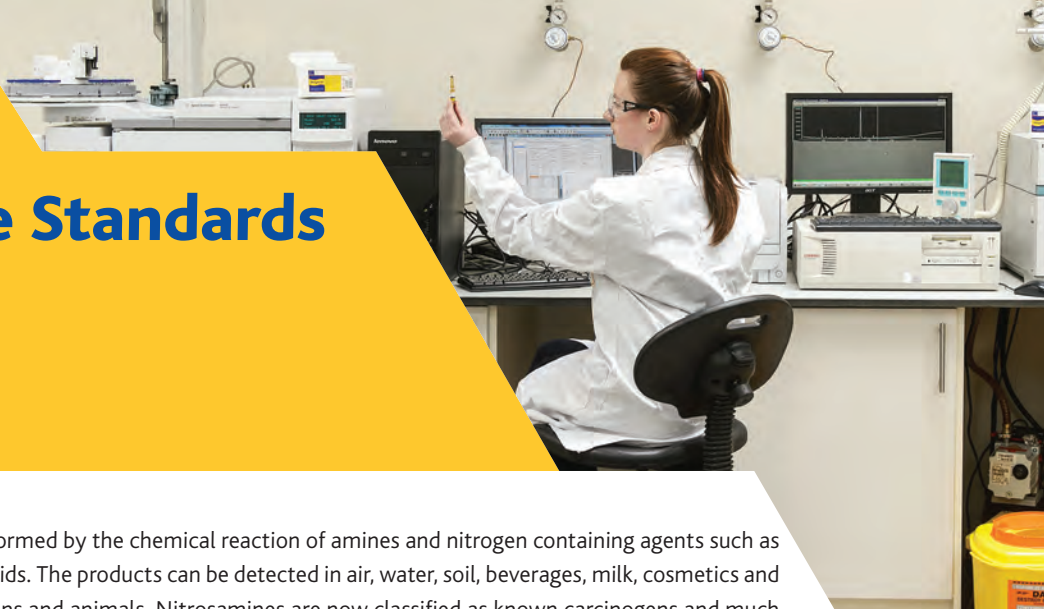
Product No.	Description	Concentration in Matrix	Pack Size
REFAEE001N	Ethyl palmitoleate	Neat	100mg
REFAEE001S	Ethyl palmitoleate	10mg/ml in Hexane	1ml
REFAEE002N	Ethyl caprylate	Neat	100mg
REFAEE002S	Ethyl caprylate	10mg/ml in Hexane	1ml
REFAEE003N	Ethyl caprate	Neat	100mg
REFAEE003S	Ethyl caprate	10mg/ml in Hexane	1ml
REFAEE004N	Ethyl laurate	Neat	100mg
REFAEE004S	Ethyl laurate	10mg/ml in Hexane	1ml
REFAEE005N	Ethyl myristate	Neat	100mg
REFAEE005S	Ethyl myristate	10mg/ml in Hexane	1ml
REFAEE006N	Ethyl palmitate	Neat	100mg
REFAEE006S	Ethyl palmitate	10mg/ml in Hexane	1ml
REFAEE007N	Ethyl stearate	Neat	100mg
REFAEE007S	Ethyl stearate	10mg/ml in Hexane	1ml
REFAEE008N	Ethyl arachidate	Neat	100mg
REFAEE008S	Ethyl arachidate	10mg/ml in Hexane	1ml
REFAEE009N	Ethyl behenate	Neat	100mg
REFAEE009S	Ethyl behenate	10mg/ml in Hexane	1ml
REFAEE010N	Ethyl lignocerate	Neat	100mg
REFAEE010S	Ethyl lignocerate	10mg/ml in Hexane	1ml
REFAEE011N	Ethyl erucate	Neat	100mg
REFAEE011S	Ethyl erucate	10mg/ml in Hexane	1ml
REFAEE012N	Ethyl linoleate	Neat	100mg
REFAEE012S	Ethyl linoleate	10mg/ml in Hexane	1ml
REFAEE013N	Ethyl nervonate	Neat	100mg
REFAEE013S	Ethyl nervonate	10mg/ml in Hexane	1ml
REFAEE014N	Ethyl oleate	Neat	100mg
REFAEE014S	Ethyl oleate	10mg/ml in Hexane	1ml
REFAEE015N	Ethyl heptadecanoate	Neat	100mg
REFAEE015S	Ethyl heptadecanoate	10mg/ml in Hexane	1ml
REFAEE016N	Ethyl linolenate	Neat	100mg
REFAEE016S	Ethyl linolenate	10mg/ml in Hexane	1ml

Should you require FAMES or FAEs in deuterated form, please email [sales@reagecon.ie](mailto:sales@reagecon.ie)

## FAME Calibration Standards

Product No.	Description	% Concentration	Solvent	Pack Size
REFAME-CAL0.5V-250	FAME	0.5	Cyclohexane	250ml
REFAME-CAL1.25V-250	FAME	1.25	Cyclohexane	250ml
REFAME-CAL2.5V-250	FAME	2.5	Cyclohexane	250ml
REFAME-CAL3.75V-250	FAME	3.75	Cyclohexane	250ml
REFAME-CAL5V-250	FAME	5	Cyclohexane	250ml
REFAME-CAL7V-250	FAME	7	Cyclohexane	250ml
REFAME-CAL2V-250	FAME	2	Chevron Phillips High Cetone	250ml
REFAME-CAL4V-250	FAME	4	Chevron Phillips High Cetone	250ml
REFAME-CAL6V-250	FAME	6	Chevron Phillips High Cetone	250ml
REFAME-ENCAL7V-250	FAME	7	Chevron Phillips High Cetone	250ml
REFAME-CAL10V-250	FAME	10	Chevron Phillips High Cetone	250ml
REFAME-CAL15V-250	FAME	15	Chevron Phillips High Cetone	250ml
REFAME-CAL20V-250	FAME	20	Chevron Phillips High Cetone	250ml
REFAME-CAL25V-250	FAME	25	Chevron Phillips High Cetone	250ml
REFAME-CAL30V-250	FAME	30	Chevron Phillips High Cetone	250ml

# Nitrosamine Standards



Nitrosamines are products that are formed by the chemical reaction of amines and nitrogen containing agents such as nitrates, nitrogen oxides or nitrous acids. The products can be detected in air, water, soil, beverages, milk, cosmetics and in the alimentary tract of both humans and animals. Nitrosamines are now classified as known carcinogens and much attention in particular is being paid to the presence of a substance called N-Nitrosodi-Methylamine (NDMA) and several other nitrosamines in drinking water. This substance is accidentally produced during a process called chloramination which is used in water treatment plants to reduce or eliminate trihalomethane levels in drinking water.

The occurrence of several nitrosamines including NDMA has been documented in recycled water, effluent, industrial waste water discharges and sewage sludge. All of these are sources of groundwater contamination and all have the potential to move from groundwater into the potable water system. NDMA is now considered a priority pollutant and a number of local, national and international authorities have set regulatory guidelines for this and other nitrosamines in drinking water. Apart from NDMA, N-Nitrosomethylethylamine (NMEA), N-Nitrosodiethylamine (NDEA), N-Nitrosopyrrolidine (NPYR), N-Nitrosodi-N-Propylamine (NDPA), N-Nitrosopiperidine (NPIP) and N-Nitrosodi-N-Buthylamine (NDBA) are all considered significant.

Since nitrosamines may only be present in various matrices in ppb of ppt levels a high degree of sensitivity in sample management is necessary to monitor their presence. High quality, pure and well characterised standards are an imperative for successful qualitative and quantitative detection and measurement. Reagecon offers neat, single and multi component Standards for Nitrosamine analysis. These Standards are characterised and screened for identity, purity, stability and homogeneity. The products are prepared and certified gravimetrically and verified using GC-MS.

As for all of Reagecon's Standards and Certified Reference Materials (CRM's), the company can produce customised Standards and Private Label options in our Global Metrology Centre in Shannon.

Product No.	Analyte	Concentration & Matrix	Pack Size
RENIT001	N-Nitrosodiethylamine	1000µg/ml in Purge & Trap Methanol	1ml
RENIT002	N-Nitrosodiethylamine	2000µg/ml in Purge & Trap Methanol	1ml
RENIT003	N-Nitrosodimethylamine	1000µg/ml in Purge & Trap Methanol	1ml
RENIT004	N-Nitrosodimethylamine	2000µg/ml in Purge & Trap Methanol	1ml
RENIT005	N-Nitrosodi-n-propylamine	1000µg/ml in Methylene Chloride	1ml
RENIT006	N-Nitrosodi-n-propylamine	2000µg/ml in Methylene Chloride	1ml
RENIT007	N-Nitrosodiphenylamine	1000µg/ml in Methylene Chloride	1ml
RENIT008	N-Nitrosodiphenylamine	2000µg/ml in Methylene Chloride	1ml
RENIT009	N-Nitrosomethylethylamine	1000µg/ml in Purge & Trap Methanol	1ml
RENIT010	N-Nitrosomethylethylamine	2000µg/ml in Purge & Trap Methanol	1ml
RENIT011	N-Nitrosomorpholine	1000µg/ml in Purge & Trap Methanol	1ml
RENIT012	N-Nitrosomorpholine	2000µg/ml in Purge & Trap Methanol	1ml
RENIT013	N-Nitrosopiperidine	1000µg/ml in Purge & Trap Methanol	1ml
RENIT014	N-Nitrosopiperidine	2000µg/ml in Purge & Trap Methanol	1ml
RENIT015	N-Nitrosopyrrolidine	1000µg/ml in Purge & Trap Methanol	1ml
RENIT016	N-Nitrosopyrrolidine	2000µg/ml in Purge & Trap Methanol	1ml

# Polybrominated Biphenyl Standards (PBBs)



Polybrominated biphenyls (PBB's) which may also be called brominated biphenyls, or polybromobiphenyls, are the bromine analogs of Polychlorinated biphenyls (PCB's). Like PCB's, they are man made, hazardous to mammalian health, controlled, or prescribed environmentally but not nearly as commonly used as PCB's in industrial applications.

Like PCB's there are 209 possible congeners which differ from each other in the number and position of the bromine atoms in the two phenyl rings. Also like the PCB's the benzene rings can rotate around the central bond that connects the rings allowing planar and non-planar configurations. These differences in molecular structure are highly relevant in terms of the interaction with different receptors in determining possible toxicological or pathological properties of PBB's.

The products are used as flame retardants and form a subset of the brominated flame retardant group. The products are added to polymers and fibres and have made their way into several types of consumer goods, including computer peripherals, electrical goods, textiles and some furniture products, always to render them, less flammable. PBB's are also highly lipophilic and will accumulate in lipid rich tissues. There is significant evidence of hazards to human health from these products which are certainly proven to be absorbed through the gastrointestinal tract. Such pathological effects include evidence of poor neurodevelopment, specific cancers, and hormonal effects on fertility. Some evidence of immunotoxicity has also been reported.

Reagecon is developing a growing offering of PBB congeners mostly in ready to use format in an isooctane matrix. However, customised matrices, mixtures and other concentrations are also available upon request. Some of the congeners are also offered in neat form. For additional information on this rapidly growing range please visit [www.reagecon.com](http://www.reagecon.com)

## Native PBBs (polybromobiphenyls)

Product No.	Description	Concentration	Pack Size
REPBB001	2-Bromobiphenyl (PBB-1)	50µg/mL in isooctane	1ml
REPBB002	3-Bromobiphenyl (PBB-2)	50µg/mL in isooctane	1ml
REPBB003	4-Bromobiphenyl (PBB-3)	50µg/mL in isooctane	1ml
REPBB004	2,2'-Dibromobiphenyl (PBB-4)	50µg/mL in isooctane	1ml
REPBB007	2,4-Dibromobiphenyl (PBB-7)	50µg/mL in isooctane	1ml
REPBB009	2,5-Dibromobiphenyl (PBB-9)	50µg/mL in isooctane	1ml
REPBB010	2,6-Dibromobiphenyl (PBB-10)	50µg/mL in isooctane	1ml
REPBB015	4,4'-Dibromobiphenyl (PBB-15)	50µg/mL in isooctane	1ml
REPBB018	2,2',5-Tribromobiphenyl (PBB-18)	50µg/mL in isooctane	1ml
REPBB026	2,3',5-Tribromobiphenyl (PBB-26)	50µg/mL in isooctane	1ml
REPBB029	2,4,5-Tribromobiphenyl (PBB-29)	50µg/mL in isooctane	1ml
REPBB031	2,4',5-Tribromobiphenyl (PBB-31)	50µg/mL in isooctane	1ml
REPBB038	3,4,5-Tribromobiphenyl (PBB-38)	50µg/mL in isooctane	1ml
REPBB049	2,2',4,5'-Tetrabromobiphenyl (PBB-49)	50µg/mL in isooctane	1ml
REPBB052	2,2',5,5'-Tetrabromobiphenyl (PBB-52)	50µg/mL in isooctane	1ml
REPBB056	2,2',5,6'-Tetrabromobiphenyl (PBB-56)	50µg/mL in isooctane	1ml
REPBB077	3,3',4,4'-Tetrabromobiphenyl (PBB-77)	50µg/mL in isooctane	1ml
REPBB080	3,3',5,5'-Tetrabromobiphenyl (PBB-80)	50µg/mL in isooctane	1ml
REPBB103	2,2',4,5',6-Pentabromobiphenyl (PBB-103)	50µg/mL in isooctane	1ml
REPBB126	3,3',4,5,5'-Pentabromobiphenyl (PBB-126)	50µg/mL in isooctane	1ml
REPBB153	2,2',4,4',5,5'-Hexabromobiphenyl (PBB-153)	50µg/mL in hexane	1ml
REPBB155	2,2',4,4',6,6'-Hexabromobiphenyl (PBB-155)	50µg/mL in isooctane	1ml
REPBB169	3,3',4,4',5,5'-Hexabromobiphenyl (PBB-169)	10µg/mL in cyclohexane	1ml
REPBB189	2,3,3',4,4',5,5'-Heptabromobiphenyl (PBB-189)	50µg/mL in isooctane	1ml
REPBB194	2,2',3,3',4,4',5,5'-Octabromobiphenyl (PBB-194)	50µg/mL in isooctane	1ml
REPBB203	2,2',3,4,4',5,5',6-Octabromobiphenyl (PBB-203)	50µg/mL in isooctane	1ml
REPBB205	2,3,3',4,4',5,5',6-Octabromobiphenyl (PBB-205)	50µg/mL in isooctane	1ml
REPBB206	2,2',3,3',4,4',5,5',6-Nonabromobiphenyl (PBB-206)	50µg/mL in isooctane	1ml
REPBB209	Decabromobiphenyl (PBB-209)	50µg/mL in isooctane	1ml
REPBB209N	Decabromobiphenyl (PBB-209)	Neat	5mg

# Polybrominated Diphenyl Ethers (PBDEs) & Other Flame Retardant Standards

## Polybrominated Diphenyl Ethers (PBDE's) & Other Flame Retardants

Polybrominated Diphenyl Ethers (PBDE's) are a subgroup of the wider brominated flame retardant family. Structurally, they are similar to Polychlorinated Biphenyls (PCB's) and like PCB's there are, in total, 209 different congeners or isomers. The compounds are classified according to the average number of Bromine atoms in the molecule.

The congeners occur as mono-, di-, tri-, tetra-, penta-, hexa-, hepta-, octa-, nono-, and decabromodiphenyl ethers and the numbers of each respectively are 3, 12, 24, 42, 46, 42, 24, 12, 3, and 1, all adding up to 209 in total. The three main commercial mixtures that were available on the market include pentaBDE, octaBDE and decaBDE. The pentaBDE mixture contains tetrabromates, hexabromates and traces of tribromates in addition to the pentabromates. OctaBDE includes hexa, hepta, nona and decabromates as well as the octa congeners. There are no known natural sources of PBDE's, although some evidence exists in the literature that PBDE variants may be produced by marine organisms, but all commercial mixtures were man made.

PBDE's have been used in a wide variety of products as flame retardants, including building materials, electronics, furnishings, motor vehicles, household appliances, plastics, foams and textiles. Like PCB's, these products exhibit high lipophilicity and therefore accumulate in fatty tissues. Unlike PCB's, they are easier to degrade because of the weaker bromine bonds and unlike PCB's there is less concern about their toxicity upon degradation.

There is evidence from animal studies that PBDE's are injurious to health, but the evidence is spurious, and specific effects are not clearly elucidated. There is evidence of the products acting as endocrine disruptors, possibilities that they may act as a teratogen and some studies have identified neurodevelopmental toxicity in mice.

Humans may either ingest orally or through the respiratory tract. Waters used in the manufacture of PBDE containing products are at high risk of contamination and pose risks if ingested. Staff in repair or recycling plants are also at risk but inhalation or food ingestion in a domestic context also poses potential health hazards. The products have also been detected in dust, sludge and wastewater effluent and there is no doubt about their ability to bioaccumulate. Detection methods include GC, GC-MS and various LC combinations.

## Native PBDEs

Product No.	Description	Concentration	Pack Size
REPBDE001	2-Bromodiphenyl ether (PBDE-1)	50µg/mL in isooctane	1ml
REPBDE002	3-Bromodiphenyl ether (PBDE-2)	50µg/mL in isooctane	1ml
REPBDE003	4-Bromodiphenyl ether (PBDE-3)	50µg/mL in isooctane	1ml
REPBDE003N	4-Bromodiphenyl ether (PBDE-3)	Neat	5mg
REPBDE007	2,4-Dibromodiphenyl ether (PBDE-7)	50µg/mL in isooctane	1ml
REPBDE0013	3,4'-Dibromodiphenyl ether (PBDE-13)	50µg/mL in isooctane	1ml
REPBDE0015	4,4'-Dibromodiphenyl ether (PBDE-15)	50µg/mL in isooctane	1ml
REPBDE0015N	4,4'-Dibromodiphenyl ether (PBDE-15)	Neat	5mg
REPBDE0017	2,2',4-Tribromodiphenyl ether (PBDE-17)	50µg/mL in isooctane	1ml

Product No.	Description	Concentration	Pack Size
REPBDE0017N	2,2',4-Tribromodiphenyl ether (PBDE-17)	Neat	5mg
REPBDE0025	2,3',4-Tribromodiphenyl ether (PBDE-25)	50µg/mL in isooctane	1ml
REPBDE0025N	2,3',4-Tribromodiphenyl ether (PBDE-25)	Neat	5mg
REPBDE0028	2,4,4'-Tribromodiphenyl ether (PBDE-28)	50µg/mL in isooctane	1ml
REPBDE0028N	2,4,4'-Tribromodiphenyl ether (PBDE-28)	Neat	5mg
REPBDE0033	3,3',4-Tribromodiphenyl ether (PBDE-33)	50µg/mL in isooctane	1ml
REPBDE0033N	3,3',4-Tribromodiphenyl ether (PBDE-33)	Neat	5mg
REPBDE0047	2,2',4,4'-Tetrabromodiphenyl ether (PBDE-47)	50µg/mL in isooctane	1ml
REPBDE0047N	2,2',4,4'-Tetrabromodiphenyl ether (PBDE-47)	Neat	5mg
REPBDE0049	2,2',4,5'-Tetrabromodiphenyl ether (PBDE-49)	50µg/mL in isooctane	1ml
REPBDE0049N	2,2',4,5'-Tetrabromodiphenyl ether (PBDE-49)	Neat	5mg
REPBDE0066	2,3',4,4'-Tetrabromodiphenyl ether (PBDE-66)	50µg/mL in isooctane	1ml
REPBDE0066N	2,3',4,4'-Tetrabromodiphenyl ether (PBDE-66)	Neat	5mg
REPBDE0071	2,3',4',6-Tetrabromodiphenyl ether (PBDE-71)	50µg/mL in isooctane	1ml
REPBDE0071N	2,3',4',6-Tetrabromodiphenyl ether (PBDE-71)	Neat	5mg
REPBDE0075	2,4,4',6-Tetrabromodiphenyl ether (PBDE-75)	50µg/mL in isooctane	1ml
REPBDE0075N	2,4,4',6-Tetrabromodiphenyl ether (PBDE-75)	Neat	5mg
REPBDE0077	3,3',4,4'-Tetrabromodiphenyl ether (PBDE-77)	50µg/mL in isooctane	1ml
REPBDE0077N	3,3',4,4'-Tetrabromodiphenyl ether (PBDE-77)	Neat	5mg
REPBDE0085	2,2',3,4,4'-Pentabromodiphenyl ether (PBDE-85)	50µg/mL in isooctane	1ml
REPBDE0085N	2,2',3,4,4'-Pentabromodiphenyl ether (PBDE-85)	Neat	5mg
REPBDE0099	2,2',4,4',5-Pentabromodiphenyl ether (PBDE-99)	50µg/mL in isooctane	1ml
REPBDE0099N	2,2',4,4',5-Pentabromodiphenyl ether (PBDE-99)	Neat	5mg
REPBDE0100	2,2',4,4',6-Pentabromodiphenyl ether (PBDE-100)	50µg/mL in isooctane	1ml
REPBDE0100N	2,2',4,4',6-Pentabromodiphenyl ether (PBDE-100)	Neat	5mg
REPBDE0118	2,3',4,4',5-Pentachlorobiphenyl ether (PBDE-118)	50µg/mL in isooctane	1ml
REPBDE0119	2,3',4,4',6-Pentabromodiphenyl ether (PBDE-119)	50µg/mL in isooctane	1ml
REPBDE0119N	2,3',4,4',6-Pentabromodiphenyl ether (PBDE-119)	Neat	5mg
REPBDE0138	2,2',3,4,4',5-Hexabromodiphenyl ether (PBDE-138)	50µg/mL in isooctane	1ml
REPBDE0138N	2,2',3,4,4',5-Hexabromodiphenyl ether (PBDE-138)	Neat	5mg
REPBDE0153	2,2',4,4',5,5'-Hexabromodiphenyl ether (PBDE-153)	50µg/mL in isooctane	1ml
REPBDE0153N	2,2',4,4',5,5'-Hexabromodiphenyl ether (PBDE-153)	Neat	5mg
REPBDE0154	2,2',4,4',5,6'-Hexabromodiphenyl ether (PBDE-154)	50µg/mL in isooctane	1ml
REPBDE0154N	2,2',4,4',5,6'-Hexabromodiphenyl ether (PBDE-154)	Neat	5mg
REPBDE0181	2,2',3,4,4',5,6-Heptabromodiphenyl ether (PBDE-181)	50µg/mL in isooctane	1ml
REPBDE0183	2,2',3,4,4',5',6-Heptabromodiphenyl ether (PBDE-183)	50µg/mL in isooctane	1ml
REPBDE0183N	2,2',3,4,4',5',6-Heptabromodiphenyl ether (PBDE-183)	Neat	5mg
REPBDE0190	2,3,3',4,4',5,6-Heptabromodiphenyl ether (PBDE-190)	50µg/mL in isooctane	1ml
REPBDE0190N	2,3,3',4,4',5,6-Heptabromodiphenyl ether (PBDE-190)	Neat	5mg
REPBDE0195	2,2',3,3',4,4',5,6-Octabromodiphenyl ether (PBDE-195)	50µg/mL in isooctane	1ml
REPBDE0196	2,2',3,3',4,4',5,6'-Octabromodiphenyl ether (PBDE-196)	50µg/mL in isooctane	1ml
REPBDE0203	2,2',3,4,4',5,5',6'-Octabromodiphenyl ether (PBDE-203)	50µg/mL in Isooctane	1ml
REPBDE0203N	2,2',3,4,4',5,5',6'-Octabromodiphenyl ether (PBDE-203)	Neat	5mg

## Native PBDEs

Product No.	Description	Concentration	Pack Size
REPBDE0205	2,3,3',4,4',5,5',6-Octabromodiphenyl ether (PBDE-205)	50µg/mL in isooctane	1ml
REPBDE0205N	2,3,3',4,4',5,5',6-Octabromodiphenyl ether (PBDE-205)	Neat	5mg
REPBDE0206	2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether (PBDE-206)	50µg/mL in isooctane	1ml
REPBDE0207	2,2',3,3',4,4',5,5',6,6'-Nonabromodiphenyl ether (PBDE-207)	50µg/mL in isooctane	1ml
REPBDE0208	2,2',3,3',4,4',5,5',6,6'-Nonabromodiphenyl ether (PBDE-208)	50µg/mL in isooctane	1ml
REPBDE0209	Decabromodiphenyl ether (PBDE-209)	50µg/mL in toluene	1ml
REPBDE0209N	Decabromodiphenyl ether (PBDE-209)	Neat	5mg

## Halogenated Flame Retardants

Product No.	Description	Concentration	Pack Size
REPBDE0400	2,2-Bis[3,5-dibromo-4-(2,3-dibromopropoxy)phenyl]propane	50µg/mL in toluene	1ml
REPBDE0401	1,2-Bis(2,4,6-tribromophenoxy)ethane	50µg/mL in toluene	1ml
REPBDE0402	Butyldiphenylphosphate	1000µg/mL in isopropanol	1ml
REPBDE0403	Decabromodiphenylethane	50µg/mL in chlorobenzene	1ml
REPBDE0404	Dechlorane plus	50µg/mL in toluene	1ml
REPBDE0405	Dibromoneopentylglycol	50µg/mL in isopropanol	1ml
REPBDE0406	Dibutylphenylphosphate	1000µg/mL in isopropanol	1ml
REPBDE0407	Ethylene bis(tetrabromophthalamide	Neat	10mg
REPBDE0408	1,2,3,4,5,6-Hexabromocyclohexane	50µg/mL in isooctane	1ml
REPBDE0409	1,2,5,6,9,10-Hexabromocyclododecane	1000µg/mL in toluene	1ml
REPBDE0410	Pentabromoethylbenzene	50µg/mL in isooctane	1ml
REPBDE0411	3,3',5,5'-Tetrabromobisphenol A	50µg/mL in isooctane	1ml
REPBDE0412	2,2',6,6'-Tetrabromobisphenol A diallyl ether	50µg/mL in toluene	1ml
REPBDE0413	3,3',5,5'-Tetrabromobisphenol A dimethyl ether	50µg/mL in isooctane	1ml
REPBDE0414	3,3',5,5'-Tetrabromobisphenol A bis(2,3-dibromopropyl) ether	50µg/mL in isooctane	1ml
REPBDE0415	3,3',5,5'-Tetrabromobisphenol A bis(2-hydroxyethyl) ether	50µg/mL in isooctane	1ml
REPBDE0416	2,4,6-Tribromophenylallyl ether	50µg/mL in isooctane	1ml
REPBDE0417	Tetrabromophthalic anhydride	50µg/mL in isooctane	1ml
REPBDE0418	Tetradecabromo-1,4-diphenoxybenzene	50µg/mL in cyclohexane	1ml



## Flame Retardants / F-PBDE Internal Standards

Product No.	Description	Concentration	Pack Size
REPBDE0300	2-Fluorodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0301	4-Fluorodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0302	2,4'-Difluorodiphenyl ether	1000µg/mL in isooctane	1ml
REPBDE0303	3,3'-Difluorodiphenyl ether	1000µg/mL in isooctane	1ml
REPBDE0304	3-Bromo-4'-fluorodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0305	3'-Fluoro-2,4-dibromodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0306	3'-Fluoro-3,4-dibromodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0307	4'-Fluoro-2,3,4-tribromodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0308	4'-Fluoro-2,3,6-tribromodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0309	2'-Fluoro-2,4,4'-tribromodiphenyl ether	50µg/mL in toluene	1ml
REPBDE0310	2'-Fluoro-2,4,4'-tribromodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0311	6-Fluoro-2,2',4,4'-tetrabromodiphenyl ether	50µg/mL in toluene	1ml
REPBDE0312	6-Fluoro-2,2',4,4'-tetrabromodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0313	5,5'-Difluoro-2,2',4,4'-tetrabromodiphenyl ether (2,2',4,4'-Tetrabromo-5,5'-difluorodiphenyl ether)	50µg/mL in toluene	1ml
REPBDE0314	5,5'-Difluoro-2,2',4,4'-tetrabromodiphenyl ether (2,2',4,4'-Tetrabromo-5,5'-difluorodiphenyl ether)	50µg/mL in isooctane	1ml
REPBDE0315	6-Fluoro-2,3',4,4'-tetrabromodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0316	4'-Fluoro-2,3',4,6-tetrabromodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0317	5,6-Difluoro-2,2',3,4,4'-pentabromodiphenyl ether (2,2',3,4,4'-Pentabromo-5,6-difluorodiphenyl ether)	50µg/mL in isooctane	1ml
REPBDE0318	3,6-Difluoro-2,2',4,4',5-pentabromodiphenyl ether (2,2',4,4',5-Pentabromo-3,6-difluorodiphenyl ether)	50µg/mL in isooctane	1ml
REPBDE0319	3-Fluoro-2,2',4,4',6-pentabromodiphenyl ether	50µg/mL in toluene	1ml
REPBDE0320	3-Fluoro-2,2',4,4',6-pentabromodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0321	3-Fluoro-2,3',4,4',6-pentabromodiphenyl ether	50µg/mL in Isooctane	1ml
REPBDE0322	3,5-Difluoro-2,3',4,4',6-pentabromodiphenyl ether (2,3',4,4',6-Pentabromo-3,5-difluorodiphenyl ether)	50µg/mL in isooctane	1ml
REPBDE0323	4'-Fluoro-2,3,3',4,5,6-hexabromodiphenyl ether	50µg/mL in toluene	1ml
REPBDE0324	3-Fluoro-2,2',4,4',5,5',6-heptabromodiphenyl ether	50µg/mL in toluene	1ml
REPBDE0325	4',6-Difluoro-2,2',3,3',4,5,5',6'-octabromodiphenyl ether	50µg/mL in toluene	1ml
REPBDE0326	4'-Fluoro-2,2',3,3',4,5,5',6,6'-nonabromodiphenyl ether	50µg/mL in isooctane	1ml
REPBDE0327	4'-Fluoro-2,2',3,3',4,5,5',6,6'-nonabromodiphenyl ether	50µg/mL in toluene	1ml

## Phosphor-Phosphate-based Flame Retardants

Product No.	Description	Concentration	Pack Size
REPBDE0500	Bis(2,3-dibromopropyl)phosphate, tech.	50µg/mL in isooctane	1ml
REPBDE0501	Bis(2,3-dibromopropyl)phosphate	50µg/mL in isooctane	1ml
REPBDE0502	Bisphenol A bis(diphenyl)phosphate	50µg/mL in methanol	1ml
REPBDE0503	9,10-Dihydro-9-Oxa-10-Phosphaphenatrene-10-Oxide	50µg/mL in isooctane	1ml
REPBDE0504	2-Ethylhexyldiphenylphosphate	Neat	1g
REPBDE0505	Isopropylated trisphenyl phosphate (Phenol, isopropylated, phosphate)	Neat	1g
REPBDE0506	Phenoxyterminated carbonate oligomer of tetrabromobisphenol A	Neat	1g
REPBDE0507	Polyphosphoric acids ammonium salt	Neat	1g
REPBDE0508	2,4,6-Tribromophenylterminated tetrabromobisphenol	Neat	1g
REPBDE0509	Tetraphenylrecorcinol bis(diphenylphosphate)	50µg/mL in methanol	1ml
REPBDE0510	Tris-(aziridinyl)-phosphineoxide	100µg/mL in methanol	1ml
REPBDE0511	Tris-(aziridinyl)-phosphineoxide	500µg/mL in methanol	1ml
REPBDE0512	Tris(2,3-dibromopropyl)phosphate, tech.	Neat	100mg
REPBDE0513	Tris(2,3-dibromopropyl)phosphate	50µg/mL in methanol	1ml
REPBDE0514	Tris(2,3-dichloropropyl)phosphate	1000µg/mL in methanol	1ml
REPBDE0515	Tris(2-ethylhexyl)phosphate	1000µg/mL in methanol	1ml
REPBDE0516	Tri-n-butylphosphate-d27	100µg/mL in isooctane	1ml
REPBDE0517	Triethylphosphate-d15	100µg/mL in isooctane	1ml
REPBDE0518	Trimethylphosphate-d9	100µg/mL in isooctane	1ml
REPBDE0519	Triphenylphosphate-d15	100µg/mL in isooctane	1ml
REPBDE0520	Tri-n-propylphosphate-d21	100µg/mL in isooctane	1ml

# Polychlorinated Biphenyl Standards (PCBs)

## Introduction

Polychlorinated biphenyls (PCB's) are man made organic chemicals derived from combining between 1 and 10 chlorine atoms with biphenyls, a molecule that is composed of two benzene rings. When all of the possible positions of the chlorine atoms on the benzene rings are taken into account, a total of 209 configurations are possible and these are called congeners. Of these 209 congeners about 130 have been used in commercial preparations, since the introduction of the products into the marketplace by a company called Swann Chemical Company, which commenced production in 1929. Synthesis at laboratory scale began in 1881 and from then significant amounts of PCB's were already being released into the environment.

## Applications

The commercial uses of PCB's were based on the products being good insulators, chemically stable and of low flammability. Therefore, they were used for a range of applications that include: coolants and insulating fluids for capacitors and transformers, hydraulic fluids, cutting oils, copying paper, plasticisers in paints and cements, additives in PVC coatings and as pesticide extenders. They also had a myriad of other commercial uses, description of which is beyond the scope of this document.

Often PCB's were sold as commercial mixtures under trade names, including Arochlor's, which is a brand name of Monsanto. Such Arochlor's had a four digit numbering system, with the first two digits referring to the number of carbons in the two benzene rings (12 in the case of PCB's) and the second two digits referred to the percentage of chlorine by mass in the mixture, although there are exceptions to this nomenclature. Arochlor's varied in terms of what they were used for, depending on availability and suitability for particular applications.

## Presence in the Environment

PCB's are highly resistant to oxidation or reduction processes, which makes them stable and persistent pollutants (POPs). They are unstable in water, which makes them more stable in the environment chemically and either intentional or natural destruction may lead to the generation and release of extremely toxic materials such as Dibenzodioxins and Dibenzofurans through partial oxidation.

Many rivers, lakes, buildings and other sites are contaminated by PCB's and they have been found also in soil and air. Because of their lipophilic properties, they are to be found in foodstuffs and at various points of the food chain.

## Health Effects

PCB's are readily absorbed through skin, but can also be absorbed through polyvinyl chloride (PVC) or latex rubber. However, most human absorption is through the alimentary or respiratory routes and once ingested they may change in chemical structure. One of the physical properties of PCB's includes lipophilicity which causes bioaccumulation in both adipose tissue and in liver tissue.

Persons exposed to very high levels may experience skin lesions, liver damage, ocular lesions, lowered immunity and irregular menstrual cycles by interference with estradiol. Generalised symptoms can include headaches, fatigue and cough. More severe symptomatic outcomes may include cancers, sexual, skeletal, and mental under-development in both sexes. In fact, evidence of reduced levels of certain thyroid hormones could have an adverse effect on every physiological process within the body.

## Analytical Methods

Generally the analytical method of choice for PCB's is Gas Chromatography using very specific columns and detectors. Reagecon can now offer over 80 of the most commercially sought after PCB standards ready to use in either isooctane or cyclohexane or as neat materials. We can also offer a wide range of PCB mixtures and offer several Aroclor's in various matrices.

## PCB Single Element Congeners

Product No.	Description	Concentration in Matrix	Pack Size
REPCB1001	4-Chlorobiphenyl (PCB-3)	100µg/mL in Isooctane	1ml
REPCB1001N	4-Chlorobiphenyl (PCB-3)	Neat	5mg
REPCB1002	2,4-Dichlorobiphenyl (PCB-7)	100µg/mL in Isooctane	1ml
REPCB1002N	2,4-Dichlorobiphenyl (PCB-7)	Neat	5mg
REPCB1003	2,4'-Dichlorobiphenyl (PCB-8)	100µg/mL in Isooctane	1ml
REPCB1003N	2,4'-Dichlorobiphenyl (PCB-8)	Neat	5mg
REPCB1004	2,6-Dichlorobiphenyl (PCB-10)	100µg/mL in Isooctane	1ml
REPCB1004N	2,6-Dichlorobiphenyl (PCB-10)	Neat	5mg
REPCB1005	3,5-Dichlorobiphenyl (PCB-14)	100µg/mL in Isooctane	1ml
REPCB1005N	3,5-Dichlorobiphenyl (PCB-14)	Neat	5mg
REPCB1006	4,4'-Dichlorobiphenyl (PCB-15)	100µg/mL in Isooctane	1ml
REPCB1006N	4,4'-Dichlorobiphenyl (PCB-15)	Neat	5mg
REPCB1007	2,2',5-Trichlorobiphenyl (PCB-18)	100µg/mL in Isooctane	1ml
REPCB1007N	2,2',5-Trichlorobiphenyl (PCB-18)	Neat	5mg
REPCB1008	2,3,3'-Trichlorobiphenyl (PCB-20)	100µg/mL in Isooctane	1ml
REPCB1008N	2,3,3'-Trichlorobiphenyl (PCB-20)	Neat	5mg
REPCB1009	2,3,4'-Trichlorobiphenyl (PCB-22)	100µg/mL in isooctane	1ml
REPCB1009N	2,3,4'-Trichlorobiphenyl (PCB-22)	Neat	5mg
REPET195	2,4,4'-Trichlorobiphenyl (PCB-28)	100µg/mL in Isooctane	1ml
REPET195N	2,4,4'-Trichlorobiphenyl (PCB-28)	Neat	5mg
REPCB1011	2,4,5-Trichlorobiphenyl (PCB-29)	100µg/mL in Isooctane	1ml
REPCB1011N	2,4,5-Trichlorobiphenyl (PCB-29)	Neat	5mg
REPCB1012	2,4,6-Trichlorobiphenyl (PCB-30)	100µg/mL in Isooctane	1ml
REPCB1012N	2,4,6-Trichlorobiphenyl (PCB-30)	Neat	5mg
REPCB1013	2,4',5-Trichlorobiphenyl (PCB-31)	100µg/mL in Isooctane	1ml
REPCB1013N	2,4',5-Trichlorobiphenyl (PCB-31)	Neat	5mg
REPCB1014	2',3,5-Trichlorobiphenyl (PCB-34)	100µg/mL in Isooctane	1ml
REPCB1014N	2',3,5-Trichlorobiphenyl (PCB-34)	Neat	5mg
REPCB1015	3,3',4-Trichlorobiphenyl (PCB-35)	100µg/mL in Isooctane	1ml
REPCB1015N	3,3',4-Trichlorobiphenyl (PCB-35)	Neat	5mg
REPCB1016	3,4,4'-Trichlorobiphenyl (PCB-37)	100µg/mL in isooctane	1ml
REPCB1016N	3,4,4'-Trichlorobiphenyl (PCB-37)	Neat	5mg
REPCB1017	3,4',5-Trichlorobiphenyl (PCB-39)	100µg/mL in isooctane	1ml
REPCB1017N	3,4',5-Trichlorobiphenyl (PCB-39)	Neat	5mg
REPCB1018	2,2',3,4'-Tetrachlorobiphenyl (PCB-42)	100µg/mL in isooctane	1ml

Product No.	Description	Concentration in Matrix	Pack Size
REPCB1018N	2,2',3,4'-Tetrachlorobiphenyl (PCB-42)	Neat	5mg
REPCB1019	2,2',3,5'-Tetrachlorobiphenyl (PCB-44)	100µg/mL in Isooctane	1ml
REPCB1019N	2,2',3,5'-Tetrachlorobiphenyl (PCB-44)	Neat	5mg
REPCB1020	2,2',4,4'-Tetrachlorobiphenyl (PCB-47)	100µg/mL in isooctane	1ml
REPCB1020N	2,2',4,4'-Tetrachlorobiphenyl (PCB-47)	Neat	5mg
REPCB1021	2,2',4,5'-Tetrachlorobiphenyl (PCB-49)	100µg/mL in isooctane	1ml
REPCB1021N	2,2',4,5'-Tetrachlorobiphenyl (PCB-49)	Neat	5mg
REPET196	2,2',5,5'-Tetrachlorobiphenyl (PCB-52)	100µg/mL in Isooctane	1ml
REPET196N	2,2',5,5'-Tetrachlorobiphenyl (PCB-52)	Neat	5mg
REPCB1023	2,2',5,6'-Tetrachlorobiphenyl (PCB-53)	100µg/mL in Isooctane	1ml
REPCB1023N	2,2',5,6'-Tetrachlorobiphenyl (PCB-53)	Neat	5mg
REPCB1024	2,2',6,6'-Tetrachlorobiphenyl (PCB-54)	100µg/mL in Isooctane	1ml
REPCB1024N	2,2',6,6'-Tetrachlorobiphenyl (PCB-54)	Neat	5mg
REPCB1025	2,3,3',4'-Tetrahalorobiphenyl (PCB-55)	100µg/mL in Isooctane	1ml
REPCB1025N	2,3,3',4'-Tetrahalorobiphenyl (PCB-55)	Neat	5mg
REPCB1026	2,3,5,6-Tetrachlorobiphenyl (PCB-65)	100µg/mL in methanol	1ml
REPCB1026N	2,3,5,6-Tetrachlorobiphenyl (PCB-65)	Neat	5mg
REPCB1027	2,3',4,4'-Tetrachlorobiphenyl (PCB-66)	100µg/mL in isooctane	1ml
REPCB1027N	2,3',4,4'-Tetrachlorobiphenyl (PCB-66)	Neat	5mg
REPCB1028	2,3',4,5-Tetrachlorobiphenyl (PCB-67)	100µg/mL in isooctane	1ml
REPCB1028N	2,3',4,5-Tetrachlorobiphenyl (PCB-67)	Neat	5mg
REPCB1029	2,4,4',5-Tetrachlorobiphenyl (PCB-74)	100µg/mL in Isooctane	1ml
REPCB1029N	2,4,4',5-Tetrachlorobiphenyl (PCB-74)	Neat	5mg
REPCB1030	3,3',4,4'-Tetrachlorobiphenyl (PCB-77)	100µg/mL in Isooctane	1ml
REPCB1030N	3,3',4,4'-Tetrachlorobiphenyl (PCB-77)	Neat	5mg
REPCB1031	3,3',4,5-Tetrachlorobiphenyl (PCB-78)	100µg/mL in Isooctane	1ml
REPCB1031N	3,3',4,5-Tetrachlorobiphenyl (PCB-78)	Neat	5mg
REPCB1032	3,4,4',5-Tetrachlorobiphenyl (PCB-81)	100µg/mL in Isooctane	1ml
REPCB1032N	3,4,4',5-Tetrachlorobiphenyl (PCB-81)	Neat	5mg
REPCB1033	2,2',3,5,6-Pentachlorobiphenyl (PCB-95)	100µg/mL in Isooctane	1ml
REPCB1033N	2,2',3,5,6-Pentachlorobiphenyl (PCB-95)	Neat	5mg
REPCB1034	2,2',4,4',5-Pentachlorobiphenyl (PCB-99)	100µg/mL in Isooctane	1ml
REPCB1034N	2,2',4,4',5-Pentachlorobiphenyl (PCB-99)	Neat	5mg
REPCB1035	2,2',4,4',6-Pentachlorobiphenyl (PCB-100)	100µg/mL in Isooctane	1ml
REPCB1035N	2,2',4,4',6-Pentachlorobiphenyl (PCB-100)	Neat	5mg
REPET197	2,2',4,5,5'-Pentachlorobiphenyl (PCB-101)	100µg/mL in Isooctane	1ml

## PCB Single Element Congeners

Product No.	Description	Concentration in Matrix	Pack Size
REPET197N	2,2',4,5,5'-Pentachlorobiphenyl (PCB-101)	Neat	5mg
REPCB1037	2,2',4,6,6'-Pentachlorobiphenyl (PCB-104)	100µg/mL in Isooctane	1ml
REPCB1037N	2,2',4,6,6'-Pentachlorobiphenyl (PCB-104)	Neat	5mg
REPCB1038	2,3,3',4,4'-Pentachlorobiphenyl (PCB-105)	100µg/mL in Isooctane	1ml
REPCB1038N	2,3,3',4,4'-Pentachlorobiphenyl (PCB-105)	Neat	5mg
REPCB1039	2,3,3',5,5'-Pentachlorobiphenyl (PCB-111)	100µg/mL in isooctane	1ml
REPCB1039N	2,3,3',5,5'-Pentachlorobiphenyl (PCB-111)	Neat	5mg
REPCB1040	2,3,3',5,6-Pentachlorobiphenyl (PCB-112)	100µg/mL in isooctane	1ml
REPCB1040N	2,3,3',5,6-Pentachlorobiphenyl (PCB-112)	Neat	5mg
REPCB1041	2,3,4,4',5-Pentachlorobiphenyl (PCB-114)	100µg/mL in Isooctane	1ml
REPCB1041N	2,3,4,4',5-Pentachlorobiphenyl (PCB-114)	Neat	5mg
REPCB1042	2,3,4',5,6-Pentachlorobiphenyl (PCB-117)	100µg/mL in Isooctane	1ml
REPCB1042N	2,3,4',5,6-Pentachlorobiphenyl (PCB-117)	Neat	5mg
REPCB1043	2,3',4,4',5-Pentachlorobiphenyl (PCB-118)	100µg/mL in Isooctane	1ml
REPCB1043N	2,3',4,4',5-Pentachlorobiphenyl (PCB-118)	Neat	5mg
REPCB1044	2,3',4,4',6-Pentachlorobiphenyl (PCB-119)	100µg/mL in Isooctane	1ml
REPCB1044N	2,3',4,4',6-Pentachlorobiphenyl (PCB-119)	Neat	5mg
REPCB1045	2',3,4,4',5-Pentachlorobiphenyl (PCB-123)	100µg/mL in Isooctane	1ml
REPCB1045N	2',3,4,4',5-Pentachlorobiphenyl (PCB-123)	Neat	5mg
REPCB1046	2,3',4',5',6-Pentachlorobiphenyl (PCB-125)	100µg/mL in isooctane	1ml
REPCB1046N	2,3',4',5',6-Pentachlorobiphenyl (PCB-125)	Neat	5mg

Product No.	Description	Concentration in Matrix	Pack Size
REPCB1047	3,3',4,4',5-Pentachlorobiphenyl (PCB-126)	100µg/mL in Isooctane	1ml
REPCB1047N	3,3',4,4',5-Pentachlorobiphenyl (PCB-126)	Neat	5mg
REPCB1048	2,2',3,4,4',5-Hexachlorobiphenyl (PCB-137)	100µg/mL in Isooctane	1ml
REPCB1048N	2,2',3,4,4',5-Hexachlorobiphenyl (PCB-137)	Neat	5mg
REPET198	2,2',3,4,4',5'-Hexachlorobiphenyl (PCB-138)	100µg/mL in Isooctane	1ml
REPET198N	2,2',3,4,4',5'-Hexachlorobiphenyl (PCB-138)	Neat	5mg
REPCB1050	2,2',3,4,5'-Hexachlorobiphenyl (PCB-141)	100µg/mL in Isooctane	1ml
REPCB1050N	2,2',3,4,5'-Hexachlorobiphenyl (PCB-141)	Neat	5mg
REPCB1051	2,2',3,4,5,6'-Hexachlorobiphenyl (PCB-143)	100µg/mL in Isooctane	1ml
REPCB1051N	2,2',3,4,5,6'-Hexachlorobiphenyl (PCB-143)	Neat	5mg
REPCB1052	2,2',3,4,5',6-Hexachlorobiphenyl (PCB-149)	100µg/mL in Isooctane	1ml
REPCB1052N	2,2',3,4,5',6-Hexachlorobiphenyl (PCB-149)	Neat	5mg
REPET199	2,2',4,4',5,5'-Hexachlorobiphenyl (PCB-153)	100µg/mL in Isooctane	1ml
REPET199N	2,2',4,4',5,5'-Hexachlorobiphenyl (PCB-153)	Neat	5mg
REPCB1054	2,2',4,4',6,6'-Hexachlorobiphenyl (PCB-155)	100µg/mL in Isooctane	1ml
REPCB1054N	2,2',4,4',6,6'-Hexachlorobiphenyl (PCB-155)	Neat	5mg
REPCB1055	2,3,3',4,4',5-Hexachlorobiphenyl (PCB-156)	100µg/mL in Isooctane	1ml
REPCB1055N	2,3,3',4,4',5-Hexachlorobiphenyl (PCB-156)	Neat	5mg
REPCB1056	2,3,3',4,4',5'-Hexachlorobiphenyl (PCB-157)	100µg/mL in Isooctane	1ml
REPCB1056N	2,3,3',4,4',5'-Hexachlorobiphenyl (PCB-157)	Neat	5mg
REPCB1057	2,3,3',4,5,6-Hexachlorobiphenyl (PCB-160)	100µg/mL in Isooctane	1ml
REPCB1057N	2,3,3',4,5,6-Hexachlorobiphenyl (PCB-160)	Neat	5mg

Product No.	Description	Concentration in Matrix	Pack Size
REPCB1058	2,3,3',4',5,6-Hexachlorobiphenyl (PCB-163)	100µg/mL in Isooctane	1ml
REPCB1058N	2,3,3',4',5,6-Hexachlorobiphenyl (PCB-163)	Neat	5mg
REPCB1059	2,3,3',5,5',6-Hexachlorobiphenyl (PCB-165)	100µg/mL in Isooctane	1ml
REPCB1059N	2,3,3',5,5',6-Hexachlorobiphenyl (PCB-165)	Neat	5mg
REPCB1060	2,3,4,4',5,6-Hexachlorobiphenyl (PCB-166)	100µg/mL in Isooctane	1ml
REPCB1060N	2,3,4,4',5,6-Hexachlorobiphenyl (PCB-166)	Neat	5mg
REPCB1061	2,3',4,4',5,5'-Hexachlorobiphenyl (PCB-167)	100µg/mL in Isooctane	1ml
REPCB1061N	2,3',4,4',5,5'-Hexachlorobiphenyl (PCB-167)	Neat	5mg
REPCB1062	3,3',4,4',5,5'-Hexachlorobiphenyl (PCB-169)	100µg/mL in Isooctane	1ml
REPCB1062N	3,3',4,4',5,5'-Hexachlorobiphenyl (PCB-169)	Neat	5mg
REPCB1063	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB-170)	100µg/mL in Isooctane	1ml
REPCB1063N	2,2',3,3',4,4',5-Heptachlorobiphenyl (PCB-170)	Neat	5mg
REPCB1064	2,2',3,3',4',5,6-Heptachlorobiphenyl (PCB-177)	100µg/mL in Isooctane	1ml
REPCB1064N	2,2',3,3',4',5,6-Heptachlorobiphenyl (PCB-177)	Neat	5mg
REPCB1065	2,2',3,3',4',5,6-Heptachlorobiphenyl (PCB-178)	100µg/mL in Isooctane	1ml
REPCB1065N	2,2',3,3',4',5,6-Heptachlorobiphenyl (PCB-178)	Neat	5mg
REPET200	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB-180)	100µg/mL in Isooctane	1ml
REPET200N	2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB-180)	Neat	5mg
REPCB1067	2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB-183)	100µg/mL in Isooctane	1ml
REPCB1067N	2,2',3,4,4',5',6-Heptachlorobiphenyl (PCB-183)	Neat	5mg
REPCB1068	2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB-187)	100µg/mL in Isooctane	1ml
REPCB1068N	2,2',3,4',5,5',6-Heptachlorobiphenyl (PCB-187)	Neat	5mg



Product No.	Description	Concentration in Matrix	Pack Size
REPCB1069	2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB-189)	100µg/mL in Isooctane	1ml
REPCB1069N	2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB-189)	Neat	5mg
REPCB1070	2,3,3',4,4',5,6-Heptachlorobiphenyl (PCB-190)	100µg/mL in Isooctane	1ml
REPCB1070N	2,3,3',4,4',5,6-Heptachlorobiphenyl (PCB-190)	Neat	5mg
REPCB1071	2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB-194)	100µg/mL in Isooctane	1ml
REPCB1071N	2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB-194)	Neat	5mg
REPCB1072	2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB-196)	100µg/mL in Isooctane	1ml
REPCB1072N	2,2',3,3',4,4',5,6-Octachlorobiphenyl (PCB-196)	Neat	5mg
REPET201	2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB-198)	100µg/mL in Isooctane	1ml
REPET201N	2,2',3,3',4,5,5',6-Octachlorobiphenyl (PCB-198)	Neat	5mg
REPCB1074	2,2',3,3',4',5,5',6-Octachlorobiphenyl (PCB-199)	100µg/mL in Isooctane	1ml
REPCB1074N	2,2',3,3',4',5,5',6-Octachlorobiphenyl (PCB-199)	Neat	5mg
REPCB1075	2,2',3,4,4',5,6,6'-Octachlorobiphenyl (PCB-204)	100 µg/mL in isooctane	1ml
REPCB1075N	2,2',3,4,4',5,6,6'-Octachlorobiphenyl (PCB-204)	Neat	5mg
REPCB1076	2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl (PCB-207)	100 µg/mL in isooctane	1ml
REPCB1076N	2,2',3,3',4,4',5,6,6'-Nonachlorobiphenyl (PCB-207)	Neat	5mg
REPET202	Decachlorobiphenyl (PCB-209)	100µg/mL in cyclohexane	1ml
REPET202N	Decachlorobiphenyl (PCB-209)	Neat	5mg

## Aroclor Standards

Product No.	Description	Concentration in Matrix	US EPA Methods	Pack Size
REA1016-H	Aroclor 1016	1,000ug/ml in high purity Hexane	625,8270C	1ml
REA1016-I	Aroclor 1016	1000ug/ml in high purity Isooctane	625,8270C	1ml
REA1221	Aroclor 1221	200ug/ml in high purity Hexane	625,8270C	1ml
REA1221-H	Aroclor 1221	1,000ug/ml in high purity Hexane	625,8270C	1ml
REA1221-I	Aroclor 1221	1000ug/ml in high purity Isooctane	625,8270C	1ml
REA1232	Aroclor 1232	200ug/ml in high purity Hexane	625,8270C	1ml
REA1232-H	Aroclor 1232	1,000ug/ml in high purity Hexane	625,8270C	1ml
REA1232-I	Aroclor 1232	1000ug/ml in high purity Isooctane	625,8270C	1ml
REA1242	Aroclor 1242	200ug/ml in high purity Hexane	625,8270C	1ml
REA1242-H	Aroclor 1242	1,000ug/ml in high purity Hexane	625,8270C	1ml
REA1242-I	Aroclor 1242	1000ug/ml in high purity Isooctane	625,8270C	1ml
REA1248	Aroclor 1248	200ug/ml in high purity Hexane	625,8270C	1ml
REA1248-H	Aroclor 1248	1,000ug/ml in high purity Hexane	625,8270C	1ml
REA1248-I	Aroclor 1248	1000ug/ml in high purity Isooctane	625,8270C	1ml
REA1254	Aroclor 1254	200ug/ml in high purity Hexane	625,8270C	1ml
REA1254-H	Aroclor 1254	1,000ug/ml in high purity Hexane	625,8270C	1ml
REA1254-I	Aroclor 1254	1000ug/ml in high purity Isooctane	625,8270C	1ml
REA1260	Aroclor 1260	200ug/ml in high purity Hexane	625,8270C	1ml
REA1260-H	Aroclor 1260	1,000ug/ml in high purity Hexane	625,8270C	1ml
REA1260-I	Aroclor 1260	1000ug/ml in high purity Isooctane	625,8270C	1ml
REA1262	Aroclor 1262	200ug/ml in high purity Hexane	625,8270C	1ml
REA1262-H	Aroclor 1262	1,000ug/ml in high purity Hexane	625,8270C	1ml
REA1262-I	Aroclor 1262	1000ug/ml in high purity Isooctane	625,8270C	1ml
REA1268	Aroclor 1268	200ug/ml in high purity Hexane	625,8270C	1ml
REA1268-H	Aroclor 1268	1000ug/ml in high purity Hexane	625,8270C	1ml
REA1268-I	Aroclor 1268	1000ug/ml in high purity Isooctane	625,8270C	1ml

# Phthalate Standards



Phthalates are esters produced by esterification of phthalic acid with different alcohols. They are the most commonly used plasticisers, which are added to plastics to increase their flexibility, transparency and durability. Phthalates may be classified into two groups, based on molecular weight, comprising low molecular weight phthalates (ester side-chain lengths, one to four carbons) which include dibutyl phthalate (DBP), diethyl phthalate (DEP) and dimethyl phthalate (DMP) and high-molecular-weight phthalates (ester side-chain lengths, five or more carbons), which include bis (2-n-ethylhexyl) phthalate (DEHP) and dinonyl phthalate (DINP). These compounds can be found in a wide range of products, including adhesives and glues, electronics, medical devices, tubing, packaging, cosmetics, children's toys and food. Their presence in different products of everyday use means they can be found in all parts of the environment.

Since phthalates are incorporated in the polymer matrix in almost all plastic materials, these can easily migrate into foods and drinking water from the packaging or bottling material. Thus phthalates can bioaccumulate in tissues and in the food chain. Phthalates are poorly biodegradable and are potentially toxic. They have been associated with a number of health problems that include endocrine, respiratory, neurological and reproductive disorders. Several phthalates have been prioritised as significantly hazardous substances by many protection organisations.<sup>(1)</sup> For example, certain phthalates have been identified as priority hazardous substances by the European Union (EU), the US Environmental Protection Agency (EPA) and other international organisations.

In order to protect the consumers, sensitive and reliable methods for rapid detection of phthalates present in food and food contact materials are clearly needed. Although, liquid chromatography-mass spectrometry (LC-MS) methods for phthalates have been described, gas chromatography-mass spectrometry (GC-MS) is the preferred method for phthalate measurement due to the high reproducibility and specificity obtained.

Irrespective of analytical methodology, there is a requirement for high quality, pure, well characterised phthalate standards. Such standards have recently been developed in this laboratory and we have as part of this work, participated in a significant study on the quantification of phthalates in commercially available drinking water from different producers. Furthermore, this study provides specific data about the concentration of DBP and DEHP attributable to the migration of phthalates from food contact materials.<sup>(1)</sup>

<sup>(1)</sup> Improved method for rapid detection of phthalates in bottled water by gas chromatography–mass spectrometry Paz Otero<sup>a</sup>, Sushanta Kumar Saha<sup>a</sup>, Siobhan Moaneaa, John Barron<sup>b</sup>, Gerard Clancy<sup>b</sup>, Patrick Murray<sup>a</sup>

<sup>a</sup> Shannon Applied Biotechnology Centre, Limerick Institute of Technology, Moylish Park, Limerick, Ireland

<sup>b</sup> Reagecon Diagnostics Limited Shannon Free Zone, Shannon, Co. Clare, Ireland.

## Monophthalate Esters

Product No.	Analyte	Concentration & Matrix	Pack size
REPHT023	Monomethyl phthalate	1000µg/ml in Isooctane	1ml
REPHT024	Monoethyl phthalate	1000µg/ml in Isooctane	1ml
REPHT025	Mono-n-butyl phthalate	1000µg/ml in Isooctane	1ml
REPHT026	Mono-iso-butyl phthalate	1000µg/ml in Isooctane	1ml
REPHT027	Mono-n-pentyl phthalate	1000µg/ml in Isooctane	1ml
REPHT028	Mono-iso-pentyl phthalate	1000µg/ml in Isooctane	1ml
REPHT029	Monobenzyl phthalate	1000µg/ml in Dichloromethane	1ml
REPHT030	Mono-n-hexyl phthalate	1000µg/ml in Isooctane	1ml
REPHT031	Mono(2-ethylhexyl) phthalate	1000µg/ml in Isooctane	1ml
REPHT032	Monobornyl phthalate	1000µg/ml in Isooctane	1ml
REPHT033	Monocholesteryl phthalate	1000µg/ml in Isooctane	1ml

## Diphthalate Esters

Product No.	Analyte	Concentration & Matrix	Pack size
REPHT011	Bis(2-ethylhexyl) phthalate	1000µg/ml in Purge & Trap Methanol	1ml
REPHT012	Bis(2-ethylhexyl) phthalate	2000µg/ml in Purge & Trap Methanol	1ml
REPHT013	Butyl benzyl phthalate	1000µg/ml in Methylene Chloride	1ml
REPHT014	Butyl benzyl phthalate	2000µg/ml in Methylene Chloride	1ml
REPHT015	Diethyl phthalate	1000µg/ml in Purge & Trap Methanol	1ml
REPHT016	Diethyl phthalate	2000µg/ml in Purge & Trap Methanol	1ml
REPHT017	Dimethyl phthalate	1000µg/ml in Purge & Trap Methanol	1ml
REPHT018	Dimethyl phthalate	2000µg/ml in Purge & Trap Methanol	1ml
REPHT019	Di-n-butyl phthalate	1000µg/ml in Purge & Trap Methanol	1ml
REPHT020	Di-n-butyl phthalate	2000µg/ml in Purge & Trap Methanol	1ml
REPHT021	Di-n-octyl phthalate	1000µg/ml in Purge & Trap Methanol	1ml
REPHT022	Di-n-octyl phthalate	2000µg/ml in Purge & Trap Methanol	1ml
REPHT034	Dimethyl phthalate	1000µg/ml in Isooctane	1ml
REPHT035	Dimethyl phthalate	neat	10mg
REPHT036	Diethyl phthalate	1000µg/ml in Isooctane	1ml
REPHT037	Diethyl phthalate	neat	10mg
REPHT038	Di-n-propyl phthalate	1000µg/ml in Isooctane	1ml
REPHT039	Di-n-propyl phthalate	neat	10mg
REPHT040	Di-iso-propyl phthalate	1000µg/ml in Isooctane	1ml
REPHT041	Bis(2-methoxyethyl) phthalate	1000µg/ml in Isooctane	1ml
REPHT042	Bis(2-methoxyethyl) phthalate	neat	10mg
REPHT043	Di-iso-butyl phthalate (Di-2-methylpropyl phthalate)	1000µg/ml in Isooctane	1ml

## Diphthalate Esters

Product No.	Analyte	Concentration & Matrix	Pack size
REPHT044	Di-iso-butyl phthalate (Di-2-methylpropyl phthalate)	neat	10mg
REPHT045	n-Butyl iso-butyl phthalate (n-Butyl 2-methylpropyl phthalate)	1000µg/ml in Isooctane	1ml
REPHT046	n-Butyl iso-butyl phthalate (n-Butyl 2-methylpropyl phthalate)	neat	10mg
REPHT047	n-Butyl n-pentyl phthalate	100µg/ml in Isooctane	1ml
REPHT048	n-Butyl n-pentyl phthalate	1000µg/ml in Isooctane	1ml
REPHT049	n-Butyl n-pentyl phthalate	neat	10mg
REPHT050	iso-Butyl n-pentyl phthalate	100µg/ml in Isooctane	1ml
REPHT051	iso-Butyl n-pentyl phthalate	1000µg/ml in Isooctane	1ml
REPHT052	iso-Butyl n-pentyl phthalate	neat	10mg
REPHT053	n-Butyl iso-pentyl phthalate (n-Butyl 3-methylbutyl phthalate)	100µg/ml in Isooctane	1ml
REPHT054	n-Butyl iso-pentyl phthalate (n-Butyl 3-methylbutyl phthalate)	1000µg/ml in Isooctane	1ml
REPHT055	n-Butyl iso-pentyl phthalate (n-Butyl 3-methylbutyl phthalate)	neat	10mg
REPHT056	Bis(2-ethoxyethyl) phthalate	1000µg/ml in Isooctane	1ml
REPHT057	Bis(2-ethoxyethyl) phthalate	neat	10mg
REPHT058	Di-n-pentyl phthalate	1000µg/ml in Isooctane	1ml
REPHT059	Di-n-pentyl phthalate	neat	10mg
REPHT060	Diisopentyl phthalate (diisoamyl phthalate)	1000µg/ml in Isooctane	1ml
REPHT061	Diisopentyl phthalate (diisoamyl phthalate)	neat	10mg
REPHT062	n-Pentyl iso-pentyl phthalate (n-Pentyl 3-methylbutyl phthalate)	100µg/ml in Isooctane	1ml
REPHT063	n-Pentyl iso-pentyl phthalate (n-Pentyl 3-methylbutyl phthalate)	1000µg/ml in Isooctane	1ml
REPHT064	n-Pentyl iso-pentyl phthalate (n-Pentyl 3-methylbutyl phthalate)	neat	10mg
REPHT065	n-Pentyl benzyl phthalate	100µg/ml in Isooctane	1ml
REPHT066	n-Pentyl benzyl phthalate	1000µg/ml in Isooctane	1ml

## Diphthalate Esters

Product No.	Analyte	Concentration & Matrix	Pack size
REPHT067	n-Pentyl benzyl phthalate	neat	10mg
REPHT068	Iso-pentyl benzyl phthalate (3-Methylbutyl benzyl phthalate)	100µg/ml in Isooctane	1ml
REPHT069	Iso-pentyl benzyl phthalate (3-Methylbutyl benzyl phthalate)	1000µg/ml in Isooctane	1ml
REPHT070	Iso-pentyl benzyl phthalate (3-Methylbutyl benzyl phthalate)	neat	10mg
REPHT071	iso-Butyl benzyl phthalate (2-Methylpropyl benzyl phthalate)	100µg/ml in Isooctane	1ml
REPHT072	iso-Butyl benzyl phthalate (2-Methylpropyl benzyl phthalate)	1000µg/ml in Isooctane	1ml
REPHT073	iso-Butyl benzyl phthalate (2-Methylpropyl benzyl phthalate)	neat	10mg
REPHT074	Diphenyl phthalate	100µg/ml in Isooctane	1ml
REPHT075	Dicyclohexyl phthalate	1000µg/ml in Isooctane	1ml
REPHT076	Dicyclohexyl phthalate	neat	10mg
REPHT077	Bis(2-n-butoxyethyl) phthalate	1000µg/ml in Isooctane	1ml
REPHT078	Bis(2-n-butoxyethyl) phthalate	neat	10mg
REPHT079	Bis(4-methyl-2-pentyl) phthalate	1000µg/ml in Isooctane	1ml
REPHT080	Bis(4-methyl-2-pentyl) phthalate	neat	10mg
REPHT081	n-Butyl n-octyl phthalate	1000µg/ml in Isooctane	1ml
REPHT082	n-Butyl n-octyl phthalate	neat	10mg
REPHT083	2-Ethylhexyl n-octyl phthalate	100µg/ml in Isooctane	1ml
REPHT084	2-Ethylhexyl n-octyl phthalate	1000µg/ml in Isooctane	1ml
REPHT085	2-Ethylhexyl n-octyl phthalate	neat	10mg
REPHT086	Di-n-hexyl phthalate	1000µg/ml in Isooctane	1ml
REPHT087	Di-n-hexyl phthalate	neat	10mg
REPHT088	Dibenzyl phthalate	100µg/ml in Isooctane	1ml
REPHT089	Dibenzyl phthalate	neat	10mg
REPHT090	Di-n-heptyl phthalate	1000µg/ml in Isooctane	1ml
REPHT091	Di-n-heptyl phthalate	neat	10mg
REPHT092	Di-n-nonyl phthalate	1000µg/ml in Isooctane	1ml
REPHT093	Di-n-nonyl phthalate	neat	10mg

# Semi Volatile Organic Compound Standards (SVOCs)

## Summary of Features & Benefits:

### Commercial Benefits

- Ready to use (dilute for use as calibration and/or quality control standards)
- Extensive range of organic compound mixes and single compound standards available
- Can be used with a variety of instruments including GC, GC-MS, HPLC and LC-MS
- Designed specifically for use in EPA or EU analytical methods
- Presented in high quality amber ampoules
- Customised formulations available

### Technical Benefits

- Produced in accordance with EPA methods
- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online

These products are prepared gravimetrically on a weight/volume basis. Both solute and solvent are prepared using equipment calibrated by Reagecon engineers. Reagecon holds IEC/ISO 17025 accreditation for calibration of laboratory balances and pipettes (INAB Ref:265C). The resulting equipment Calibration Certificates are issued in accordance with the requirements of ISO/IEC 17025. The results are then reported and certified in µg/ml on the basis of weight and the density measurement of the standard. Reagecon is IEC/ISO 17025 (INAB Ref:264T) Accredited for density measurement using an Oscillating U-Tube Method in accordance with the ASTM D4052 method. The calibration of the GC-MS instrument is completed using high purity ISO Guide 34 accredited SVOC standards similar in SVOC concentration value to these products. The mass spectrum of each of the analytes is confirmed by comparison with the National Institute of Standards and Technology (NIST) mass spectral library.

## Semi Volatile Organic Compound Standards (SVOCs)

Product No.	Description	Concentration in Matrix	Pack Size
RESVOC001	1,2,4,5-Tetrachlorobenzene	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC002	1,2,4,5-Tetrachlorobenzene	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC003	1,4-Naphthoquinone	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC004	1,4-Naphthoquinone	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC005	1-Acetyl-2-thiourea	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC006	1-Acetyl-2-thiourea	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC007	1-Aminonaphthalene	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC008	1-Aminonaphthalene	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC009	1-Chloronaphthalene	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC010	1-Chloronaphthalene	2000µg/ml in Purge & Trap Methanol	1ml

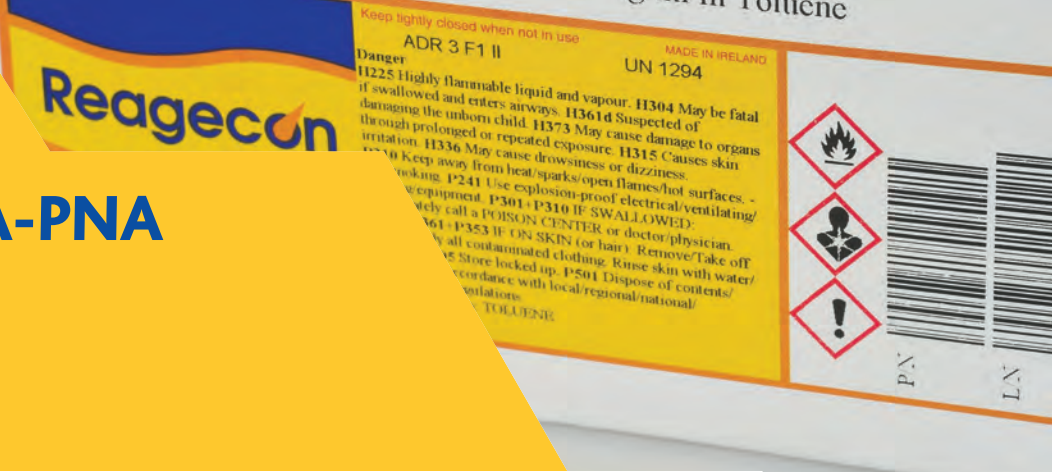
## Semi Volatile Organic Compound Standards (SVOCs)

Product No.	Description	Concentration in Matrix	Pack Size
RESVOC011	2-Aminoanthraquinone	1000µg/ml in MeCl:Benzene:Tetrahydrofuran	1ml
RESVOC012	2-Aminoanthraquinone	2000µg/ml in MeCl:Benzene:Tetrahydrofuran	1ml
RESVOC013	2-Aminonaphthalene	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC014	2-Aminonaphthalene	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC015	2-Chloroaniline	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC016	2-Chloroaniline	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC017	2-Chloronaphthalene	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC018	2-Chloronaphthalene	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC019	2-Nitroaniline	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC020	2-Nitroaniline	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC021	3-Amino-9-ethylcarbazole.	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC022	3-Amino-9-ethylcarbazole.	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC023	3-Methylcholanthrene	1000µg/ml in Methylene Chloride	1ml
RESVOC024	3-Methylcholanthrene	2000µg/ml in Methylene Chloride	1ml
RESVOC025	3-Nitroaniline	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC026	3-Nitroaniline	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC027	4-Chloro-1,2-phenylenediamine	1000µg/ml in Acetonitrile	1ml
RESVOC028	4-Chloro-1,2-phenylenediamine	2000µg/ml in Acetonitrile	1ml
RESVOC029	4-Chloro-1,3-phenylenediamine	1000µg/ml in Acetone	1ml
RESVOC030	4-Chloro-1,3-phenylenediamine	2000µg/ml in Acetone	1ml
RESVOC031	4-Nitroaniline	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC032	4-Nitroaniline	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC033	4-Nitrobiphenyl	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC034	4-Nitrobiphenyl	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC035	5-Chloro-2-methylaniline	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC036	5-Chloro-2-methylaniline	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC037	5-Nitroacenaphthene	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC038	5-Nitroacenaphthene	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC039	Aniline	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC040	Aniline	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC041	Benzoic acid	1000µg/ml in Methylene Chloride	1ml
RESVOC042	Benzoic acid	2000µg/ml in Methylene Chloride	1ml
RESVOC043	Benzyl alcohol	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC044	Benzyl alcohol	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC045	Dibenzofuran	1000µg/ml in Purge & Trap Methanol	1ml



Product No.	Description	Concentration in Matrix	Pack Size
RESVOC046	Dibenzofuran	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC047	Diethyl sulfate	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC048	Diethyl sulfate	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC049	Diethylstilbestrol	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC050	Diethylstilbestrol	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC051	Hexachlorophene	1000µg/ml in Methylene Chloride	1ml
RESVOC052	Hexachlorophene	2000µg/ml in Methylene Chloride	1ml
RESVOC053	Hexachloropropene	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC054	Hexachloropropene	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC055	Hexamethylphosphoramide	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC056	Hexamethylphosphoramide	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC057	Hydroquinone	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC058	Hydroquinone	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC059	Maleic anhydride	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC060	Maleic anhydride	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC061	Nicotine	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC062	Nicotine	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC063	Nitroquinoline-1-oxide	1000µg/ml in Methylene Chloride	1ml
RESVOC064	Nitroquinoline-1-oxide	2000µg/ml in Methylene Chloride	1ml
RESVOC065	p-Benzoquinone	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC066	p-Benzoquinone	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC067	Resorcinol	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC068	Resorcinol	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC069	Safrole	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC070	Safrole	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC071	Tetraethyl dithiopyrophosphate	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC072	Tetraethyl dithiopyrophosphate	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC073	Thiophenol (Benzenethiol)	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC074	Thiophenol (Benzenethiol)	2000µg/ml in Purge & Trap Methanol	1ml
RESVOC075	Toluene diisocyanate	1000µg/ml in Purge & Trap Methanol	1ml
RESVOC076	Toluene diisocyanate	2000µg/ml in Purge & Trap Methanol	1ml

# PIANO-PONA-PNA Standards



These complex mixes are prepared from materials of the highest available purity, accurate to four decimal places, and include a detailed data sheet on the formulation composition. The exact composition on a weight % basis for each analyte is provided on the certificate of analysis that is provided with every bottle

## PIANO, PONA & PNA Standards

Product Number Reagecon	Mix Name	Constituents	Concentration	Matrix	Pack Size	ASTM
REPIANO-P	Piano Paraffins	N-Pentane	Varies per Batch	None	1ml	D6279
		N-Hexane				D6733
		N-Heptane				D5134
		N-Octane				D3710
		N-Nonane				D2789
		N-Decane				
		N-Undecane				
		N-Dodecane				
		N-Tridecane				
		N-Tetradecane				
N-Pentadecane						

Product Number Reagecon	Mix Name	Constituents	Concentration	Matrix	Pack Size	ASTM
REPIANO-I	Piano Isoparaffins	Isopentane	Varies per Batch	None	1ml	D6279
		2,3-Dimethylbutane				D6733
		2-Methylpentane				D5134
		3-Methylpentane				D3710
		2,2-Dimethylpentane				D2789
		2,4-Dimethylpentane				
		2,2,3-Trimethylbutane				
		3,3-Dimethylpentane				
		2-Methylhexane				
		2,3-Dimethylpentane				
		3-Methylhexane				
		3-Ethylpentane				
		2,2-Dimethylhexane				
		2,5-Dimethylhexane				
		2,2,3-Trimethylpentane				
		2,4-Dimethylhexane				
		2,3-Dimethylhexane				
		2-Methylheptane				
		4-Methylheptane				
		3-Methylheptane				
		3-Ethylhexane				
		3,3-Dimethylheptane				
		2,5-Dimethylheptane				
		3,5-Dimethylheptane				
		2,3-Dimethylheptane				
		3,4-Dimethylheptane				
		2-Methyloctane				
		3-Methyloctane				
		3,3-Diethylpentane				
		2,2-Dimethyloctane				
3,3-Dimethyloctane						
2,3-Dimethyloctane						
3-Ethylloctane						
2-Methylnonane						
3-Methylnonane						

Product Number Reagecon	Mix Name	Constituents	Concentration	Matrix	Pack Size	ASTM
REPIANO-A	PIANO Aromatics	Benzene	Varies per Batch	None	1ml	D6279
		Toluene				D6733
		EthylBenzene				D5134
		m-Xylene				D3710
		p-Xylene				D2789
		o-Xylene				
		Isopropylbenzene				
		n-Propylbenzene				
		1-Methyl-3-ethylbenzene				
		1-Methyl-4-ethylbenzene				
		1,3,5-Trimethylbenzene				
		1-Methyl-2-ethylbenzene				
		1,2,4-Trimethylbenzene				
		tert-Butylbenzene				
		Isobutylbenzene				
		sec-Butylbenzene				
		1-Methyl-3-isopropylbenzene				
		1-Methyl-4-isopropylbenzene				
		1-Methyl-2-isopropylbenzene				
		1-Methyl-3-n-propylbenzene				
		1-Methyl-4-n-propylbenzene				
		n-Butylbenzene				
		1,2-Diethylbenzene				
		1-Methyl-2-n-propylbenzene				
		1,4-Dimethyl-2-ethylbenzene				
		1,3-Dimethyl-5-ethylbenzene				
		1,2-Dimethyl-4-ethylbenzene				
		1,3-Dimethyl-2-ethylbenzene				
		1,2-Dimethyl-3-ethylbenzene				
		1,2,4,5-Tetramethylbenzene				
		2-Methylbutylbenzene				
		trans-1-Butyl-1-2-methylbenzene				
		n-Pentylbenzene				
t-1-Butyl-1,3,5-dimethylbenzene						
t-1-butyl-ethylbenzene						
1,3,5-Triethylbenzene						
1,2,4-Triethylbenzene						
n-Hexylbenzene						

Product Number Reagecon	Mix Name	Constituents	Concentration	Matrix	Pack Size	ASTM
REPIANO-N	PIANO Naphthalenes	Cyclopentane	Varies per Batch	None	1ml	D6279
		Methylcyclopentane				D6733
		Cyclohexane				D5134
		1,1-Dimethylcyclopentane				D3710
		cis-1,3-Dimethylcyclopentane				D2789
		trans-1,2-Dimethylcyclopentane				
		trans-1,3-Dimethylcyclopentane				
		Methylcyclohexane				
		Ethylcyclopentane				
		ctc-1,2,3-Trimethylcyclopentane				
		cct-1,2,4-Trimethylcyclopentane				
		ctc-1,2,4-Trimethylcyclopentane				
		trans-1,4-Dimethylcyclohexane				
		1-Ethyl-1-methylcyclopentane				
		trans-1,2-Dimethylcyclohexane				
		ccc-1,2,3-Trimethylcyclopentane				
		Isopropylcyclopentane				
		cis-1,2-Dimethylcyclohexane				
		n-Propylcyclopentane				
		ccc-1,3,5-Trimethylcyclohexane				
		1,1,4-Trimethylcyclohexane				
		ctt-1,2,4-Trimethylcyclohexane				
		ctc-1,2,4-Trimethylcyclohexane				
		1,1,2-Trimethylcyclohexane				
		Isobutylcyclopentane				
		Isopropylcyclohexane				
		n-Butylcyclopentane				
		Isobutylcyclohexane				
		t-1-Methyl-2-propylcyclohexane				
		t-1-Methyl-2-(4MP)cyclopentane				

Product Number Reagecon	Mix Name	Constituents	Concentration	Matrix	Pack Size	ASTM
REPIANO-O	PIANO Olefins	3-Methyl-1-butene	Varies per Batch	None	1ml	D6279
		1-Pentene				D6733
		2-Methyl-1-butene				D5134
		2-Methyl-1, 3-butadiene				D3710
		trans-2-Pentene				D2789
		cis-2-Pentene				
		4-Methylpentene-1				
		1-Hexene				
		trans-2-Hexene				
		2-Methylpentene-2				
		cis-2-Hexene				
		1-Heptene				
		trans-3-Heptene				
		cis-3-Heptene				
		trans-2-Heptene				
		cis-2-Heptene				
		1-Octene				
		trans-2-Octene				
		cis-2-Octene				
		1-Nonene				
trans-3-Nonene						
cis-3-Nonene						
trans-2-Nonene						
cis-2-Nonene						
1-Decene						

Product Number Reagecon	Mix Name	Constituents	Concentration	Matrix	Pack Size	ASTM
REPIANO1	PIANO 1 Standard	n-Pentane	Varies per Batch	None	1ml	D6279
		n-Hexane				D6733
		n-Heptane				D5134
		n-Octane				D3710
		n-Nonane				D2789
		n-Decane				
		n-Undecane				
		n-Dodecane				
		Isopentane				
		2-Methyl Pentane				
		3-Methyl Pentane				
		2,2 Dimethylpentane				
		2,3 Dimethylpentane				
		2,4 Dimethylpentane				
		2,2,4 Trimethylpentane				
		Cyclohexane				
		Methylcyclohexane				
		Ethylcyclohexane				
		Propylcyclohexane				
		n-Butylcyclohexane				
		n-Pentylcyclohexane				
		Decalin				
		Benzene				
		Toluene				
		Propylbenzene				
		Ethylbenzene				
		p-Xylene				
		Cumene				
		1,3,5-Trimethylbenzene				
		3-Ethyltoluene				
		1,2,4-Trimethylbenzene				
		1,2,4,5 Tetramethylbenzene				
		n-Butylbenzene				
		Iso-Butylbenzene				
		n-Pentylbenzene				
		1-Pentene				
		2,3,3 Trimethyl-1-Butene				
		2-Methyl-1-Heptene				
		1-Hexene				
		2,3-Dimethyl-2-Butene				
1-Heptene						
1-Nonene						
1-Decene						
1-Undecene						
1-Dodecene						

Product Number Reagecon	Mix Name	Constituents	Concentration	Matrix	Pack Size	ASTM
REPONA	PONA Standard	1-Butene	Varies per Batch	None	1ml	D6279
		1-Pentene				D6733
		1-Hexene				D5134
		1-Heptene				D3710
		1-Octene				D2789
		1-Nonene				D6298
		1-Decene				
		1-Undecene				
		1-Dodecene				
		N-Propane				
		N-Butane				
		N-Pentane				
		N-Hexane				
		N-Heptane				
		N-Octane				
		N-Nonane				
		N-Decane				
		N-Undecane				
		N-Dodecane				
		Methanol				
		Ethanol				
		tert- Butyl methyl ether				
		tert -Amyl methyl ether				
		tert –Butanol				
		tert– Butyl ethyl ether				
		Cyclopentane				
		Cyclohexane				
		Methylcyclohexane				
		Ethylcyclohexane				
		Propylcyclohexane				
		n-Butylcyclohexane				
		Benzene				
Toluene						
Ethylbenzene						
Propylbenzene						
N-Butylbenzene						
N-Pentylbenzene						



# Petrochemical Standards



## Gas calibration Standards for use in the Petrochemical Industry

Product No.	Description	% Concentration	Solvent	Pack Size
REGASCAL-1-250	Naphtalin	3	Petrolether	250ml
	o-xylene	6.2		
	p-xylene	6		
	MTBE	10.6		
REGASCAL-2-250	Ethanol	12	Petrolether	250ml
	2-ET-Toluene	7.6		
	Mesitylen	6		
	Pseudocumen	6		
REGASCAL-3-250	TAME	14.6	Petrolether	250ml
	ET-Benzene	6.5		
	4-ET-Toluene	4		
REGASCAL-4-250	Pr-Benzene	9.8	Petrolether	250ml
	M-xylene	5.5		
	Toluene	5.3		
REGASCAL-5-250	Methanol	6	Petrolether	250ml
	3-ET-Toluene	5.2		
	Toluene	7		



## Benzene Calibration Standards

Product No.	Description	% Concentration	Solvent	Pack Size
REBENCAL-B05-250	Benzene	0.5	Petrolether	250ml
	Toluene	15		
REBENCAL-B10-250	Benzene	1	Petrolether	250ml
	Mesitylen	7		
	Pr-Benzene	7		
REBENCAL-B25-250	Benzene	2.5	Petrolether	250ml
	Toluene	5.5		
	Mesitylen	3		
	Pr-Benzene	4.5		
REBENCAL-B35-250	Benzene	3.5	Petrolether	250ml
	Mesitylen	11.5		
REBENCAL-B50-250	Benzene	5	Petrolether	250ml
	Pr-Benzene	10		

## Cetane Improver Calibration Sets

Product No.	Description	% Concentration	Solvent	Pack Size
RECETIMP-CAL1-250	2-Ethylhexyl Nitrate	0.03	Chevron Phillips High Cetone	250ml
RECETIMP-CAL2-250	2-Ethylhexyl Nitrate	0.1	Chevron Phillips High Cetone	250ml
RECETIMP-CAL3-250	2-Ethylhexyl Nitrate	0.2	Chevron Phillips High Cetone	250ml
RECETIMP-CAL4-250	2-Ethylhexyl Nitrate	0.5	Chevron Phillips High Cetone	250ml

# TOC/TIC Standards - Premium Range

## Summary of Features & Benefits:

### Commercial Benefits

- Extensive range (500ppb to 20,000ppm /0.5mg/l to 20,000mg/l)
- Presented in single - use glass vials
- Extended shelf life
- Ready to Use
- Offered as single vials or convenient kit format

### Technical Benefits

- In accordance with USP <643> and <1051> guidelines
- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online
- Extremely high specification and purity
- Manufactured in a cleanroom environment
- Vials are manufactured, cleaned and leached specifically for low level TOC standards
- Products manufactured from Ultra-Pure Water, produced by a special proprietary process
- ISO/IEC 17025 Accreditation 500µg/L to 50mg/l (INAB Ref:264T)

Reagecon manufactures a range of Total Organic Carbon (TOC) and Total Inorganic Carbon (TIC) Standards for ease of use when calibrating all types of TOC analysers, irrespective of brand. All of our TOC standards are manufactured using high purity raw materials in accordance with USP <1051> and <643> guidelines. These products are prepared gravimetrically on a weight/weight basis. Both solute (salts) and solvent (water) are weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO/IEC 17025 accreditation for calibration of laboratory balances (INAB Ref:265C). The resulting Balance Certificate of Calibration is issued in accordance with the requirements of ISO/IEC 17025. The TOC / TIC of the standard is verified using a high performance calibrated TOC analyser. The calibration of this instrument involves the use of high purity ISO Guide 34 accredited TOC standards similar in TOC value to the products listed in the following tables.



## TOC/TIC Standards

Product No.	Description	Pack Size
RTOCW	USP Reagent Water Rw	35ml
RTOCRs	USP Standard Sucrose Solution Rs (0.5mg/L C)	35ml
RTOCRss	USP System Suitability Solution 1, 4-Benzoquinone (0.5mg/L C)	35ml
RTOCK08	TOC Standard 0.5mg/L C as Potassium Hydrogen Phthalate	35ml
RTOCK09	TOC Standard 1.0mg/L C as Potassium Hydrogen Phthalate	35ml
RTOCK10	TOC Standard 1.5mg/L C as Potassium Hydrogen Phthalate	35ml
RTOCK10a	TOC Standard 1.5mg/L C as Potassium Hydrogen Phthalate acidified with Hydrochloric Acid	35ml
RTOCK11	TOC Standard 10mg/L C as Potassium Hydrogen Phthalate	35ml
RTOCK12	TOC Standard 25mg/L C as Potassium Hydrogen Phthalate	35ml
RTOCK30	TOC Standard 30 mg/L C as Potassium Hydrogen Phthalate	35ml
RTOCK13	TOC Standard 50mg/L C as Potassium Hydrogen Phthalate	35ml
RTOCK14	TOC Standard 5mg/L C as Potassium Hydrogen Phthalate	35ml
RTOCK15	TOC Standard 2.5mg/L C as Potassium Hydrogen Phthalate	35ml
RTOCK16	TOC Standard 4mg/L C as Potassium Hydrogen Phthalate	35ml
RTOCK17	TOC Standard 100mg/L C as Potassium Hydrogen Phthalate	35ml
RTOC125B	TOC Standard 125ppm C as 1,4-Benzoquinone	35ml
RTOC125S	TOC Standard 125ppm C as Sucrose	35ml
RTOCK18	TOC Standard 1,000mg/L C as Potassium Hydrogen Phthalate	35ml
RTOC1000K	TOC Standard 1,000ppm C as Potassium Hydrogen Phthalate	35ml
RTOCK19	TOC Standard 5,000mg/L C as Potassium Hydrogen Phthalate	35ml
RTOCK20	TOC Standard 20,000mg/L C as Potassium Hydrogen Phthalate	35ml
RTOCK01	TOC Standard 50ppb C as Potassium Hydrogen Phthalate	35ml
RTOC200	TOC Standard 200ppb C as Sucrose	35ml
RTOC800	TOC Standard 800ppb C as Sucrose	35ml
RTICN01	TIC Standard 0.5mg/L as Sodium Carbonate	35ml
RTICN02	TIC Standard 1.0mg/L as Sodium Carbonate	35ml
RTICN03	TIC Standard 1.5mg/L as Sodium Carbonate	35ml
RTICN04	TIC Standard 2mg/L as Sodium Carbonate	35ml
RTICN09	TIC Standard 4mg/L as Sodium Carbonate	35ml
RTICN05	TIC Standard 5mg/L as Sodium Carbonate	35ml
RTICN06	TIC Standard 10mg/L as Sodium Carbonate	35ml
RTICN07	TIC Standard 25mg/L as Sodium Carbonate	35ml
RTICN08	TIC Standard 50mg/L as Sodium Carbonate	35ml
RTIC1000	TIC Standard 1000mg/L as Sodium Carbonate	35ml
RTOCS01	TOC Standard 0.5mg/L C as Sucrose	35ml
RTOCS02	TOC Standard 1.0mg/L C as Sucrose	35ml
RTOCS03	TOC Standard 2mg/L C as Sucrose	35ml
RTOCS04	TOC Standard 5mg/L C as Sucrose	35ml
RTOCS05	TOC Standard 10mg/L C as Sucrose	35ml
RTOCS06	TOC Standard 25mg/L C as Sucrose	35ml
RTOCS07	TOC Standard 50mg/L C as Sucrose	35ml
RTOCS08	TOC Standard 0.25mg/L C as Sucrose	35ml
RTOCS09	TOC Standard 0.75mg/L C as Sucrose	35ml
RTOCS10	TOC Standard 4mg/L C as Sucrose	35ml
RTOCS11	TOC Standard 500mg/L C as Sucrose	35ml

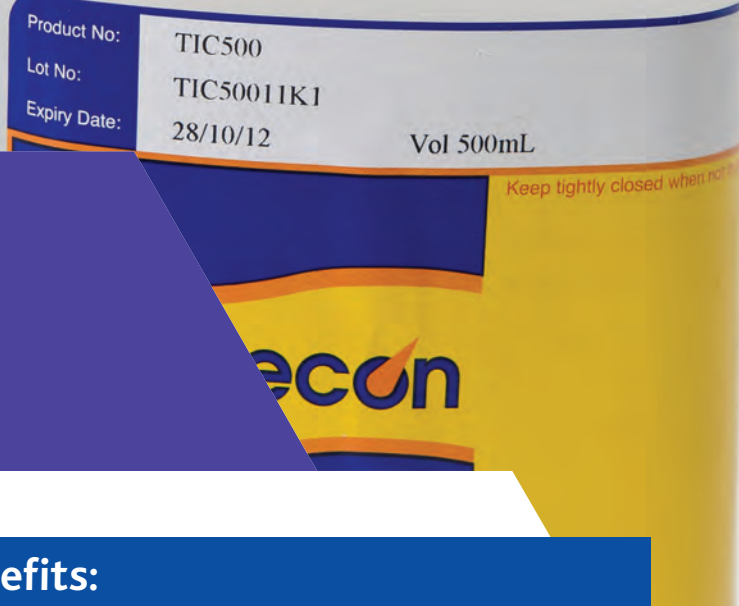
## TOC/TIC Standards

Product No.	Description	Pack Size
RTOCN01	TOC Standard 50mg/L C as Nicotinamide	35ml
RTOCN02	TOC Standard 0.5mg/L C as Nicotinamide	35ml
RTOCM01	TOC Standard 0.5mg/L C as Methanol	35ml
RTOCWa	USP Reagent Water Rw acidified with HCl	35ml
RTOCRsa	USP Standard Sucrose Solution Rs (0.5mg/L C) acidified with HCl	35ml
RTOCRssa	USP System Suitability Solution 1,4-Benzoquinone (0.5mg/L C) acidified with HCl	35ml
RTOCUSP1	USP System Suitability Set consisting of 1 x 40ml vial of Reagent Water (RTOCW), Standard Solution (RTOCRs) and Suitability Solution (RTOCRss)	3 x 35ml
RTOCUSP2	2 x USP System Suitability Set consisting of 1 x 40ml vial of Reagent Water (RTOCW), Standard Solution (RTOCRs) and Suitability Solution (RTOCRss). Delivered at six month intervals	3 x 35ml
RTOCUSP4	4 x USP System Suitability Sets, consisting of: 1 x 40ml vial of Reagent Water (RTOCW), Standard Solution (RTOCRs) and Suitability Solution (RTOCRss). Delivered at three month intervals	3 x 35ml
RTOCUSP12	12 x (USP System Suitability Set consisting of 1 x 40ml vial of Reagent Water (RTOCW), Standard Solution (RTOCRs) and Suitability Solution (RTOCRss). Delivered at monthly intervals	3 x 35ml
RTOCUSP52	52 x (USP System Suitability Set consisting of 1 x 40ml vial of Reagent Water (RTOCW), Standard Solution (RTOCRs) and Suitability Solution (RTOCRss). Delivered at 2 weekly intervals	3 x 35ml
RTOCUSP260	260 x USP System Suitability Set consisting of 1 x 40ml vial of Reagent Water (RTOCW), Standard Solution (RTOCRs) and Suitability Solution (RTOCRss). Delivered at 2 weekly intervals	3 x 35ml
RC120001	Carbon Calibration Set 1-50mg/L C consisting of 1 x 40ml vial each of calibration blank (RTOCW), TOC Standards 1(RTOCK09), 5 (RTOCK14), 10 (RTOCK11), 25 (RTOCK12), 50 (RTOCK13) mg/L C as Potassium Hydrogen Phthalate, TIC Standards 1mg/L (RTICN02), 5mg/L (RTICN05), 10mg/L (RTICN06), 25mg/L (RTICN07), 50mg/L (RTICN08) C as Sodium Carbonate	11 x 35ml
RC120002	1mg C/L Carbon Standard Set consisting of 1 x 40ml vial each of calibration blank (RTOCW), 1mg/L (RTOCK09) C TOC as Potassium Hydrogen Phthalate and 1 mg/L (RTICN02) C TIC as Sodium Carbonate	3 x 35ml
RC120003	1mg C/L Carbon Verification Set consisting of 1 x 40ml vial each of calibration blank (RTOCW), 1mg/L (RTOCS02) C TOC as Sucrose and 1 mg/L (RTICN02) C TIC as Sodium Carbonate	3 x 35ml
RC120004	1mg C/L Carbon Standard Set and Verification Set consisting of 1 x RC120002 and 1 x RC120003	6 x 35ml
RC120005	5mg C/L Carbon Standard Set consisting of 1 x 40ml vial each of calibration blank (RTOCW), 5mg/L (RTOCK14) C TOC as Potassium Hydrogen Phthalate and 5 mg/L (RTICN05) C TIC as Sodium Carbonate	3 x 35ml
RC120006	5mg C/L Carbon Verification Set consisting of 1 x 40ml vial each of calibration blank (RTOCW), 5mg/L (RTOCS04) TOC C as Sucrose and 5 mg/L (RTICN05) TIC C as Sodium Carbonate	3 x 35ml
RC120007	5mg C/L Carbon Standard and Verification Set consisting of 1 x RC120005 and 1 x RC120006	6 x 35ml

Product No.	Description	Pack Size
RC120008	0.5mg/L Carbon Verification Set consisting of 1 x 40ml vial each of calibration blank (RTOCW), 0.5mg/L (RTOCS01) TOC C as Sucrose and 0.5mg/L (RTICN01) TIC C as Sodium Carbonate	3 x 35ml
RC120009	1mg/L Carbon Standard and 0.5mg/L Carbon Verification Set Consisting of 1 x RC120002 and 1 x RC120008	6 x 35ml
RC120010	Validation Set -- Accuracy Precision (0.5mg), consisting of 1 x Reagent water (RTOCW) and 1 x 0.5mg/L C as sucrose (RTOCS01) in 40ml Vials	2 x 35ml
RC120011	Validation Set -- Linearity, consisting of 1x Reagent water blank (RTOCW) and 1 each of 0.25mg/L (RTOCS08), 0.5mg/L (RTOCS01), 0.75mg /L (RTOCS09), C as Sucrose in 40ml vials	4 x 35ml
RC120012	Validation Set -- Specificity, consisting of 1 x Reagent water (RTOCW), 1 x 0.5mg/L (RTOCM01) C as Methanol, 1 x 0.5mg/L (RTOCN02) C as Nicotinamide and 1 x 0.5mg/L (RTOCK08) C as Potassium Hydrogen Phthalate in 40ml vials	4 x 35ml
RC120013	Validation Set -- Robustness Standards, consisting of 1 x Reagent water (RTOCWa), 1 x Standard Solution (RTOCRsa), 1 x System suitability solution (RTOCRssa) in 40ml vials. All standards in the set acidified	3 x 35ml
RC120014	Validation Set -- Complete , consisting of 1xRC120010, 1xRC120011, RC120012 and RC120013	13 x 35ml
RC120015	10mg C/L Carbon Standard Set consisting of 1 x 40ml vial each of calibration blank (RTOCW), 10mg/L (RTOCK11) TOC C as Potassium Hydrogen Phthalate and 10mg/L (RTICN06) TIC C as Sodium Carbonate	3 x 35ml
RC120016	Multipoint calibration set for Sievers 5310C, consisting of 1 x calibration blank (RTOCW), 1 each of 0.25mg/L (RTOCK15), 1mg/L (RTOCK09), 5mg/L (RTOCK14), 25mg/L (RTOCK12), 50mg/L (RTOCK13) C as Potassium Hydrogen Phthalate TOC standards and 1 each of 1mg/L (RTICN02), 5mg/L (RTICN05), 10mg/L (RTICN06), 25mg/L (RTICN07), 50mg/L (RTICN08) C as Sodium Carbonate TIC standards	11 x 35ml
RC120017	2mg C/L Carbon Verification Set consisting of 1 x 40ml vial each of calibration blank (RTOCW), 2mg/L (RTOCS03) TOC C as Sucrose and 2mg/L (RTICN04) TIC C as Sodium Carbonate	3 x 35ml
RC120018	10mg C/L Carbon Verification Set consisting of 1 x 40ml vial each of calibration blank (RTOCW), 10mg/L (RTOCS05) TOC C as Sucrose and 10mg/L (RTICN06) TIC C as Sodium Carbonate	3 x 35ml
RC120019	3 point Carbon Verification Set consisting of 1 x 40ml Vial each of 1mg/L (RTOCK09), 5mg/L (RTOCK14), 10mg/L (RTOCK11) C as Potassium Hydrogen Phthalate	3 x 35ml



# TOC/TIC Standards - Quality Range



## Summary of Features & Benefits:

### Commercial Benefits

- Can be used with any brand of TOC analyser
- Extensive range (5ppm-5000ppm)
- Extended shelf life
- Ready to Use
- The Quality Range represents excellent value for money
- Other TOC/TIC values can be quoted for upon request
- Mixed TOC and TIC standards available as a normal part of the range

### Technical Benefits

- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online
- Presented in special 500ml twin neck bottles (all values above 50ppm) - prevents product contamination, evaporation or interference
- Twin neck bottles come with a special dosing device
- All values below 50ppm are packed in specially cleaned and leached 500ml amber glass bottles

## TOC Standards

Product No.	Description	Pack Size
TOC5	Total Organic Carbon Standard 5ppm	500ml
TOC5W	Total Organic Carbon Standard 5pm	2.5L
TOC75	Total Organic Carbon Standard 7.5ppm	500ml
TOC10	Total Organic Carbon Standard 10ppm	500ml
TOC15	Total Organic Carbon Standard 15ppm	500ml
TOC20	Total Organic Carbon Standard 20ppm	500ml
TOC25	Total Organic Carbon Standard 25ppm	500ml
TOC30	Total Organic Carbon Standard 30ppm	500ml
TOC50	Total Organic Carbon Standard 50ppm	500ml
TOC50W	Total Organic Carbon Standard 50ppm	2.5L
TOC60	Total Organic Carbon Standard 60ppm	500ml
TOC100	Total Organic Carbon Standard 100ppm	500ml
TOC160	Total Organic Carbon Standard 160ppm	500ml
TOC200	Total Organic Carbon Standard 200ppm	500ml
TOC250	Total Organic Carbon Standard 250ppm	500ml
TOC500	Total Organic Carbon Standard 500ppm	500ml
TOC750	Total Organic Carbon Standard 750ppm	500ml
TOC1M	Total Organic Carbon Standard 1000ppm	500ml
TOC15M	Total Organic Carbon Standard 1500ppm	500ml
TOC2M	Total Organic Carbon Standard 2000ppm	500ml
TOC5M	Total Organic Carbon Standard 5000ppm	500ml

## TIC Standards

Product No.	Description	Pack Size
TIC5	Total Inorganic Carbon Standard 5ppm	500ml
TIC50	Total Inorganic Carbon Standard 50ppm	500ml
TIC100	Total Inorganic Carbon Standard 100ppm	500ml
TIC200	Total Inorganic Carbon Standard 200ppm	500ml
TIC500	Total Inorganic Carbon Standard 500ppm	500ml
TIC1M	Total Inorganic Carbon Standard 1000ppm	500ml
TIC2M	Total Inorganic Carbon Standard 2000ppm	500ml

## Mixed TOC/TIC Standards

Product No.	Description	Pack Size
TOIC10	Mixed Standard (equal conc of organic & inorganic carbon) 10ppm	500ml
TOIC100	Mixed Standard (equal conc of organic & inorganic carbon) 100ppm	500ml
TOIC1M	Mixed Standard (equal conc of organic & inorganic carbon) 1000ppm	500ml
TOIC2M	Mixed Standard (equal conc of organic & inorganic carbon) 2000ppm	500ml
TOIC308	Mixed Standard 30ppm Organic Carbon, 8ppm Inorganic Carbon	500ml
TOIC4M	Mixed Standard (equal conc of organic & inorganic carbon) 4000ppm	500ml

**Reagecon**  
*Certificate of Analysis*

**Carbon Standards**

**Total Organic Carbon 5ppm**

**Product No:** TOC5  
**Lot No:** TOC516C1  
**Expiry date:** 28/03/2017

**Mean Assay:** 5.00 ppm as TOC  
**Date of measurement:** 15/03/2016

**Specification:**  
 4.95 - 5.05ppm as TOC

**Method:**  
 Standardised in accordance with in-house method acidimetric.

**Reference:**  
 Vogels Textbook of Quantitative Inorganic Analysis, Fifth Edition.

Products are manufactured under an NSAI registered I.S EN ISO9001:2008 Quality System, registration no: 19.2789  
 Date of issue of the certificate: 15/03/2016

QC Technician **Derrre Madigan**

Complementary information relative to this product is available at [www.reagecon.com](http://www.reagecon.com)  
 Page 1 of 1. This Certificate must not be reproduced except in full. Rev-16C10

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# TOC/TIC Standards - Instrument Specific



Reagecon's Premium Range of TOC/TIC Standards as detailed in the second last chapter are an independent range of standards suitable for use on the Sievers® Range of Laboratory TOC/TIC analysers (35ml vials). The Quality Range as detailed in the previous chapter is suitable for other TOC/TIC analysers available in the market place.

Reagecon offer an extensive range of new independent standards, suitable for use on other leading brands of TOC/TIC analysers for laboratory and online applications.

Although the range is not totally exhaustive it does include independent standards for Brands listed alphabetically below such as;

- Analytik Jena®
- Anatel®
- OI Analytical®
- Shimadzu®
- Sievers®
- Teledyne Tekmar®
- Thornton®

These standards are developed, validated, manufactured and tested to an extremely high specification. We believe that they offer real choice in the market place and represent exceptionally good value.

In addition to the products listed bulk sizes may be available upon request, please contact us with your request by emailing [sales@reagecon.ie](mailto:sales@reagecon.ie)

## Instrument Specific TOC/TIC Standards

Instrument	Product	Description	Pack Size
Analytik Jena	ISTOC1103	System Suitability Set to USP; Reagent Water, 0.5mg/L C Sucrose and 0.5mg/L C 1,4- Benzoquinone	Kit (3x40ml)
Analytik Jena	ISTOC1104	System Suitability Set to JP; Reagent Water, 0.5mg/L C Sodium Dodecylbenzene Sulfonate	Kit (2x40ml)
Analytik Jena	ISTOC1105	USP Reagent Water	40ml
Analytik Jena	ISTOC1106	JP Reagent Water	40ml
Analytik Jena	ISTOC1107	0.5mg/L C from USP Sucrose	40ml
Analytik Jena	ISTOC1108	0.5mg/L C from USP 1,4 - Benzoquinone	40ml
Analytik Jena	ISTOC1124	0.5mg/L C from Sodium Dodecylbenzene Sulfonate	40ml
Anatel A1000	ISTOC1030	Calibration Blank	1L
Anatel A1000	ISTOC1034	Calibration Standard 0.25 mg/L C NIST Sucrose	1L
Anatel A1000	ISTOC1038	Calibration Standard 0.5 mg/L C NIST Sucrose	1L
Anatel A1000	ISTOC1046	Calibration Standard 0.75 mg/L C NIST Sucrose	1L

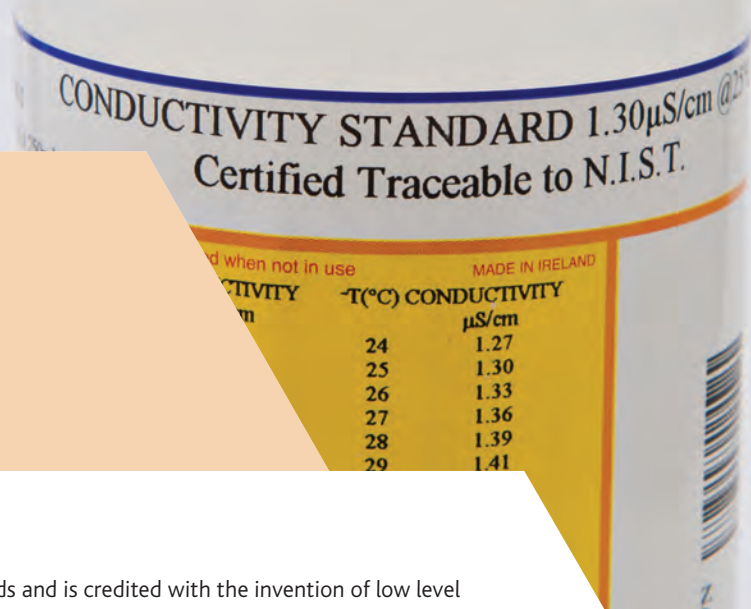
Instrument	Product	Description	Pack Size
Anatel A1000	ISTOC1165	System Suitability Set to USP; Reagent Water, 0.5mg/L C Sucrose and 0.5mg/L C 1,4- Benzoquinone	Kit (3x1L)
Anatel A643	ISTOC1016	100uS/cm Conductivity Standard for Calibration	60ml
Anatel A643	ISTOC1079	Calibration Blank	60ml
Anatel A643	ISTOC1080	System Suitability Set; 2 x Reagent Water, 0.5mg/L C USP Sucrose, 0.5mg/L C 1,4- Benzoquinone and 0.25mg/L C NIST Sucrose as Check	Kit (5x60ml)
Anatel A643	ISTOC1081	Calibration Standard 0.25 mg/L C NIST Sucrose	60ml
Anatel A643	ISTOC1082	Calibration Standard 0.5 mg/L C NIST Sucrose	60ml
Anatel A643	ISTOC1083	Calibration Standard 0.75 mg/L C NIST Sucrose	60ml
Anatel A643	ISTOC1166	Validation Set; 2 x Blanks, 0.25 mg/L C NIST Sucrose, 0.5 mg/L C NIST Sucrose and 0.75 mg/L C NIST Sucrose	Kit (5x60ml)
Anatel A643	ISTOC1169	Validation Kit; 2 x Blanks and 0.5 mg/L C NIST Sucrose	Kit (3x60ml)
Anatel PAT700	ISTOC1001	Calibration Blank	60ml
Anatel PAT700	ISTOC1002	Calibration Standard 0.25 mg/L C NIST Sucrose	60ml
Anatel PAT700	ISTOC1003	Calibration Standard 0.5 mg/L C NIST Sucrose	60ml
Anatel PAT700	ISTOC1004	Calibration Standard 0.75 mg/L C NIST Sucrose	60ml
Anatel PAT700	ISTOC1005	USP Reagent Water System Suitability Standard	60ml
Anatel PAT700	ISTOC1006	0.5mg/L C from USP Sucrose System Suitability Standard	60ml
Anatel PAT700	ISTOC1007	0.5mg/L C from USP 1,4 Benzoquinone System Suitability Standard	60ml
Anatel PAT700	ISTOC1009	USP System Suitability Set; Reagent Water, 0.5mg/L C Sucrose and 0.5mg/L C 1,4- Benzoquinone	Kit (3x60ml)
Anatel PAT700	ISTOC1015	100uS/cm Conductivity Standard for Calibration	40ml
Anatel PAT700	ISTOC1171	Validation Kit; 2 x Blanks and 0.5 mg/L C NIST Sucrose	Kit (3x60ml)
Anatel TOC600	ISTOC1014	100uS/cm Conductivity Standard for Calibration	125ml
Anatel TOC600	ISTOC1021	Calibration Blank	125ml
Anatel TOC600	ISTOC1031	Calibration Standard 0.25 mg/L C NIST Sucrose	125ml
Anatel TOC600	ISTOC1035	Calibration Standard 0.5 mg/L C NIST Sucrose	125ml
Anatel TOC600	ISTOC1039	Calibration Standard 0.75 mg/L C NIST Sucrose	125ml
Anatel TOC600	ISTOC1079	Calibration Blank	60ml
Anatel TOC600	ISTOC1081	Calibration Standard 0.25 mg/L C NIST Sucrose	60ml
Anatel TOC600	ISTOC1082	Calibration Standard 0.5 mg/L C NIST Sucrose	60ml
Anatel TOC600	ISTOC1083	Calibration Standard 0.75 mg/L C NIST Sucrose	60ml
Anatel TOC600	ISTOC1123	USP System Suitability Set; Reagent Water, 0.5mg/L C Sucrose and 0.5mg/L C 1,4- Benzoquinone	Kit (3x125ml)
Anatel TOC600	ISTOC1167	Calibration Kit; Blank, 0.25mg/L C NIST Sucrose, 0.5 mg/L C NIST Sucrose and 0.75mg/L C NIST Sucrose	Kit (3x60ml)
Anatel TOC600	ISTOC1170	Validation Kit; Blank and 0.5mg/L C NIST Sucrose	Kit (2x60ml)
Comet Analytics	ISTOC1133	Reagent Water, 0.5 mg/L C from USP Sucrose and 0.5 mg/L C USP 1,4- Benzoquinone	Kit (3x250ml)
Horiba	ISTOC1176	USP System Suitability Kit; Reagent Water, 0.5 mg/L C from USP Sucrose and 0.5 mg/L C USP 1,4- Benzoquinone	Kit (3x1L)
Horiba	ISTOC1200	USP Reagent Water	1L

Instrument	Product	Description	Pack Size
Horiba	ISTOC1201	0.5mg/L C from USP Sucrose	1L
Horiba	ISTOC1202	0.5mg/L C from USP 1,4 - Benzoquinone	1L
Lighthouse	ISTOC1160	USP System Suitability Kit; 2 x Reagent Water, 0.5mg/L C Sucrose and 0.5mg/L C 1,4- Benzoquinone	Kit (3x60ml)
Lighthouse	ISTOC1166	Validation Set; 2 x Blanks, 0.25 mg/L C NIST Sucrose, 0.5 mg/L C NIST Sucrose and 0.75 mg/L C NIST Sucrose	Kit (5x60ml)
Membrapure	ISTOC1177	USP System Suitability Kit; Reagent Water, 0.5 mg/L C from USP Sucrose and 0.5 mg/L C USP 1,4- Benzoquinone	Kit (3x500ml)
Membrapure	RTOCW500	TOC Standard USP Reagent Water Rw	500ml
Membrapure	RTOCRS500	TOC Standard USP Standard Sucrose Solution Rs (0.5mg/L C)	500ml
Membrapure	RTOCRSS500	TOC Standard USP System Suitability Solution 1 4-Benzoquinone (0.5mg/L C)	500ml
Membrapure	ISTOC1178	Membrapure USP Calibration Kit; Reagent water, 1.0 mg/L C USP Sucrose	Kit (2x500ml)
Membrapure	RTOCRS1	TOC Standard USP Standard Sucrose Solution (1.0 mg/L C)	500ml
OI Analytical	ISTOC1018	TOC/TIC Calibration Blank	40ml
OI Analytical	ISTOC1059	Calibration Standard 0.5mg/L C NIST KHP	40ml
OI Analytical	ISTOC1065	Calibration Standard 1mg/L C NIST KHP	40ml
OI Analytical	ISTOC1070	Calibration Standard 5mg/L C NIST KHP	40ml
OI Analytical	ISTOC1072	Calibration Standard 10mg/L C NIST KHP	40ml
OI Analytical	ISTOC1074	Calibration Standard 25mg/L C NIST KHP	40ml
OI Analytical	ISTOC1076	Calibration Standard 50mg/L C NIST KHP	40ml
OI Analytical	ISTOC1104	System Suitability Set to JP; Reagent Water and 0.5mg/L C from Sodium Dodecylbenzene Sulfonate	Kit (2x40ml)
OI Analytical	ISTOC1106	JP Water	40ml
OI Analytical	ISTOC1110	USP Reagent Water	40ml
OI Analytical	ISTOC1111	0.5mg/L C from USP Sucrose	40ml
OI Analytical	ISTOC1112	0.5mg/L C from USP 1,4 - Benzoquinone	40ml
Shimadzu	ISTOC1018	Individual TOC/TIC Calibration Blank	40ml
Shimadzu	ISTOC1041	Validation Kit for TOC contains a blank and 2 x 100mg/L C NIST KHP	Kit (3x125ml)
Shimadzu	ISTOC1042	Validation Kit for TOC contains a blank and 2 x 10mg/L C NIST KHP	Kit (3x125ml)
Shimadzu	ISTOC1043	Validation Kit for Wet Chemistry TOC contains 3 x blanks, 2 x 0.5 mg/L C NIST KHP and 1mg/L C NIST KHP	Kit (6x40ml)
Shimadzu	ISTOC1044	Calibration Kit; 2 x blanks, 2 x 0.1 mg/L C NIST KHP, 2 X 0.25 mg/L C NIST KHP, 2 X 0.5 mg/L C NIST KHP, 0.75mg/L C NIST KHP and 1mg/L C NIST KHP	Kit (10x40ml)
Shimadzu	ISTOC1054	Calibration Standard 0.1mg/L C NIST KHP	40ml
Shimadzu	ISTOC1055	Calibration Standard 0.25mg/L C NIST KHP	40ml
Shimadzu	ISTOC1059	Calibration Standard 0.5mg/L C NIST KHP	40ml
Shimadzu	ISTOC1064	Calibration Standard 0.75mg/L C NIST KHP	40ml
Shimadzu	ISTOC1065	Calibration Standard 1mg/L C NIST KHP	40ml

Instrument	Product	Description	Pack Size
Shimadzu	ISTOC1070	Calibration Standard 5mg/L C NIST KHP	40ml
Shimadzu	ISTOC1072	Calibration Standard 10mg/L C NIST KHP	40ml
Shimadzu	ISTOC1074	Calibration Standard 25mg/L C NIST KHP	40ml
Shimadzu	ISTOC1076	Calibration Standard 50mg/L C NIST KHP	40ml
Shimadzu	ISTOC1104	System Suitability Set to JP; Reagent Water and 0.5mg/L C from Sodium Dodecylbenzene Sulfonate	Kit (2x40ml)
Shimadzu	ISTOC1106	JP Reagent Water	40ml
Shimadzu	ISTOC1110	USP Reagent Water	40ml
Shimadzu	ISTOC1111	0.5mg/L C from USP Sucrose	40ml
Shimadzu	ISTOC1112	0.5mg/L C from USP 1,4 - Benzoquinone	40ml
Shimadzu	ISTOC1118	USP Reagent Water	125ml
Shimadzu	ISTOC1120	0.5mg/L C from USP Sucrose	125ml
Shimadzu	ISTOC1121	0.5mg/L C from USP 1,4 - Benzoquinone	125ml
Shimadzu	ISTOC1125	USP Reagent Water	250ml
Shimadzu	ISTOC1126	0.5mg/L C from USP Sucrose	250ml
Shimadzu	ISTOC1127	0.5mg/L C from USP 1,4 - Benzoquinone	250ml
Shimadzu	ISTOC1128	USP System Suitability Set; Reagent Water, 0.5mg/L C Sucrose and 0.5mg/L C 1,4- Benzoquinone	Kit (3x250ml)
Shimadzu	ISTOC1139	USP System Suitability Set; Reagent Water, 0.5mg/L C Sucrose and 0.5mg/L C 1,4- Benzoquinone	Kit (3x500ml)
Shimadzu	ISTOC1140	USP Reagent Water	500ml
Shimadzu	ISTOC1141	0.5mg/L C from USP Sucrose	500ml
Shimadzu	ISTOC1142	0.5mg/L C from USP 1,4 - Benzoquinone	500ml
Shimadzu	ISTOC1153	USP System Suitability Set; Reagent Water, 0.5mg/L C Sucrose and 0.5mg/L C 1,4- Benzoquinone	Kit (3x1L)
Shimadzu	ISTOC1154	USP Reagent Water	1L
Shimadzu	ISTOC1155	0.5mg/L C from USP Sucrose	1L
Shimadzu	ISTOC1156	0.5mg/L C from USP 1,4 - Benzoquinone	1L
Swan Analytical	ISTOC1133	Reagent Water, 0.5 mg/L C from USP Sucrose and 0.5 mg/L C USP 1,4- Benzoquinone	Kit (3x250ml)
Swan Analytical	ISTOC1186	Swan AMI LineTOC 0.5 mg/L C USP 1,4- Benzoquinone	125ml
Swan Analytical	ISTOC1185	Swan AMI LineTOC 0.5 mg/L C USP Sucrose	125ml
Swan Analytical	ISTOC1188	Swan AMI LineTOC 20 mg/L C USP 1,4- Benzoquinone	125ml
Swan Analytical	ISTOC1187	Swan AMI LineTOC 20 mg/L C USP Sucrose	125ml
Swan Analytical	ISTOC1182	Swan AMI LineTOC Calibration Standard 1 mg/L C Sucrose	250ml
Swan Analytical	ISTOC1181	Swan AMI LineTOC FT Kit; TOC Standard 20 mg/L C as Sucrose, 20 mg/L C as 1,4- Benzoquinone	Kit (2x125ml)
Swan Analytical	ISTOC1179	Swan AMI LineTOC USP Calibration Kit; Reagent Water, 1.0 mg/L C USP Sucrose	Kit (2x250ml)
Swan Analytical	ISTOC1183	Swan AMI LineTOC USP Reagent Water	250ml
Swan Analytical	ISTOC1184	Swan AMI LineTOC USP Reagent Water	125ml
Swan Analytical	ISTOC1180	Swan AMI LineTOC USP SST Kit; Reagent Water, 0.5 mg/L C USP Sucrose, 0.5 mg/L C USP 1,4 -Benzoquinone	Kit (3x125ml)

Instrument	Product	Description	Pack Size
Swan Analytical	ISTOC1195	Swan AMI LineTOC 0.5 mg/L C USP 1,4- Benzoquinone	250ml
Swan Analytical	ISTOC1196	Swan AMI LineTOC 0.5 mg/L C USP Sucrose	250ml
Teledyne Tekmar	ISTOC1018	Individual TOC/TIC Calibration Blank	40ml
Teledyne Tekmar	ISTOC1020	Individual TOC/TIC Calibration Blank	125ml
Teledyne Tekmar	ISTOC1059	Calibration Standard 0.5mg/L C NIST KHP	40ml
Teledyne Tekmar	ISTOC1061	Calibration Standard 0.5mg/L C NIST KHP	125ml
Teledyne Tekmar	ISTOC1065	Calibration Standard 1mg/L C NIST KHP	40ml
Teledyne Tekmar	ISTOC1067	Calibration Standard 1mg/L C NIST KHP	125ml
Teledyne Tekmar	ISTOC1070	Calibration Standard 5mg/L C NIST KHP	40ml
Teledyne Tekmar	ISTOC1071	Calibration Standard 5mg/L C NIST KHP	125ml
Teledyne Tekmar	ISTOC1072	Calibration Standard 10mg/L C NIST KHP	40ml
Teledyne Tekmar	ISTOC1073	Calibration Standard 10mg/L C NIST KHP	125ml
Teledyne Tekmar	ISTOC1074	Calibration Standard 25mg/L C NIST KHP	40ml
Teledyne Tekmar	ISTOC1075	Calibration Standard 25mg/L C NIST KHP	125ml
Teledyne Tekmar	ISTOC1076	Calibration Standard 50mg/L C NIST KHP	40ml
Teledyne Tekmar	ISTOC1077	Calibration Standard 50mg/L C NIST KHP	125ml
Teledyne Tekmar	ISTOC1088	Ultra Low-Level TOC Kit; 3 x TOC Water Blanks, 9 TOC Standards (0.05, 0.06, 0.07, 0.08, 0.09, 0.1, 0.25, 0.5 and 1mg/L C) from NIST KHP	Kit (12x40ml)
Teledyne Tekmar	ISTOC1104	System Suitability Set to JP; Reagent Water and 0.5mg/L C from Sodium Dodecylbenzene Sulfonate	Kit (2x40ml)
Teledyne Tekmar	ISTOC1106	JP Reagent Water	40ml
Teledyne Tekmar	ISTOC1110	USP Reagent Water	40ml
Teledyne Tekmar	ISTOC1111	0.5mg/L C from USP Sucrose	40ml
Teledyne Tekmar	ISTOC1112	0.5mg/L C from USP 1,4 - Benzoquinone	40ml
Teledyne Tekmar	ISTOC1113	USP System Suitability Kit;Reagent Water, 0.5 mg/L C from USP Sucrose and 0.5 mg/L C USP 1,4- Benzoquinone	Kit (3x125ml)
Teledyne Tekmar	ISTOC1118	USP Reagent Water	125ml
Teledyne Tekmar	ISTOC1120	0.5mg/L C from USP Sucrose	125ml
Teledyne Tekmar	ISTOC1121	0.5mg/L C from USP 1,4 - Benzoquinone	125ml
Thronton 5000	ISTOC1047	Calibration Blank	500ml
Thronton 5000	ISTOC1048	Calibration Standard 0.25 mg/L C NIST Sucrose	500ml
Thronton 5000	ISTOC1049	Calibration Standard 0.5 mg/L C NIST Sucrose	500ml
Thronton 5000	ISTOC1050	Calibration Kit; 2 x Calibration Blanks, 0.25 mg/L C Sucrose and 0.5 mg/L C Sucrose	Kit (4x500ml)
Thronton 5000	ISTOC1053	Calibration Standard 1.25 mg/L C NIST Sucrose	500ml
Thronton 5000	ISTOC1144	USP Reagent Water	500ml
Thronton 5000	ISTOC1145	0.5mg/L C from USP Sucrose	500ml
Thronton 5000	ISTOC1146	0.5mg/L C from USP 1,4 - Benzoquinone	500ml
Thronton 5000	ISTOC1148	USP System Suitability Kit;Reagent Water, 0.5 mg/L C from USP Sucrose and 0.5 mg/L C USP 1,4- Benzoquinone	Kit (3x500ml)

# Conductivity Standards



## Introduction

Reagecon is the world's largest producer of conductivity standards and is credited with the invention of low level aqueous standards. The company is still the only producer worldwide with the capability to manufacture and stabilise these products at such low levels of conductivity. This low range of standards includes  $1.3\mu\text{S} \pm 0.5\mu\text{S}$  - the lowest aqueous conductivity standard available worldwide. The following summary details the principle features and benefits of this exciting range of products.

## Extensive range of values

Reagecon offer over 45 different values of Conductivity and Total Dissolved Solids (TDS) standards, ranging from as low as  $1.3\mu\text{S}/\text{cm}$  to as high as  $500,000\mu\text{S}/\text{cm}$ . Customised or bespoke values can be manufactured on demand.

## Matrix Matched

The matrix of a solution is defined as "the components of the sample other than the analyte". In all analytical measurements, it is of utmost importance that the matrix of the standard and the sample are the same. As conductivity measurement is, in the main, a water quality measurement, the standard used should also have an aqueous matrix. Reagecon's conductivity standards are all aqueous based, thereby eliminating any errors attributable to matrix mismatch.

## Non-Hazardous

As Reagecon's conductivity standards are aqueous, they are non-hazardous. They offer the following benefits over solvent-based conductivity standards

- Ease and cost of shipping, without the need to provide hazardous goods' paperwork
- Reduced Health & Safety requirements for storage and use
- Ease and cost of disposal - solvent-based conductivity standards require expensive, specialised disposal to comply with environmental regulations.

## Guaranteed Stability

As a result of the extensive R&D that led to our innovative manufacturing process, Reagecon can guarantee the stability of their complete range of conductivity standards over their entire shelf life. The stability offered by Reagecon's conductivity standards varies from that of their competitors in one vital area. We can guarantee that our conductivity standards will remain within specification, (up to their expiry date), right through their working life, regardless of when the bottle was first opened provided Good Laboratory Practise is adhered to. This eliminates the need to open a fresh bottle of standard every time the product is used. (The  $1.30\mu\text{S}/\text{cm}$  conductivity standard is packaged in single-dose bottles and each bottle when opened can only be used once.) The shelf life of the products from their date of manufacture are given below.

Conductivity Value ( $\mu\text{S}/\text{cm}$ )	Shelf Life
1.3 & 3	3 months
5 & 10	6 months
20 - 147	12 months
200 - 500,000	18 months

## Accuracy

All standards have a specification of  $\pm 1\%$ , except  $1.30\mu\text{S}/\text{cm}$ , which has a specification of  $1.25 - 1.35\mu\text{S}/\text{cm}$ . This high level of accuracy enables the standards to be used as calibrators and/or controls in fulfilment of the most exacting industrial statutory requirements, for example the United States Pharmacopoeia monograph for Water for Injection.

## Accreditation

Reagecon's conductivity measurement has been covered in the scope of our accreditation to ISO 17025 "General Requirements for the competence of Calibration and Testing Laboratories" and its predecessor, EN 45001, since 1990. ISO/IEC 17025 (INAB Ref. 264T). Achieving accreditation involves fulfilling many highly technical criteria, including fully validating our test methods and instrumentation systems and characterising our measurement uncertainty. Reagecon's accreditation proves the technical competence of our personnel, the technical validity of our test procedures and the traceability of our measurements. Therefore, in purchasing a conductivity standard from us, not only do you have transparent traceability to primary standards, but you also have confidence that our standards are of a well-defined and tightly controlled specification.

## All values are Certified & Traceable

Comprehensive Certificates of Analysis are available for all of Reagecon's conductivity standards, including detailed information on:

- Product Number
- Lot Number
- Expiry Date
- Mean specific conductance
- Date of Measurement
- Assay Limits
- Test Method Used
- Uncertainty of Measurement and Traceability Data

The complete range is traceable to primary standards from the United States National Institute for Standards and Technology (NIST). The traceability of these standards is proven by the inclusion of conductivity testing in our ISO 17025 accreditation. It is a fundamental requirement of ISO 17025 that traceability is proven.

## Characterised Temperature Coefficient of Variation

Reagecon's standards are aqueous based and consequently have a very low temperature coefficient of variation. A table of conductivity variation with temperature is printed on the label of each bottle. This feature provides the user with all the information necessary to use the products across the full range of measurement temperatures encountered for their application. Non-aqueous standards have a very high coefficient of variation which leads to measurement error and renders the products totally unsuitable for non-temperature controlled conditions, or field work.

## Unparalleled Technical Support

We have been manufacturing conductivity standards for over 20 years. In that time, we have built up a vast resource of technical expertise on all aspects of conductivity measurement. The members of Reagecon's Technical Services Department have written a comprehensive series of papers covering all of the practical requirements for accurate conductivity measurement.

These papers and the Reagecon book, "A Practical Guide to Accurate Conductivity Measurement" are available via our website - [www.reagecon.com](http://www.reagecon.com) Our Technical Services team is always on hand to answer any questions regarding the selection and use of conductivity instruments, sensors and standards.

## Conductivity Standards

Product No.	Description	Pack Size
CSKC13	1.30 $\mu\text{S/cm}$ @25°C	250ml
CSKC136	1.30 $\mu\text{S/cm}$ @25°C	6 x 250ml
CSKC5	5 $\mu\text{S/cm}$ @25°C	500ml
CSKC1025	10 $\mu\text{S/cm}$ @25°C	250ml
CSKC10256	10 $\mu\text{S/cm}$ @25°C	6 x 250ml
CSKC10	10 $\mu\text{S/cm}$ @25°C	500ml
CSKC10-10L	10 $\mu\text{S/cm}$ @25°C	10L
CSKC1325	13.25 $\mu\text{S/cm}$ @25°C	500ml
CSKC13.4	13.4 $\mu\text{S/cm}$ @25°C	500ml
CSKC15-250ml	15 $\mu\text{S/cm}$ @25°C	250ml
CSKC15	15 $\mu\text{S/cm}$ @25°C	500ml
CSKC20	20 $\mu\text{S/cm}$ @25°C	500ml
CSKC238	23.8 $\mu\text{S/cm}$ @25°C	500ml
CSKC238-1L	23.8 $\mu\text{S/cm}$ @25°C	1L
CSKC238-5L	23.8 $\mu\text{S/cm}$ @25°C	5L
CSKC25-250ml	25 $\mu\text{S/cm}$ @25°C	250ml
CSKC25	25 $\mu\text{S/cm}$ @25°C	500ml
CSKC50	50 $\mu\text{S/cm}$ @25°C	500ml
CSKC8425	84 $\mu\text{S/cm}$ @25°C	250ml
CSKC84	84 $\mu\text{S/cm}$ @25°C	500ml
CSKC84-5L	84 $\mu\text{S/cm}$ @25°C	5L
CSKC84-25L	84 $\mu\text{S/cm}$ @25°C	25L
CSKC100	100 $\mu\text{S/cm}$ @25°C	500ml
CSKC100-5L	100 $\mu\text{S/cm}$ @25°C	5L
CSKCS-250ml	147 $\mu\text{S/cm}$ @25°C	250ml
CSKCS	147 $\mu\text{S/cm}$ @25°C	500ml
CSKCS-10L	147 $\mu\text{S/cm}$ @25°C	10L
CSKC150	150 $\mu\text{S/cm}$ @25°C	500ml
CSKC185	185 $\mu\text{S/cm}$ @25°C	500ml
CSKC200	200 $\mu\text{S/cm}$ @25°C	500ml
CSKC200-5L	200 $\mu\text{S/cm}$ @25°C	5L
CSKC250	250 $\mu\text{S/cm}$ @25°C	500ml
CSKC300	300 $\mu\text{S/cm}$ @25°C	500ml
CSKC300-5L	300 $\mu\text{S/cm}$ @25°C	5L
CSKC400	400 $\mu\text{S/cm}$ @25°C	500ml
CSKC400-5L	400 $\mu\text{S/cm}$ @25°C	5L
CSKC50025	500 $\mu\text{S/cm}$ @25°C	250ml
CSKC500256	500 $\mu\text{S/cm}$ @25°C	6 x 250ml
CSKC500	500 $\mu\text{S/cm}$ @25°C	500ml
CSKC500-5L	500 $\mu\text{S/cm}$ @25°C	5L





Product No.	Description	Pack Size
CSKC600-5L	600 $\mu$ S/cm @25°C	5L
CSKC718	718 $\mu$ S/cm @25°C	500ml
CSKC1000	1,000 $\mu$ S/cm @25°C	500ml
CSKC1000-10L	1,000 $\mu$ S/cm @25°C	10L
CSKCL-50ml	1,413 $\mu$ S/cm @25°C	50ml
CSKCL01	1,413 $\mu$ S/cm @25°C	100ml
CSKCL-250ml	1,413 $\mu$ S/cm @25°C	250ml
CSKCL	1,413 $\mu$ S/cm @25°C	500ml
CSKCL1	1,413 $\mu$ S/cm @25°C	1L
CSKCL-5L	1,413 $\mu$ S/cm @25°C	5L
CSKCL-10L	1,413 $\mu$ S/cm @25°C	10L
CSKC2M	2,000 $\mu$ S/cm @25°C	500ml
CSKC2M-10L	2,000 $\mu$ S/cm @25°C	10L
CSKC2500	2,500 $\mu$ S/cm @25°C	500ml
CSKC2500-10L	2,500 $\mu$ S/cm @25°C	10L
CSKC3M	3,000 $\mu$ S/cm @25°C	500ml
CSKC3M-10L	3,000 $\mu$ S/cm @25°C	10L
CSKC5M	5,000 $\mu$ S/cm @25°C	500ml
CSKC5M-10L	5,000 $\mu$ S/cm @25°C	10L
CSKC7M	7,000 $\mu$ S/cm @25°C	500ml
CSKC7M - 5L	7,000 $\mu$ S/cm @25°C	5L
CSKC10M	10,000 $\mu$ S/cm @25°C	500ml
CSKC10M-10L	10,000 $\mu$ S/cm @25°C	10L
CSKC12880-50ML	12,880 $\mu$ S/cm @25°C	50ml
CSKC12880	12,880 $\mu$ S/cm @25°C	500ml
CSKC12880-1L	12,880 $\mu$ S/cm @25°C	1L
CSKC12880-10L	12,880 $\mu$ S/cm @25°C	10L
CSKC1325M	13,250 $\mu$ S/cm @25°C	500ml
CSKC13400	13,400 $\mu$ S/cm @25°C	500ml
CSKC15M	15,000 $\mu$ S/cm @25°C	500ml
CSKC20M	20,000 $\mu$ S/cm @25°C	500ml
CSKC20M-10L	20,000 $\mu$ S/cm @25°C	10L
CSKC30M	30,000 $\mu$ S/cm @25°C	500ml
CSKC30M-10L	30,000 $\mu$ S/cm @25°C	10L
CSKC35M	35,000 $\mu$ S/cm @25°C	500ml
CSKC40M	40,000 $\mu$ S/cm @25°C	500ml
CSKC50M	50,000 $\mu$ S/cm @25°C	500ml
CSKC50M-10L	50,000 $\mu$ S/cm @25°C	10L
CSKC58700	58,700 $\mu$ S/cm @25°C	500ml
CSKC60M	60,000 $\mu$ S/cm @25°C	500ml
CSKC80M	80,000 $\mu$ S/cm @25°C	500ml
CSKC80M-10L	80,000 $\mu$ S/cm @25°C	10L

Product No.	Description	Pack Size
CSKC84M	84,000 $\mu\text{S}/\text{cm}$ @25°C	500ml
CSKC100M	100,000 $\mu\text{S}/\text{cm}$ @25°C	500ml
CSKC100M-10L	100,000 $\mu\text{S}/\text{cm}$ @25°C	10L
CSKC111800	111,800 $\mu\text{S}/\text{cm}$ @25°C	500ml
CSKC150M	150,000 $\mu\text{S}/\text{cm}$ @25°C	500ml
CSKC150M-10L	150,000 $\mu\text{S}/\text{cm}$ @25°C	10L
CSKC200M	200,000 $\mu\text{S}/\text{cm}$ @25°C	500ml
CSKC200M-5L	200,000 $\mu\text{S}/\text{cm}$ @25°C	5L
CSKC200M-10L	200,000 $\mu\text{S}/\text{cm}$ @25°C	10L
CSKC300M	300,000 $\mu\text{S}/\text{cm}$ @25°C	500ml
CSKC300M-10L	300,000 $\mu\text{S}/\text{cm}$ @25°C	10L
CSKC350M	350,000 $\mu\text{S}/\text{cm}$ @25°C	500ml
CSKC350M-10L	350,000 $\mu\text{S}/\text{cm}$ @25°C	10L
CSKC400M	400,000 $\mu\text{S}/\text{cm}$ @25°C	500ml
CSKC450M	450,000 $\mu\text{S}/\text{cm}$ @25°C	500ml
CSKC450M-10L	450,000 $\mu\text{S}/\text{cm}$ @25°C	10L
CSKC500M	500,000 $\mu\text{S}/\text{cm}$ @25°C	500ml
CSKC500M-10L	500,000 $\mu\text{S}/\text{cm}$ @25°C	10L

## Non Accredited Values Available

Product No.	Description	Pack Size
CSKC2	2 $\mu\text{S}/\text{cm}$ @25°C	250ml
CSKC3	3 $\mu\text{S}/\text{cm}$ @25°C	250ml

\* Other Values Available upon Request

## TDS Standard

Product No.	Description	Pack Size
CS1382-50ml	1382 ppm NaCl @25°C	50ml
CS1382	1382 ppm NaCl @25°C	500ml

# pH Buffer Solutions



## Guaranteed Traceability

Reagecon's pH buffer standards are directly traceable to the IUPAC pH scale by an unbroken chain of traceability. Reagecon achieve this traceability through a series of comparisons, with the key reference materials being Standard Reference Materials (SRMs) manufactured by NIST.

For proof of traceability, all of these comparisons must be made in a technically - valid manner and the accuracy of each step must be quantified by calculating the associated Uncertainty of Measurement. Reagecon's pH buffer standards meet the ISO definition of traceability: "The ability to relate measurements back to a stated reference (usually an international standard) through an unbroken chain of comparisons, each having stated uncertainties of measurement." Reagecon's traceability claims are guaranteed by our accreditation to ISO/IEC 17025.

## Why use traceable pH buffers?

Your pH measurements can only be as good as the pH buffers that you use. If your pH calibration is made using traceable pH buffers then you have a direct link to the International pH scale for your measurements. Without this link, you are not entitled to report your measurements in pH units so the number displayed on your pH meter is just that - a number and is not a pH value. The common link that is achieved by traceability allows comparability of results regardless of:

- When the measurements were made
- Where the measurements were made
- What instrumentation was used to make the measurements

Traceable analysis is necessary for consistency and universal acceptance of your pH results - including acceptance by regulatory bodies.

## Fully Accredited

Reagecon's pH analysis is accredited to ISO/IEC 17025 (INAB Ref:264T) "General requirements for the competence of testing and calibration laboratories". Reagecon's accreditation to ISO/IEC 17025 gives independent proof of three key areas:

- Our pH analysis is technically valid and is carried out in a thoroughly controlled manner by highly - qualified staff.
- Our claims over the accuracy of our pH analysis are valid and we have properly quantified our accuracy in our Uncertainty of Measurement calculations.
- Our pH analysis is traceable to NIST SRMs. It is important to note that NIST do not police claims of traceability to their SRMs. Any manufacturer of pH buffers can claim that their buffers are traceable to NIST, but only manufacturers that are accredited to ISO/IEC 17025 have independent proof of their traceability.

Reagecon's accreditation is indicated by the Irish National Accreditation Board (INAB) logo on our Certificates of Analysis for pH Buffers. Accreditation by INAB and all other accreditation boards validated to accredit ISO/IEC 17025 are mutually recognised as being directly equivalent.

Why take chances with your pH buffer supplier's traceability? By using buffers from a manufacturer that holds ISO/IEC 17025 accreditation you have a guarantee of traceability.

## Stability

Reagecon's pH buffers have been specially formulated to ensure their stability. The packaging bottles that we use have also been selected and tested to provide maximum stability. We have conducted stability trials on both freshly-opened and part-full bottles of our pH buffers to validate their shelf-life - an example is given in Figure 2. This demonstrates that Reagecon's pH buffers will stay within their specification limits up to the stated expiry date regardless of when the bottle was first opened (provided that the pH buffer is stored in accordance with good laboratory practice). Most of Reagecon's pH buffers have an expiry date of either 2 years or 3 years from the date of manufacture.

This means that our pH buffers' expiry dates are an absolute value and they have a long "Active Life". We do not quote a short usage period after opening the bottle and there is no need to record by hand an "Opened on date" and a "Use by date". With Reagecon's pH buffers you just open the bottle and use the contents - with other manufacturers' pH buffers you need to record these extra dates and may need to dispose of most of the contents of the bottle at the end of its short "Active Life".

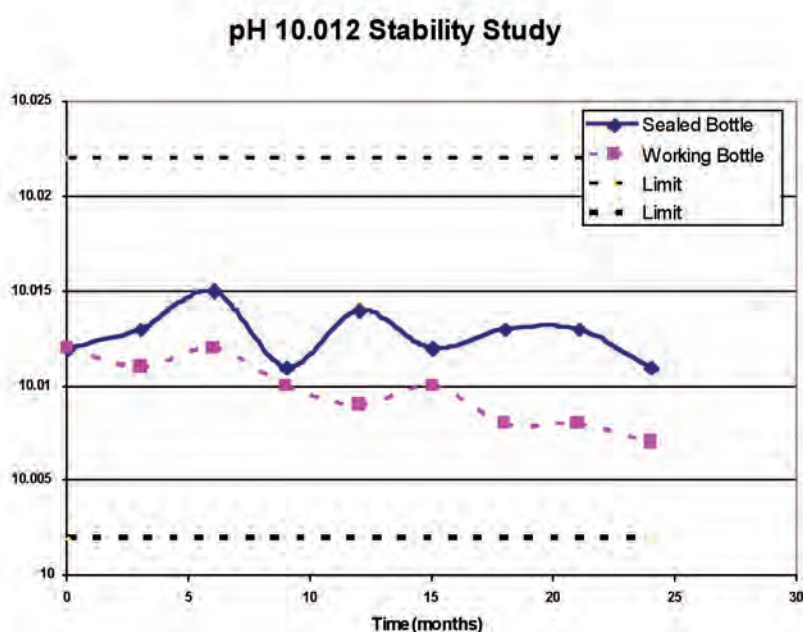


Figure 2: Stability Data for Reagecon pH 10.012 @ 25°C

## Packaging Options

Besides regular bottles, Reagecon offer pH buffers in a wide variety of convenient packaging options:

- **Twin-neck bottles.** These bottles are ideal for use with portable pH meters. Their integral calibration chamber prevents contamination and removes the need to carry a separate measuring container or to decant buffers for use in the field
- **Bag-in-Box containers.** This packaging consists of a cardboard box with a collapsible plastic liner. This offers a space-saving alternative to bottles and reduces the amount of packaging waste for disposal. Every Bag-in-Box container is supplied with a tap to allow the contents to be easily dispensed.
- **Capsules.** The presentation of pH buffers in capsule format is an innovative concept developed by Reagecon, and offers several advantages
- **RECAL Buffers.** RECAL is a range of pH Buffers in a wide mouth disposable container which can be used for direct calibration of the electrode and then discarded on completion.

## Extensive Range of pH values

Reagecon manufacture the most comprehensive range of pH reagents in the world; these are designed to suit all end user requirements. These include laboratory grade buffers, the Professional Range (buffer standards as per N.I.S.T/DIN and high resolution buffers), low ionic strength buffers and pH buffer capsules. We are delighted to add several new offerings that include buffers to calibrate Antimony electrodes, Sterile Buffers and colour coded pH buffers with a three decimal place specification. All are manufactured to exacting specifications with an extended shelf life and cover the pH range of pH 1.00 to pH 13.00 inclusive. All are supplied with a detailed Certificate of Analysis which outlines traceability to N.I.S.T (the N.I.S.T SRM(s) Lot No. is stated on the certificate). Temperature dependence data is printed on the label as are lot numbers and expiry dates.

## Calibration Buffers

Reagecon pH Buffers are pre-programmed into the instruments of most major manufacturers.

## Control Buffers

For increased confidence in their test measurements, analysts should regularly measure the pH of a Control Standard. If an acceptable value is obtained from the Control Standard measurement then the analysts, can have improved confidence that their test measurements will be correct. Reagecon's extensive range of pH buffers means that there will be a Reagecon pH buffer which can be used as a control buffer for all pH applications.

## pH Buffers @ 20°C

Clear, Colourless pH Buffer Solutions. Tested at 20°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml	Product No. 1L	Product No. 5L
pH 1.00 ± 0.02 @20°C	10105	1010	5010
pH 1.20 ± 0.02 @20°C	10125	1012	5012
pH 2.00 ± 0.02 @20°C	10205	1020	5020
pH 3.00 ± 0.02 @20°C	10305	1030	5030
pH 4.00 ± 0.01 @20°C	10405	1040	5040
pH 4.00 ± 0.01 @20°C (Phthalate Free)	CC10405	CC1040	CC5040
pH 5.00 ± 0.01 @20°C	10505	1050	5050
pH 6.00 ± 0.01 @20°C	10605	1060	5060
pH 6.80 ± 0.01 @20°C	10685	1068	5068
pH 7.00 ± 0.01 @20°C	10705	1070	5070
pH 8.00 ± 0.01 @20°C	10805	1080	5080
pH 9.00 ± 0.01 @20°C	10905	1090	5090
pH 9.20 ± 0.01 @20°C	10925	10920	50920
pH 9.22 ± 0.01 @20°C	109220	10922	50922
pH 10.00 ± 0.01 @20°C	11005	1100	5100
pH 11.00 ± 0.05 @20°C	11105	1110	5110
pH 12.00 ± 0.05 @20°C	11205	1120	5120
pH 13.00 ± 0.05 @20°C	11305	1130	5130

## pH Buffers @ 25°C

Clear, Colourless pH Buffer Solutions. Tested at 25°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml	Product No. 1L	Product No. 5L
pH 1.00 ± 0.02 @25°C	1010525	101025	501025
pH 1.68 ± 0.02@25°C	10168	1016825	5016825
pH 2.00 ± 0.02 @25°C	1020525	102025	502025
pH 2.00 ± 0.02@25°C (Mercury Free)	1020255MF	102025MF	502025MF
pH 3.00 ± 0.02 @25°C	1030525	103025	503025
pH 4.00 ± 0.01 @25°C	1040525	104025	504025
pH 4.00 ± 0.01 @25°C (Phthalate Free)	CC1040525	CC104025	CC504025
pH 5.00 ± 0.01 @25°C	1050525	105025	505025
pH 5.00 ± 0.01 @25°C (Mercury Free)	1050525MF	105025MF	505025MF
pH 6.00 ± 0.01 @25°C	1060525	106025	506025
pH 6.00 ± 0.01 @25°C (Mercury Free)	1060525MF	106025MF	506025MF
pH 6.80 ± 0.01 @25°C	1068525	106825	506825
pH 7.00 ± 0.01 @25°C (Mercury Free)	1070525MF	107025MF	507025MF
pH 7.00 ± 0.01 @25°C	1070525	107025	507025
pH 8.00 ± 0.01 @25°C	1080525	108025	508025
pH 8.00 ± 0.01 @25°C (Mercury Free)	1080525MF	108025MF	5080525MF
pH 9.00 ± 0.01 @25°C	1090525	109025	509025
pH 9.40 ± 0.01 @25°C	1094025	10940251	5094025
pH 10.00 ± 0.01 @25°C	1100525	110025	510025
pH 11.00 ± 0.05 @25°C	1110525	111025	511025
pH 12.00 ± 0.05 @25°C	1120525	112025	512025
pH 13.00 ± 0.05 @25°C	1130525	113025	513025

## Colour Coded Buffers @ 20°C

Coloured pH Buffer Solutions. Tested at 20°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 30ml	Product No. 100ml	Product No. 250ml	Product No. 500ml	Product No. 1L	Product No. 5L
pH 4.00 ± 0.01 @20°C (Red)	1040C030	1040C100	10402C	10405C	1040C	5040C
pH 7.00 ± 0.01 @20°C (Yellow)	1070C030	1070C100	10702C	10705C	1070C	5070C
pH 9.00 ± 0.01 @ 20°C (Blue)	1090C030	1090C100	10902C	10905C	1090C	5090C
pH 10.00 ± 0.01 @20°C (Blue)	1100C030	1100C100	11002C	11005C	1100C	5100C

## Colour Coded Buffers @ 25°C

Coloured pH Buffer Solutions. Tested at 25°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml	Product No. 1L	Product No. 5L
pH 4.00 ± 0.01 @25°C (Red)	1040525C	104025C	504025C
pH 4.00 ± 0.01@ 25°C (Red) (Mercury Free)	1040525CMF	104025CMF	504025CMF
pH 7.00 ± 0.01 @25°C (Yellow)	1070525C	107025C	507025C
pH 7.00 ± 0.01@25°C (Yellow)(Mercury Free)	1070525CMF	107025CMF	507025CMF
pH 10.00 ± 0.01 @25°C (Blue)	1100525C	110025C	510025C
pH 10.00 ± 0.01@ 25°C (Blue) (Mercury Free)	1100255CMF	110025CMF	510025CMF

## Twin Neck Bottle Format

pH Buffers are available in an attractive and innovative twin neck bottle.

The main advantages of this packaging are:

- No possibility of contamination
- No need for separate measuring container for use in the calibration of the Electrode
- Correct quantity of buffer required for calibration is dispensed into the calibrating chamber giving rise to no waste
- Ideally suited for field work
- Easy to carry
- 250ml, 500ml and 1L sizes available



## Twin Neck Bottle Format @ 20°C

Coloured pH Buffer solutions in Twin-neck containers with integrated calibrating chamber. Tested at 20°C and certified by Reagecon's ISO/IEC 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 250ml	Product No. 500ml	Product No. 1L
pH 4.00 ± 0.01 @20°C (Red)	10402CTT	10405CTT	1040CTT
pH 7.00 ± 0.01 @20°C (Yellow)	10702CTT	10705CTT	1070CTT
pH 9.00 ± 0.01 @ 20°C (Blue)	10902CTT	10905CTT	1090CTT
pH 9.22 ± 0.01 @20°C	1092202TT	1092205TT	10922CTT
pH 10.00 ± 0.01 @20°C (Blue)	11002CTT	11005CTT	1100CTT

## Twin Neck Bottle Format @ 25°C

Coloured pH Buffer solutions in Twin-neck containers with integrated calibrating chamber. Tested at 25°C and certified by Reagecon's ISO/IEC 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml
pH 1.00 ± 0.02 @25°C	1010525TT
pH 2.00 ± 0.02 @ 25°C	1020525TT
pH 4.00 ± 0.01 @25°C (Red)	1040525CTT
pH 6.86 ± 0.01 @25°C (Yellow)	1068805CTT
pH 6.865 ± 0.01 @25°C	106865TT
pH 7.00 ± 0.01 @25°C (Yellow)	1070525CTT
pH 9.00 ± 0.01 @25°C	1090525TT
pH 9.18 ± 0.01@25°C (Blue)	109180CTT
pH 9.18 ± 0.01 @25°C	109180TT
pH 9.21 ± 0.01 @ 25°C (Blue)	1092125CTT
pH 9.21 ± 0.01 @ 25°C	1092125TT
pH 10.00 ± 0.01 @25°C (Blue)	1100525CTT
pH 12.00 ± 0.05 @25°C	1120525TT

## pH Buffer Standards NIST Values @ 20°C

Clear, Colourless NIST Value pH Buffer Solutions. Tested at 20°C and certified by Reagecon's ISO/IEC 17025 Accredited Test Method. NIST traceable and presented in 500ml bottles. Other pack sizes available upon request.

Description	Product No.500ml
pH 1.675 ± 0.010 @20°C	101675
pH 1.677 ± 0.010 @20°C	101677
pH 3.788 ± 0.010 @20°C	103788
pH 4.001 ± 0.010 @20°C	104001
pH 6.881 ± 0.010 @20°C	106881
pH 7.429 ± 0.010 @20°C	107429
pH 9.225 ± 0.010 @20°C	109225
pH 10.062 ± 0.010 @20°C	110062
pH 12.627 ± 0.050 @20°C	112627



## pH Buffer Standards DIN 19266 values @ 25°C

Clear, Colourless DIN Value pH Buffer Solutions. Tested at 25°C and certified by Reagecon's ISO/IEC 17025 Accredited Test Method. NIST traceable and presented in 500ml bottles. Other pack sizes available upon request.

Description	Product No. 500ml
pH 1.679 ± 0.010 @25°C	101679
pH 3.776 ± 0.010 @25°C	103776
pH 4.005 ± 0.010 @25°C	104005
pH 6.865 ± 0.010 @25°C	10687
pH 7.413 ± 0.010 @25°C	107413
pH 9.180 ± 0.010 @25°C	109180
pH 10.012 ± 0.010 @25°C	110012
pH 12.454 ± 0.050 @25°C	112454

## pH Buffer Standards DIN 19267 @25°C

Description	Product No. 500ml
pH 1.09 @25°C	101095
pH 3.06 @25°C	103065
pH 4.65 @25°C	104655
pH 6.79 @25°C	106795
pH 9.23 @25°C	109235
pH 12.75 @25°C	112755

## High Resolution Buffers

Coloured High Resolution pH Buffer solutions. Tested at 20°C or 25°C and certified by Reagecon's ISO/IEC 17025 Accredited Test Method. NIST traceable and presented in 500ml bottles. Other pack sizes available upon request.

Description	Product No. 500ml
pH 4.000 ± 0.010 @20°C (Red)	104000C
pH 4.000 ± 0.010 @25°C (Red)	H40525C
pH 4.000 ± 0.010 @25°C	H40525
pH 7.000 ± 0.010 @20°C (Yellow)	107000C
pH 7.000 ± 0.010 @25°C (Yellow)	H70525C
pH 7.000 ± 0.010 @25°C	H70525
pH 10.000 ± 0.010 @20°C (Blue)	110000C
pH 10.000 ± 0.010 @25°C (Blue)	H100525C

## Antimony Buffers

Description	Product No. 250ml	Product No. 500ml
pH 1.07 @25°C - Colourless	10725025	10725050
pH 4.00 ± 0.05 @25°C - Light Red	401025P	40102550
pH 7.01 at 25°C - Yellow	70125025	70125050

## Technical pH Buffer Solutions @ 25°C

Coloured Technical pH Buffer solutions. Tested at 25°C and certified by Reagecon's ISO/IEC 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 250ml	Product No. 500ml	Product No. 1L
pH 2.00 ± 0.02 @25°C (Coloured)	TB2002	TB200	TB2001
pH 4.01 ± 0.02 @25°C (Coloured)	TB4012	TB401	TB4011
pH 4.60 ± 0.02 @25°C (Coloured)	TB4602	TB460	TB46001
pH 7.00 ± 0.02 @25°C (Coloured)	TB7002	TB700	TB7001
pH 9.21 ± 0.02 @25°C (Coloured)	TB9212	TB921	TB9211
pH 10.00 ± 0.02 @25°C (Coloured)	TB1002	TB100	TB1001

## Low Ionic Strength Buffers

Low Ionic Strength pH Buffer Solutions. Special buffers suitable for accurate measurement of low ionic strength samples. Tested at 20°C and certified by Reagecon's ISO/IEC 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml	Product No. 5L
pH 4.10 ± 0.04 @20°C	LS41	LS415
pH 6.96 ± 0.04 @20°C	LS69	LS695

## "Bag In Box" - Colour Coded @ 20°C

Coloured, Bag in Box pH Buffer solutions supplied in cubitainers with tap. Tested at 20°C and certified by Reagecon's ISO/IEC 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 5L	Product No.10L
pH 4.00 ± 0.01 @20°C (Red)	BPH01	BPH02
pH 6.00 ± 0.01 @20°C (Clear)	BPH34	BPH35
pH 7.00 ± 0.01 @20°C (Yellow)	BPH03	BPH04
pH 10.00 ± 0.01 @20°C (Blue)	BPH05	BPH06

## Bag in Box - Colour Coded @ 25°C

Coloured, Bag in Box pH Buffer solutions supplied in cubitainers with tap. Tested at 25°C and certified by Reagecon's ISO/IEC 17025 Accredited Test Method. NIST traceable and presented in various pack sizes

Description	Product No. 5L	Product No. 10L
pH 4.00 ± 0.01 @25°C (Red)	BPH07	BPH08
pH 7.00 ± 0.01 @25°C (Yellow)	BPH09	BPH10
pH 10.00 ± 0.01 @25°C (Blue)	BPH11	BPH12

## pH Buffer @ 20°C - Bag in Box

Description	Product No. 5L
pH 1.675 ± 0.01 @20°C	BPH97
pH 4.00 ± 0.01 @20°C	BPH43
pH 4.66 ± 0.01 @20°C	BPH113
pH 5.00 ± 0.01 @20°C	BPH105
pH 6.881± 0.01 @20°C	BPH99
pH 7.00 ± 0.01 @20°C	BPH22
pH 8.00 ± 0.01 @20°C	BPH48
pH 9.00 ± 0.01 @20°C	BPH32
pH 9.225 ± 0.01 @20°C	BPH100
pH 10.00 ± 0.01 @20°C	BPH44
pH 11.00 ± 0.05 @20°C	BPH63

## pH Buffer @ 25°C - Bag in Box

Description	Product No. 5L
pH 1.00 ± 0.02 @25°C	BPH27
pH 1.679 ± 0.01 @25°C	BPH90
pH 2.00 ± 0.02 @25°C	BPH13
pH 3.776 @25°C	BPH91
pH 4.00 ± 0.01 @25°C	BPH21

## Sterile Buffers

pH Buffer Solutions sterilised by gamma irradiation.

Description	Product No. 500ml
pH 4.00 ± 0.01 @20°C (Sterile)	104005S
pH 6.00 ± 0.01 @20°C (Sterile)	106005S
pH 7.00 ± 0.01 @20°C (Sterile)	107005S
pH 8.00 ± 0.01 @20°C (Sterile)	108005S

## pH Buffers @ 38°

Description	Product No. 1L
pH 4.00 ± 0.01 @ 38°C	104038
pH 6.00 ± 0.01@38°C	106038
pH 7.00 ± 0.01@ 38°C	107038
pH 8.00 ± 0.01 @ 38°C	108038

## pH Buffer Capsules

The presentation of pH buffers in capsule format is an innovative concept developed by Reagecon. Tested at 25°C, NIST Traceable. These capsules offer the following advantages:

- Colour coded for ease of identification
- Dissolve quickly
- Preservative free
- Easy to store and transport
- Easy to use
- Accuracy  $\pm 0.02$  pH units
- Economical
- Extended shelf life

**To use:** Empty contents of one capsule into 100ml of distilled water.

Description	Product No. Pack of 50 Capsules
pH Buffer Capsules pH 4.01 $\pm 0.02$ @25°C (Red)	CP1040
pH Buffer Capsules pH 7.00 $\pm 0.02$ @25°C (Green)	CP1070
pH Buffer Capsules pH 9.00 $\pm 0.02$ @25°C (Purple)	CP1090
pH Buffer Capsules pH 10.00 $\pm 0.02$ @25°C (Blue)	CP1100
pH Buffer Capsule Kit (10 x pH 4.01, 20 x pH 7.00, 10 x pH 9.00, 10 x pH 10.00 @25°C)	CPMX47910
pH Buffer Capsule Kit (10 x pH 4.01, 20 x pH 7.00, 10 x pH 9.00 & 10 x pH 10.00 )	CPMX
pH Buffer Capsule Kit (10 x pH 4, 10x pH 7, 10x pH 10 & 2 x Universal Indicator)	CPMX4710-UNI
pH Buffer Capsule Kit ( 3 x pH 4, 3x pH 7, 3x pH 10 & 1 Universal Indicator)	CPMX4710-UNI/1
pH Buffer Capsule Kit (20 x pH 4.01, 20 x pH 7.00, 10 x pH 9.00 )	CPMX479

## RECAL - Single use Calibration Buffers (Colour Coded)

RECAL is a range of pH Buffers in a wide mouth disposable container which can be used for direct calibration of the electrode and then discarded after use. RECAL offers the following advantages:

- Tested and Certified by Reagecon's ISO 17025 Accredited Test Method.
- Convenience - saves time, more efficient calibration, avoids waste and spillage.
- Mobility - These are easy to store and transport, allowing calibration in the field or directly in the plant.
- Economical - No waste buffer, beaker not required.
- Accuracy - the possibility of contamination is eliminated giving increased confidence in the results.
- Traceability - Each container is labelled with lot number and expiry date and buffers are directly traceable to N.I.S.T. Standards.

Description	Product No. 6 x 90ml @ 20°C	Product No. 6 x 90ml @ 25°C
pH 4.00 (Red) $\pm 0.01$	04C60	04C65
pH 7.00 (Yellow) $\pm 0.01$	07C60	07C65
pH 9.00 (Clear) $\pm 0.01$	09C60	09C65
pH 10.00 (Blue) $\pm 0.01$	10C60	10C65
Recal mixed pack of 2xpH 4, 7 & 10 $\pm 0.01$	MXC60	MXC65
Recal mixed pack of 2xpH 4, 7 & 9 $\pm 0.01$	MX09C60	MX09C65

Additional pack sizes available on request

# Electrode Care & Maintenance Solutions



## Introduction

pH is one of the most frequently and universally made measurements in science. Despite the number of people involved in pH measurement, the practical fundamentals governing it are not widely understood. The literature sometimes offers conflicting advice on how it is best measured and there is often uncertainty about the correct option available to deal with individual measurement applications. What is often not fully appreciated is that the vast majority of pH problems are related to the correct selection, care or maintenance of the electrode with particular emphasis on the reference electrode.

This brief technical note deals specifically with the correct choice of reference electrode filling solution and the compatibility of the filling solution with the sample being measured. It is important to keep two key considerations in mind as part of the selection process of the electrode filling solution. Firstly, the issue of the compatibility between the filling solution and the sample relates not only to direct pH measurement but also direct Ion and Redox measurement. It is also relevant to the use of all three sensors when performing potentiometric titrations. Secondly, the direct experience of the analyst, the operating instructions of the electrode or the detail contained within the test method being followed, may be of most value in the selection of the correct filling solution.

## Correct choice of Electrode Filling Solution (Electrolyte)

A good electrolyte must fulfil a number of conditions. The equitransference of the cation/anion combination should be as close as possible to being equimobile, have constant chloride activity, be of high electrical conductance and as non-chemically reactive as possible.

Concentrated or saturated Potassium Chloride (KCl) fulfils all of these conditions to a greater or lesser extent and is the filling solution of choice in either potentiometric titrations or direct pH, redox or ion measurements where silver/silver chloride or calomel reference electrodes are used.

However, saturated KCl is only sparingly soluble below 20°C, so if the measurements are carried out below this temperature weaker concentrations of this salt needs to be used. By way of example, 3.5M KCl remains in solution down to 15°C and 2M KCl will remain in solution down to -5°C. However, the lower the concentration of KCl the higher the liquid junction potential error that will arise in the measurement. For work at very low temperatures, 1.5M KCl dissolved in equal volumes of water and glycerin can be used. (KCl does not crystallize out of solution in this mixture until the temperature reaches -30°C). This mixture will introduce even greater liquid junction errors.

**The use of KCl in any concentration may be problematic in the following situations:**

- 1 The following ions can react with  $\text{Cl}^-$  to form insoluble precipitates that block the diaphragm,  $\text{Hg}^{++}$ ,  $\text{Cu}^{++}$ ,  $\text{Ag}^+$ ,  $\text{Pb}^{++}$ . In such cases, a double junction electrode must be used with the outer chamber containing either Potassium Nitrate or Ammonium Sulphate at various concentrations. However, the potassium may also react with anions like Perchlorate ( $\text{ClO}_4^-$ ) to form Potassium Perchlorate ( $\text{KClO}_4$ ) which is sparingly soluble. In this situation Ammonium Sulfate can also be used as the filling solution in the outer chamber.
- 2 Some electrode manufacturers recommend the use of 3M KCl or 4M KCl saturated with Silver Chloride ( $\text{AgCl}$ ) as the filling solution of choice. In this instance silver may react with several halides including bromides or iodides or may react with cyanides. Most importantly, silver may also react with sulfide which manifests itself in blackening of the diaphragm due to blockage. There may also be ingress of the sulfide into the electrode which will cause poisoning of the reference system, as well as high false liquid junction potentials. In this instance, silver free KCl can be used either as a primary electrolyte or in the outer junction of a double junction electrode.

- 3 2M Potassium Nitrate (KNO<sub>3</sub>) + 0.001M Potassium Chloride may be used specifically for measurement of samples containing silver halides or used for argentimetric titrations where silver billet electrodes are used.
- 4 For pH measurement or titration in non-aqueous media or organic solvents, Lithium Chloride in Ethanol, Methanol, Isopropanol or Glacial Acetic Acid must be used as a filling solution in both the inner and outer chamber.

These hints are for guidance purposes and will help in the majority of applications. However, such hints can never be exhaustive or sufficiently comprehensive to cover all types of samples encountered.



## Electrode Filling Solutions

Product No.	Description	Pack Size
EFS3005	3M Potassium Chloride (KCl), free from Silver ion	50ml
EFS3	3M Potassium Chloride (KCl), free from Silver ion	100ml
EFS3-250ML	3M Potassium Chloride (KCl), free from Silver ion	250ml
EFS35	3M Potassium Chloride (KCl), free from Silver ion	500ml
EFS301	3M Potassium Chloride (KCl), free from Silver ion	1L
EFS351	3.5M Potassium Chloride (KCl) free from Silver ion	100ml
EFS3511	3.5M Potassium Chloride (KCl) free from Silver ion	1L
EFS35AC	3.5M Potassium Chloride (KCl), saturated with AgCl	100ml
EFS35AC5	3.5M Potassium Chloride (KCl), saturated with AgCl	500ml
EFS381	3.8M Potassium Chloride (KCl), free from Silver ion	100ml
EFS3810	3.8M Potassium Chloride (KCl) free from Silver ion	1L
EFS4	4M Potassium Chloride (KCl), free from Silver ion	100ml
LKCL	Saturated Potassium (KCl), free from Silver ion	100ml
LKCL1	Saturated Potassium (KCl), free from Silver ion	1L
EFS3AC	3M Potassium Chloride (KCl), saturated with AgCl	100ml
EFS3AC-250ML	3M Potassium Chloride (KCl), saturated with AgCl	250ml
EFS3AC5	3M Potassium Chloride (KCl), saturated with AgCl	500ml
EFS4AC	4M Potassium Chloride (KCl), saturated with AgCl	100ml
EFSPS	Saturated Potassium Sulphate K <sub>2</sub> SO <sub>4</sub>	100ml
EFS2AS	Double Junction Bridge Solution 2M Ammonium Sulphate(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	100ml
EFS2-250ML	Double Junction Bridge Solution 2M Ammonium Sulphate(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	250ml
EFSAMO1	Ammonia	100ml
EFS01AS	Double Junction Bridge Solution 0.1M Ammonium Sulphate	100ml
EFSKNO	Double Junction Bridge Solution 10% w/v Potassium Nitrate	100ml
EFSLICL	Non-Aqueous Filling Solution; 1M Lithium Chloride (LiCl), dissolved in isopropanol	100ml
EFSLIET	Non-Aqueous Filling Solution; 1M Lithium Chloride (LiCl), dissolved in ethanol	100ml
EFSLIGA	Non-Aqueous Filling Solution; 1M lithium Chloride (LiCl), dissolved in glacial acetic acid	100ml
EFSDO	Dissolved Oxygen Electrolyte	100ml
EFSLIAPP	Low Ionic Strength Applications	100ml
EFSNACLO4	Saturated Sodium Perchlorate in Glacial Acetic Acid	100ml
EFSBR5	Preparation Cell Electrolyte for ASTM D1492 (Bromine)	5L

## Electrode Cleaning Solutions

Designed to extend the useful life of your PH electrode.

Product No.	Description	Pack Size
ECS1	(Pepsin/Hydrochloric Acid) for removal of proteins	100ml
ECS-250ML	(Pepsin/Hydrochloric Acid) for removal of proteins	250ml
ECS	(Pepsin/Hydrochloric Acid) for removal of proteins	500ml
ECSF	(Pepsin/Hydrochloric Acid) for removal of proteins	1L
IECS	Inorganic (Thiourea/Hydrochloric Acid); for removal of sulphide	100ml
IECS5	Inorganic (Thiourea/Hydrochloric Acid); for removal of sulphide	500ml
IECS1	Inorganic (Thiourea/Hydrochloric Acid); for removal of sulphide	1L
O ECS1	Organic Cleaning Solutions	100ml
O ECS	Organic Cleaning Solutions	500ml
O ECS5	Organic Cleaning Solutions	5L
ERS	Electrode Regeneration Solution	100ml
ECHPS	Rinse Solution, High Purity Water for Rinsing Electrodes	500ml
ERSS5	Electrode Rinse Solution	500ml

## Electrode Storage Solutions

Product No.	Description	Pack Size
ESS001	pH Electrode Storage Solution	100ml
ESS5	pH Electrode Storage Solution	500ml
ESS01	pH Electrode Storage Solution	1L
ESS05	pH Electrode Storage Solution	5L

## Electrode Care & Maintenance Kit

This is a unique Kit designed to help calibrate, clean and extend the useful life of your pH electrodes.

### Contents include:

- pH buffers in twin neck bottles - 1 x 500ml each of pH 4.00/7.00/10.00 @ 20°C
- Electrode Storage Solution - 1 x 500ml
- Electrode Cleaning Solution - 1 x 100ml each of Biological, Organic and Inorganic Solutions
- Filling Solution 1 x 100ml each of 3M KCl/AgCl and 4M KCl
- Pipettes (2)
- Regeneration Solution - 1 x 100ml
- Instruction card and GLP Log Book

Product No.	Description	Pack Size
RCMK1	REAGECARE pH Electrode Care & Maintenance Kit	Kit

# Redox Standards



## Summary of Features & Benefits:

- Widest range of values and pack options available in the market
- Very high specifications ( $\pm 5\text{mV}$ )
- Extensive technical advice on the measurement techniques available
- Detailed Safety Data Sheets available online
- Enquiries for customized or bulk options welcome
- All products certified with proven verifiable accuracy and uncertainty of measurement

During its working life a Redox electrode undergoes no change of zero point or slope. Redox is an absolute measurement expressed in millivolts (unlike pH, which is an artificial logarithmic scale using values of 1 - 14). Therefore, redox electrodes do not require calibration and the standards act as control materials rather than calibration standards. Such control standards not only control the functionality of the sensing and reference electrode, but also control the analyst's technique, environmental conditions and the operation of the measurement meter (pH meter in millivolt mode).

If the measurement of the control material is outside the expected values, it may be due to any or several of the following reasons:

- Poor connections or a short circuit within the electrodes or between the electrodes and meter.
- Incompatibility between the reference electrode and sample, in particular the use of incorrect electrolyte.
- Contamination or poisoning of reference system or reference electrolyte.
- Blocked or contaminated diaphragm.
- Incorrect choice of sensing electrode.

In choosing an electrode, broadly, but not exclusively the analyst can choose between platinum or gold and choose several different options as to how the platinum or gold is configured on the electrode.

Although, platinum is more commonly used, it may give erroneous results in low ionic strength solutions or, when its surface is passivated or roughened. It may also show poor results in strongly oxidizing solutions. On the other hand gold is totally unsuitable in the presence of or due to the formation of gold cyanide or gold halide complexes in the sample. Although substantial guidance is offered in the literature on which metal to use, the specific experience of the user, is the most important determinant of the final choice.

**Redox Standards** All values quoted are potentials of Platinum Electrode v Ag/AgCl reference (3M KCl)

Value	Product No. 500ml	Product No. 10L	Product No. 10L Bag In Box
124mV @25°C	RS124	RS12410	RSB12410
200mV @25°C	RS200	RS20010	RSB20010
220mV @25°C	RS220	RS22010	RSB22010
250mV @25°C	RS250	RS25010	RSB25010
300mV @25°C	RS300	RS30010	RSB30010
358mV @25°C	RS358	RS35810	RSB35810
400mV @25°C	RS400	RS40010	RSB40010
440mV @25°C	RS440	RS44010	RSB44010
465mV @25°C	RS465	RS46510	RSB46510
468mV @25°C	RS468	RS46810	RSB46810
475mV @25°C	RS475	RS47510	RSB47510
600mV @25°C	RS600	RS60010	RSB60010
650mV @25°C	RS650	RS65010	RSB65010



# Turbidity Standards



## Summary of Features & Benefits:

- Non toxic and non carcinogenic
- 2 year shelf life for all values
- Highly accurate
- Traceable to NIST
- US EPA approved
- Ready to use - our range covers the full turbidity measurement range

Reagecon's turbidity standards for ratio and non-ratio instruments are composed of suspended polymer microspheres. These turbidity standards remove the handling, stability and accuracy problems associated with traditional Formazin turbidity standards; (for detailed comparison, see Table 1).

## Turbidity Measurement

Accurate and precise laboratory or online analytical measurement can be influenced by the following 6 key parameters:

- Measuring Instrument
- The Operator
- Measuring Accessories
- Standards and Reference Material
- The Sample
- Measuring Environment

The technical validation, comparability, quality control/assurance, proficiency testing and traceability of any analysis require significant attention to detail of all these parameters. Turbidity measurement is no different in this respect.

## The Standard / Reference Material

The nephelometric turbidity meter is designed to be routinely standardised with a known light scattering standard. As with all analytical standards or reference materials, a turbidity standard should fulfil the following criteria:

- Provide traceability.
- Demonstrate the accuracy of results.
- Calibrate the equipment and methodology.
- Monitor the user performance.
- Validate the test.
- Facilitate comparability i.e. to ensure that when the correct procedures have been followed the same analysis of the same materials will produce results that agree with each other whenever they are performed.

Standards and Reference materials should be produced and characterised in a technically competent manner, should be homogenous, stable, certified and have available a known uncertainty of measurement. Presently, there are only two types of standards recognised and approved by the USEPA, Standard Methods, ASTM and other regulatory agencies, these are formazin or formazin derived standards and suspended polymer microspheres.

## Table 1: Comparison of Reagecon Polymer Microsphere & Formazin Turbidity Standards

Feature	Reagecon Polymer Microspheres	Formazin
Toxicity	Non-toxic. No special handling or disposal requirements	Very toxic, contains a known carcinogen. Requires special handling and disposal
Particle shape & size	Well defined spherical shape. Mean diameter is 0.06µm with a distribution between 0.01 and 0.2µm.	Irregular shape and distribution. Mean diameter is 3µm with a distribution between 1 and 20µm.
Shelf life	Does not deteriorate or settle out. A long stable shelf life at all concentrations.	Flocculates and deteriorates. Lower concentrations change value within days, or hours, after preparation.
Particle suspension	Particles stay in suspension. Mixing is discouraged as it entrains air.	Particles settle quickly, suspension must be continuously mixed. Mixing induces shearing.
Traceability	Certified traceable to NIST Reference Material 1690	Non traceable
Precision (batch to batch)	Mean of SD's 0±0.00	Mean of SD's 0.9±0.2
Inter-instrument reproducibility	0.5 ±0.0	0.8±0.2
Stability	0.1 – 4000 NTU (1 year)	4000 NTU (3 months). Need for dilutions to be prepared daily or weekly.
Accuracy	Highly accurate for Reagecon Polymer Microspheres	±10% (4000 NTUs) up to ±30% for dilute working standards.



Description	Product No. Ratio 100 ml	Product No. Ratio 500 ml	Product No. Non Ratio 100 ml	Product No. Non Ratio 500 ml
Turbidity Std 0.0 NTU	CRSR-0-100	CRSR-0-500	CRS-0.0-100	CRS-0.0-500
Turbidity Std 0.1 NTU	CRSR-0.1-100	CRSR-0.1-500	CRS-0.1-100	CRS-0.1-500
Turbidity Std 0.2 NTU	CRSR-0.2-100	CRSR-0.2-500	CRS-0.2-100	CRS-0.2-500
Turbidity Std 0.4 NTU	CRSR-0.4-100	CRSR-0.4-500	CRS-0.4-100	CRS-0.4-500
Turbidity Std 0.5 NTU	CRSR-0.5-100	CRSR-0.5-500	CRS-0.5-100	CRS-0.5-500
Turbidity Std 1 NTU	CRSR-1-100	CRSR-1-500	CRS-1-100	CRS-1-500
Turbidity Std 1.8 NTU	CRSR-1.8-100	CRSR-1.8-500	CRS-1.8-100	CRS-1.8-500
Turbidity Std 2 NTU	CRSR-2-100	CRSR-2-500	CRS-2-100	CRS-2-500
Turbidity Std 4 NTU	CRSR-4-100	CRSR-4-500	CRS-4-100	CRS-4-500
Turbidity Std 5 NTU	CRSR-5-100	CRSR-5-500	CRS-5-100	CRS-5-500
Turbidity Std 10 NTU	CRSR-10-100	CRSR-10-500	CRS-10-100	CRS-10-500
Turbidity Std 20 NTU	CRSR-20-100	CRSR-20-500	CRS-20-100	CRS-20-500
Turbidity Std 40 NTU	CRSR-40-100	CRSR-40-500	CRS-40-100	CRS-40-500
Turbidity Std 50 NTU	CRSR-50-100	CRSR-50-500	CRS-50-100	CRS-50-500
Turbidity Std 60 NTU	CRSR-60-100	CRSR-60-500	CRS-60-100	CRS-60-500
Turbidity Std 90 NTU	CRSR-90-100	CRSR-90-500	CRS-90-100	CRS-90-500
Turbidity Std 100 NTU	CRSR-100-100	CRSR-100-500	CRS-100-100	CRS-100-500
Turbidity Std 150 NTU	CRSR-150-100	CRSR-150-500	CRS-150-100	CRS-150-500
Turbidity Std 200 NTU	CRSR-200-100	CRSR-200-500	CRS-200-100	CRS-200-500
Turbidity Std 400 NTU	CRSR-400-100	CRSR-400-500	CRS-400-100	CRS-400-500
Turbidity Std 500 NTU	CRSR-500-100	CRSR-500-500	CRS-500-100	CRS-500-500
Turbidity Std 800 NTU	CRSR-800-100	CRSR-800-500	CRS-800-100	CRS-800-500
Turbidity Std 1000 NTU	CRSR-1000-100	CRSR-1000-500	CRS-1000-100	CRS-1000-500
Turbidity Std 4000 NTU	CRSR-4000-100	CRSR-4000-500	CRS-4000-100	CRS-4000-500

# Chemical Oxygen Demand



## Chemical Oxygen Demand (COD) Standards

Reagecon's offering includes a comprehensive range of COD Standards. These standards are ideal for use as Control Standards to verify that correct analysis for COD has taken place. Achieving an acceptable result for the Control Standard will improve confidence in sample readings for this important environmental parameter.

Product No.	Description	Pack Size
COD10	COD Calibration Standard 10ppm	500ml
COD20	COD Calibration Standard 20ppm	500ml
COD50	COD Calibration Standard 50ppm	500ml
COD100	COD Calibration Standard 100ppm	500ml
COD200	COD Calibration Standard 200ppm	500ml
COD500	COD Calibration Standard 500ppm	500ml
COD600	COD Calibration Standard 600ppm	500ml
COD1000	COD Calibration Standard 1000ppm	500ml
COD1300	COD Calibration Standard 1300ppm	500ml
COD1500	COD Calibration Standard 1500ppm	500ml
COD2000	COD Calibration Standard 2000ppm	500ml
COD3000	COD Calibration Standard 3000ppm	500ml
COD5000	COD Calibration Standard 5000ppm	500ml
COD6000	COD Calibration Standard 6000ppm	500ml
COD10M	COD Calibration Standard 10000ppm	500ml
COD20M	COD Calibration Standard 20000ppm	500ml
COD30K	COD Calibration Standard 30000ppm	1L
COD60M5	COD Calibration Standard 60000ppm	500ml

## Chemical Oxygen Demand (COD) Reagents

Reagecon's product offering includes reagents for the two accepted methods for measuring COD at concentrations less than 400mg/l. Where the concentration is greater than 400mg/l, the sample must be diluted.

Product No.	Description	Pack Size
WTR50W	Chemical Oxygen Demand COD Reagent (1977 method)	2.5L
CODMS	Chemical Oxygen Demand COD 20% w/v Mercury (II) Sulphate in 10% w/v Sulphuric Acid	500ml
KC2002F	Chemical Oxygen Demand COD Potassium Dichromate 0.0208M (0.125N ) Solution	1L
AGN01001	Chemical Oxygen Demand COD Reagent Silver Nitrate 1000g/L	100ml
AGS1W	Chemical Oxygen Demand COD 1% w/v Silver Sulphate in Sulphuric Acid Solution	2.5L
AGS1H	Chemical Oxygen Demand COD 1% w/v Silver Sulphate in Sulphuric Acid Solution	500ml
PFS1	Indicator Solution Ferroin Indicator	100ml

\* Methodology as per the Department of the Environment (U.K.) "Chemical Oxygen Demand (Dichromate Value) of Polluted and Waste Waters" published in 1977 and revised in 1986.

## Chemical Oxygen Demand (COD) Vials

Reagecon's COD Reagent Vials can be used in conjunction with the Aqualytic PC Spectro, PC Compact Vario and all Hach® spectrophotometers. This compatibility is proven in the Reagecon Technical Publication. <sup>(1)</sup> Reagecon also offer a collection and disposal service in certain territories for used vials that complies with all relevant dangerous goods disposal and environmental regulations.

Product No.	Description	Pack Size
420720	Measuring Range 0-150mg/L	pk25
420720R	Measuring Range 0-150mg/L with compliant disposal	pk25
420721	Measuring Range 0-1500mg/L	pk25
420721R	Measuring Range 0-1500mg/L with compliant disposal	pk25
420722	Measuring Range 0-15000mg/L	pk25
420722R	Measuring Range 0-15000mg/L with compliant disposal	pk25

<sup>(1)</sup> A comparative study of the performance of Reagecon COD vials and Hach® COD vials using the Hach® DR/2010 photometer. Authors: John J. Barron, Colin Ashton & Leo Geary - Technical Services Department, Reagecon Diagnostics Ltd., Shannon Free Zone, County Clare, Ireland.

# Ion Selective Electrode Standards & Ionic Strength Adjustors



## Introduction

Ion Selective Electrodes, (ISEs) allow specific and quantitative measurement of a wide range of cations, anions and some dissolved gases. These ions can be measured directly like pH measurement, indirectly (see below) or by titrimetry. ISEs respond selectively to the relevant ion activity exactly like pH electrodes respond to hydrogen ion activity. Like pH electrodes, they require a suitable reference electrode, preferably a double junction system. They also require a pH or ion meter and a selection of filling solutions for the outer and inner chambers of the reference electrode. In some instances the reference and sensing electrodes may be combined into one unit.

## Types of Measurement

Direct measurement is performed exactly like the measurement of pH. The electrode is calibrated using two concentrations of the relevant standard which are chosen to bracket the expected value of the sample. More than two calibration standards may be used for better linearity or more accurate measurement and a standard curve of mV reading versus concentration of various standards can be constructed.

However, the measurement technique deviates from pH in that both sample and standards require the addition of an Ionic Strength Adjustor (ISA). The addition of this solution confers the following benefits:

- The ionic strength of the adjustor is much higher than the ionic strength of the sample or standard so it keeps the ionic strength of both high, constant and similar and thus enables what is effectively activity measurement to be read as concentration.
- The ionic strength adjustor (which should never react with the sample or standard chemically) also keeps the pH value constant in some instances. This combined with high ionic strength and the chemistry of the ISA suppresses or eliminates interfering ions.
- The ISA when added to sample and standard eliminates any matrix, hysteresis or erroneous liquid junction potentials that might affect the accuracy of the test result.
- Indirect measurement methodologies include the use of standard addition, sample addition, standard subtraction and sample subtraction. Such methods offer advantages that include:
- Calibration need only be performed occasionally or not at all, therefore only ISA needs to be added to the sample.
- The possibility of error due to a temperature co-efficient of variation between the sample and standard is largely eliminated.
- The ion concentration of solid samples can be measured.
- The range of types of ions measured and the versatility of the technique is greatly enhanced by careful and considered selection of the optimal indirect method. This is true, in particular, with standard or sample subtraction, where precipitation or complexation may be performed, or where the counter ion to that contained in the standard is measured.

## Use of Controls

As with all analytical measurements, no test should be performed without the use of control material. The control should be treated in exactly the same way as the sample including the addition of ISA, thereby picking up any error in the measurement technique, whether it be due to the analyst, environment, meter, sensors or sample in line with the execution of good laboratory practice. Reagecons ISE standards, diluted to a suitable concentration, are particularly suitable for use as control material.

## ISE Standards & ISA Solutions

Reagecon is world leader in the development, manufacture, testing and stabilising of chemical and physical standards and reagents. Our ISE standards and ISA's are an important part of our offering. The range of standards is extensive, accurate, traceable and produced to have minimal uncertainty of measurement. They can be used for:

- Calibration
- Instrument Qualification
- Control
- Method Validation

Both ISE standards or ISA reagents can be customised for individual customer requirements and can be supplied in bulk quantities for process or online applications.

## Ion Selective Electrode Standards

Product No.	Description	Pack Size
ISEF10005	Fluoride 100ppm	500ml
ISEF1005	Fluoride 10ppm	500ml
ISENH55	Ammonia 1000ppm as N	5L
ISENH1005	Ammonia 100ppm as N	500ml
ISENH1005-5L	Ammonia 100ppm as N	5L
NH0-5-P-500	Ammonia Standard 0.5ppm as NH <sub>3</sub>	500ml
NH2-5-P-500	Ammonia Standard 2.5 ppm as NH <sub>3</sub>	500ml
NH3101	Ammonia Standard 1mg/l as as NH <sub>3</sub>	100ml
ISEF101	Fluoride 10ppm	1L
ISEF11	Fluoride 1ppm	1L
ISENH4105	Ammonium 10ppm as NH <sub>4</sub>	500ml
ISENH41005	Ammonium 100ppm as NH <sub>4</sub>	500ml
ISENH45	Ammonium 1000ppm as NH <sub>4</sub>	500ml
ISENH500	Ammonia 500ppm	500ml
ISENH5	Ammonia 1000ppm as N	500ml
ISEBA5	Barium 1000ppm	500ml
ISEBR5	Bromide 1000ppm	500ml
ISECD5	Cadmium 1000ppm	500ml
ISECA10	Calcium 10ppm	500ml
ISECA1005	Calcium 100ppm	500ml
ISECA5	Calcium 1000ppm	500ml
ISECO5	Carbon Dioxide 1000ppm	500ml
ISECL10005	Chloride 100ppm	500ml
ISECL5	Chloride 1000ppm	500ml
ISECU5	Copper 1000ppm	500ml
ISECN025	Cyanide 1000ppm	250ml
ISECN5	Cyanide 1000ppm	500ml
ISEF1	Fluoride 1ppm	500ml
ISEF5	Fluoride 1000ppm	500ml
ISEI5	Iodide 1000ppm	500ml
ISEPB5	Lead 1000ppm	500ml
ISEMG5	Magnesium 1000ppm	500ml
ISEHG5	Mercury 1000ppm	500ml
ISEN105	Nitrate 10ppm as NO <sub>3</sub>	500ml
ISEN105-5L	Nitrate 10ppm as NO <sub>3</sub>	5L
ISEN1005	Nitrate 100ppm as NO <sub>3</sub>	500ml
ISEN1005-5L	Nitrate 100ppm as NO <sub>3</sub>	5L

Product No.	Description	Pack Size
ISEN5	Nitrate 1000ppm as NO <sub>3</sub>	500ml
ISEN5-5L	Nitrate 1000ppm as NO <sub>3</sub>	5L
NITRATE025PPM	Nitrate Standard 25ppm as N	1L
NITRITE025PPM	Nitrite Standard 25ppm as N	1L
NO2-0.3-100	Nitrite Standard in Water 0.3mg/l	100ml
NO2-6-100	Nitrite Standard in Water 6mg/L	100ml
NO3-6-100	Nitrate Standard in Water 6mg/l	100ml
P10001	Phosphate Solution 1000ppm	1L
P1005	Phosphate Solution 100ppm	500ml
ISENO5	Nitrogen Oxide 1000ppm as NO <sub>2</sub>	500ml
ISEPCL5	Perchlorate 1000ppm	500ml
ISEK5	Potassium 1000ppm	500ml
ISEAG5	Silver 1000ppm	500ml
ISENA5	Sodium 1000ppm	500ml
ISES5	Sulphide 1000ppm	500ml
ISESCO5	Sulphur Dioxide 1000ppm	500ml
ISESC5	Thiocyanate 1000ppm	500ml
ISEWH5	Water Hardness Standard 1000ppm CaCO <sub>3</sub>	500ml

## Ionic Strength Adjuster Solutions

Product No.	Description	Pack Size
ISANH5	Ammonia 10M NaOH	500ml
ISANH45	Ammonium 4M LiCl	500ml
ISABA5	Barium 4M LiCl	500 ml
ISABR5	Bromide 5M NaNO <sub>3</sub>	500 ml
ISACD5	Cadmium 5M NaNO <sub>3</sub>	500 ml
ISACA5	Calcium 4M KCl	500 ml
ISACO5	Carbon Dioxide Solution	500 ml
ISACL5	Chloride 5M NaNO <sub>3</sub>	500 ml
ISACU5	Copper 5M NaNO <sub>3</sub>	500 ml
ISACN5	Cyanide 10M NaOH	500 ml
TISAF5	Fluoride TISAB3	500 ml
TISAF55	Fluoride TISAB3	5L
ISAI5	Iodide 5M NaNO <sub>3</sub>	500 ml
ISAPB5	Lead 2.5M NaNO <sub>3</sub>	500 ml
ISAMG5	Magnesium 4M KCl	500 ml
ISAHG5	Mercury 5M NaNO <sub>3</sub>	500 ml
ISAN5	Nitrate 2M (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	500 ml
ISAPCL5	Perchlorate 2M (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	500 ml
ISAK5	Potassium 5M NaCl	500 ml
ISAAG5	Silver 5M NaNO <sub>3</sub>	500 ml
ISANA5	Sodium Based Standard	500 ml
ISAS5	Sulphide 10M NaOH	500 ml
ISASO5	Sulphur Dioxide 2M H <sub>2</sub> SO <sub>4</sub>	500 ml
ISASC5	Thiocyanate 5M NaNO <sub>3</sub>	500 ml
ISAWH5	Water Hardness 4M KCl Solution	500 ml



# ICP-MS/ ICP-OES Standards



## ICP-MS/ICP-OES Standards

Reagecon have been manufacturing Inorganic Standards, Controls and Calibrators for Spectroscopy for almost two decades. During that time, the company has established itself as the most reliable primary producer of top quality standards. Our customer base in over 80 countries is testament of our efforts to be leaders in a changing field where limits of detection and purity are becoming ever more demanding. Whether your application is ICP-MS, ICP-OES or whether you require a single element or multi-element mixture, our products are manufactured, tested and stabilised to such a high level, that they can be used on all of these instruments.

## Quality Control

All metal raw materials are assayed by titration and ICP-MS prior to manufacture. Separate CRM's are used to control or calibrate the titration and ICP-MS respectively. This dual process enables the assays to be cross-checked against each other, provides two layers of traceability and quantifies the combined level of impurities in the starting material. The product is then manufactured gravimetrically using the mass balance approach: 100% - sum of all impurities (w/w). The assay of the final product is certified using the gravimetric result corrected for density. Prior to bottling, the finished product is again tested and verified using an ICP-MS instrument calibrated with appropriate CRM's.

## Certification

Reagecon's ICP-MS and ICP-OES Standards are prepared gravimetrically on a weight/weight basis from the purest available raw materials on the market. Both solute and solvent are weighed on balances calibrated by Reagecon's engineers using OIML traceable weights. Reagecon holds ISO/IEC 17025 accreditation for calibration of laboratory balances (INAB Ref:265C). The resulting Balance Certificate of Calibration is issued in accordance with the requirements of ISO/IEC 17025.



## Traceability

The content of the starting material for each single element or multi-element standard is established by titration. The resulting analysis is directly traceable to a relevant NIST standard where available. All of the resulting uncertainties of measurement are calculated according to EURACHEM/CITAC guidelines and reported as expanded uncertainties at the 95% confidence level. Reagecon has ISO/IEC 17025 (INAB Ref:264T) accreditation for several classes of titrimetric analysis relevant to the assay of Raw Materials, for the manufacture of ICP-MS and ICP-OES standards.

## Verification of Raw Materials

The concentration of the target element of each raw material is then verified using a high performance state of the art calibrated ICP-MS instrument. The calibration of the ICP-MS is completed using high purity ISO Guide 34 certified reference materials or other internationally accepted materials (e.g. BAM from Germany). This verification procedure serves three distinct but critical purposes.

- It provides a completely independent check of the accuracy and validity of the titration assay.
- It provides traceability by comparison to a second reference, which is independent from the first Reference Material.
- It determines the level of trace elemental impurities in the starting raw materials.

## Elemental Metallic Impurities

All Reagecon Standards are manufactured from the purest available raw materials. At least thirty-three starting materials are metals of > 99.999% purity. Several others are at least 99.995% pure. Most of the remaining metals or salts of metals are at least 99.99% pure. The level of impurities are quantified using ICP-MS and are measured and reported both on the starting materials and on the finished product. All of Reagecon's ICP-MS standards are manufactured in a Class 10,000 (ISO 7) clean room environment.

## Final Assay & Result

Each batch of Reagecon's finalised ICP-MS standards are subjected to an assay on the instrument prior to bottling. This assay verifies the target element assay and verifies that the level of impurities have not changed significantly during the manufacturing process. The results are then reported and certified in mg/Kg and mg/L on the basis of weight and the density measurement of the standard. All of the volumetric, titrimetric and gravimetric functions are carried out under a highly regulated temperature regime, using equipment calibrated by Reagecon's engineers. Reagecon holds ISO/IEC 17025 accreditation for temperature calibration in the range of -196 to +1200°C (INAB Ref:265C). The density measurements are also highly temperature dependent and are carried out in Reagecon's specialised Density Laboratory. Reagecon is ISO/IEC 17025 Accredited (INAB Ref:264T), for density measurement using an Oscillating U-Tube Method in accordance with the ASTM D4052 method. The company is an extensive producer of density standards.



## ICP-MS Single Element Standards

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Aluminium</b>				
PAL1D2	AL 99.999	5% HNO <sub>3</sub>	1	100ml
PAL1A2	AL 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PAL2A2	AL 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PAL2B2	AL 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PAL2C2	AL 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PAI2B4-500ML	AL 99.999	3.5% HNO <sub>3</sub>	1,000	500ml
PAL4A2	AL 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PAL4B2	AL 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PAI4B4-500ML	AL 99.999	3.5% HNO <sub>3</sub>	10,000	500ml
PAL2A3	AL 99.999	5% HCl	1,000	100ml
PAL2B3	AL 99.999	2 - 5% HCl	1,000	250ml
PAL2C3	AL 99.999	5% HCl	1,000	500ml
PAL4A3	AL 99.999	5% HCl	10,000	100ml
PAL4B3	AL 99.999	2 - 5% HCl	10,000	250ml
PAL4C3	AL 99.999	2 - 5% HCl	10,000	500ml

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Antimony</b>				
PSB1A4	Sb 99.999	1% HF + 5% HNO <sub>3</sub>	100	100ml
PSB2A4	Sb 99.999	1% HF + 5% HNO <sub>3</sub>	1,000	100ml
PSB2C4	Sb 99.999	1% HF + 5% HNO <sub>3</sub>	1,000	500ml
PSB4A4	Sb 99.999	1% HF + 5% HNO <sub>3</sub>	10,000	100ml
PSB2A5	Sb 99.999	10% HCl	1,000	100ml
PSB2C5	Sb 99.999	10% HCl	1,000	500ml
PSB4A5	Sb 99.999	10% HCl	10,000	100ml
PSB2A11	Sb 99.999	1% HCl	1,000	100ml
PSB2B4	C <sub>8</sub> H <sub>4</sub> K <sub>2</sub> O <sub>12</sub> ·3H <sub>2</sub> O	6% Tart. Acid	1,000	250ml
PSB4B4	C <sub>8</sub> H <sub>4</sub> K <sub>2</sub> O <sub>12</sub> ·3H <sub>2</sub> O	6% Tart. Acid, tr. HNO <sub>3</sub>	10,000	250ml
PSB2B5	Sb 99.999	20% HCl	1,000	250ml
PSB4B5	Sb 99.999	20% HCl	10,000	250ml
<b>Arsenic</b>				
PAS01D6	As 99.999	2 % HNO <sub>3</sub>	10	50ml
PAS01A6	As 99.999	2 % HNO <sub>3</sub>	10	100ml
PAS1A2	As 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PAS1C3	As 99.999	2 - 5% HNO <sub>3</sub>	100	500ml
PAS2A2	As 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PAS2B2	As 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PAS2C2	As 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PAS2C2-1000ml	As 99.999	2 - 5% HNO <sub>3</sub>	1,000	1L
PAS4A2	As 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PAS4B2	As 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PAS4B4-500ml	As 99.999	3.5% HNO <sub>3</sub>	10,000	500ml
PAS2B3	As 99.999	2 - 5% HCl	1,000	250ml
PAS4B3	As 99.999	2 - 5% HCl	10,000	250ml
PAS52C2	As 99.999	0.5M HNO <sub>3</sub>	100	500ml
<b>Barium</b>				
PBA1A2	BaCO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PBA2A2	BaCO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PBA2B2	BaCO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
ICP-GLO-BA-100	BaCO <sub>3</sub> 99.999	0.5M HNO <sub>3</sub>	1,000	100ml
PBA2C2	BaCO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PBA4A2	BaCO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PBA4B2	BaCO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PBa4B4-500ML	BaCO <sub>3</sub> 99.999	3.5% HNO <sub>3</sub>	10,000	500ml
PBA2A3	BaCO <sub>3</sub> 99.999	2% HCl	1,000	100ml
PBA2B3	BaCO <sub>3</sub> 99.999	2-5% HCl	1,000	250ml
PBA2C3	BaCO <sub>3</sub> 99.999	2% HCl	1,000	500ml
PBA4A3	BaCO <sub>3</sub> 99.999	2% HCl	10,000	100ml
PBA4B3	BaCO <sub>3</sub> 99.999	2-5% HCl	10,000	250ml

## ICP-MS Single Element Standards

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Beryllium</b>				
PBE1A2	BeO 99.99	2 - 5% HNO <sub>3</sub>	100	100ml
PBE2A2	BeO 99.99	2 - 5% HNO <sub>3</sub>	1,000	100ml
PBE2B2	BeO 99.99	2 - 5% HNO <sub>3</sub>	1,000	250ml
PBE2C2	BeO 99.99	2 - 5% HNO <sub>3</sub>	1,000	500ml
PBE4A2	BeO 99.99	2 - 5% HNO <sub>3</sub>	10,000	100ml
PBE4B2	BeO 99.99	2 - 5% HNO <sub>3</sub>	10,000	250ml
PBe4B4-500ML	BeO 99.99	3.5% HNO <sub>3</sub>	10,000	500ml
<b>Bismuth</b>				
PBi1A6	Bi 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PBi1A6-125ml	Bi 99.999	2 - 5% HNO <sub>3</sub>	100	125ml
PBi1A6-500ml	Bi 99.999	2 - 5% HNO <sub>3</sub>	100	500ml
PBi2A6	Bi 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PBi2C6	Bi 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PBi4A6	Bi 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PBi4C2-500ml	Bi 99.999	2 - 5% HNO <sub>3</sub>	10,000	500ml
PBi2B6	Bi 99.999	10% HNO <sub>3</sub>	1,000	250ml
PBi4B6	Bi 99.999	10% HNO <sub>3</sub>	10,000	250ml
PBi2C1L	Bi 99.999	1.5M HNO <sub>3</sub>	1,000	1L
<b>Boron</b>				
PB1A7	H <sub>3</sub> BO <sub>3</sub> 99.99	H <sub>2</sub> O	100	100ml
PB2A7	H <sub>3</sub> BO <sub>3</sub> 99.99	H <sub>2</sub> O	1,000	100ml
PB2B7	H <sub>3</sub> BO <sub>3</sub> 99.99	H <sub>2</sub> O	1,000	250ml
ICP-GLO-B-100	H <sub>3</sub> BO <sub>3</sub> 99.99	0.5M NH <sub>4</sub>	1,000	100ml
PB2C7	H <sub>3</sub> BO <sub>3</sub> 99.99	H <sub>2</sub> O	1,000	500ml
PB3C7	H <sub>3</sub> BO <sub>3</sub> 99.99	H <sub>2</sub> O	5,000	100ml
PB3A7	H <sub>3</sub> BO <sub>3</sub> 99.99	H <sub>2</sub> O	5,000	500ml
PB4A7	H <sub>3</sub> BO <sub>3</sub> 99.99	H <sub>2</sub> O	10,000	100ml
PB4B7	H <sub>3</sub> BO <sub>3</sub> 99.99	H <sub>2</sub> O	10,000	250ml
PB4N-250ML	H <sub>3</sub> BO <sub>3</sub> 99.99	0.5N HNO <sub>3</sub>	10,000	250ml
<b>Cadmium</b>				
PCD01D6	Cd 99.999	2% HNO <sub>3</sub>	10	50ml
PCD01A6	Cd 99.999	2% HNO <sub>3</sub>	10	100ml
PCD1A2	Cd 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PCD1C3	Cd 99.999	2 - 5% HNO <sub>3</sub>	100	500ml
PCD2A2	Cd 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PCD2B2	Cd 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PCD2C2	Cd 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PCD2C4	Cd 99.999	0.5M HNO <sub>3</sub>	1,000	500ml
PCD4A2	Cd 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PCD4B2	Cd 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PCd4B4-500ML	Cd 99.999	3.5% HNO <sub>3</sub>	10,000	500ml
PCD2A3	Cd 99.999	2% HCl	1,000	100ml
PCD2B3	Cd 99.999	2-5% HCl	1,000	250ml
PCD2C3	Cd 99.999	2% HCl	1,000	500ml
PCD4B3	Cd 99.999	2-5% HCl	10,000	250ml

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Calcium</b>				
PCA1A2	CaCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	100	100ml
PCA2A2	CaCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	1,000	100ml
PCA2B2	CaCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	1,000	250ml
PCA2B4-500ML	CaCO <sub>3</sub> 99.995	3.5% HNO <sub>3</sub>	1,000	500ml
PCA2C2	CaCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	1,000	500ml
PCA5A2	CaCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	5,000	100ml
PCA4A2	CaCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	10,000	100ml
PCA4B2	CaCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	10,000	250ml
PCA4C2	CaCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	10,000	500ml
PCa4B4-500ML	CaCO <sub>3</sub> 99.995	3.5% HNO <sub>3</sub>	10,000	500ml
PCA2A3	CaCO <sub>3</sub> 99.995	2% HCl	1,000	100ml
PCA2B3	CaCO <sub>3</sub> 99.995	2-5% HCl	1,000	250ml
PCA2C3	CaCO <sub>3</sub> 99.995	2% HCl	1,000	500ml
PCA4A3	CaCO <sub>3</sub> 99.995	2% HCl	10,000	100ml
PCA4B3	CaCO <sub>3</sub> 99.995	2-5% HCl	10,000	250ml
PCA4C3	CaCO <sub>3</sub> 99.995	2-5% HCl	10,000	500ml
<b>Carbon</b>				
PC2A7	Tartaric Acid 99.7	H <sub>2</sub> O	1,000	100ml
PC2B7	Tartaric Acid 99.7	H <sub>2</sub> O	1,000	250ml
PC4B7	Tartaric Acid 99.7	H <sub>2</sub> O	10,000	250ml
<b>Cerium</b>				
PCE1A2	CeO <sub>2</sub> 99.99	2 - 5% HNO <sub>3</sub>	100	100ml
PCE2A2	CeO <sub>2</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	100ml
PCE2B2	CeO <sub>2</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	250ml
PCE2C2	CeO <sub>2</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	500ml
PCE4A2	CeO <sub>2</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	100ml
PCE4B2	CeO <sub>2</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	250ml
PCE4B4-500ML	CeO <sub>2</sub> 99.99	3.5% HNO <sub>3</sub>	10,000	500ml
<b>Cesium</b>				
PCS1A2	CsCl 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PCS2A2	CsCl 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PCS2B2	CsCl 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PCS2C2	CsCl 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PCS4A2	CsCl 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PCS4B2	CsCl 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Chloride</b>				
PCL2A7	NaCl 99.99	H <sub>2</sub> O	1,000	100ml

## ICP-MS Single Element Standards

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Chromium</b>				
PCR1A2	Cr(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O 99.99+	2 - 5% HNO <sub>3</sub>	100	100ml
PCR1C3	Cr(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O 99.99+	2 - 5% HNO <sub>3</sub>	100	500ml
PCR2A2	Cr(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O 99.99+	2 - 5% HNO <sub>3</sub>	1,000	100ml
PCR2B2	Cr(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O 99.99+	2 - 5% HNO <sub>3</sub>	1,000	250ml
PCR2C2	Cr(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O 99.99+	2 - 5% HNO <sub>3</sub>	1,000	500ml
PCR4A2	Cr(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O 99.99+	2 - 5% HNO <sub>3</sub>	10,000	100ml
PCR4B2	Cr(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O 99.99+	2 - 5% HNO <sub>3</sub>	10,000	250ml
PCR4B4-500ML	Cr(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O 99.99+	3.5% HNO <sub>3</sub>	10,000	500ml
PCR2C3	Cr 99.995	2% HCl	1,000	500ml
PCR4A3	Cr 99.995	2% HCl	10,000	100ml
PCR4B3	Cr 99.995	2-5% HCl	10,000	250ml
PCR4C3	Cr 99.995	2-5% HCl	10,000	500ml
PCR2A7	Cr 99.995	2% HCl	1,000	100ml
PCR2B3	Cr 99.995	2-5% HCl	1,000	250ml
PCR2A5	Cr(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O 99.99+	H <sub>2</sub> O	1,000	100ml
PCR2B7	Cr(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O 99.99+	H <sub>2</sub> O	1,000	250ml
PCR4B7	Cr(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O 99.99+	H <sub>2</sub> O	10,000	250ml
<b>Cobalt</b>				
PCO1A2	Co 99.995	2 - 5% HNO <sub>3</sub>	100	100ml
PCO1C3	Co 99.995	2 - 5% HNO <sub>3</sub>	100	500ml
PCO2A2	Co 99.995	2 - 5% HNO <sub>3</sub>	1,000	100ml
PCO2B2	Co 99.995	2 - 5% HNO <sub>3</sub>	1,000	250ml
PCO2C2	Co 99.995	2 - 5% HNO <sub>3</sub>	1,000	500ml
PCO2C3	Co 99.995	0.5M HNO <sub>3</sub>	1,000	500ml
PCO4A2	Co 99.995	2 - 5% HNO <sub>3</sub>	10,000	100ml
PCO4B2	Co 99.995	2 - 5% HNO <sub>3</sub>	10,000	250ml
PCo4B4-500ML	Co 99.995	3.5% HNO <sub>3</sub>	10,000	500ml
PCO2B3	Co 99.995	2-5% HCl	1,000	250ml
PCO4A3	Co 99.995	2% HCl	10,000	100ml
PCO4B3	Co 99.995	2-5% HCl	10,000	250ml
PCO4C3	Co 99.995	2% HCl	10,000	500ml

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Copper</b>				
PCU1A2	Cu 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PCU1C3	Cu 99.999	2 - 5% HNO <sub>3</sub>	100	500ml
PCU2A2	Cu 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PCU2B2	Cu 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PCU2C2	Cu 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PCU4A2	Cu 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PCU4B2	Cu 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PCu4B4-500ML	Cu 99.999	3.5% HNO <sub>3</sub>	10,000	500ml
PCU2A3	Cu 99.999	2% HCl	1,000	100ml
PCU2B3	Cu 99.999	2-5% HCl	1,000	250ml
PCU2C3	Cu 99.999	2% HCl	1,000	500ml
PCU4A3	Cu 99.999	2% HCl	10,000	100ml
PCU4B3	Cu 99.999	2-5% HCl	10,000	250ml
PCU4C3	Cu 99.999	2-5% HCl	10,000	500ml
<b>Dysprosium</b>				
PDY1A2	DY <sub>2</sub> O <sub>3</sub> 99.99+	2 - 5% HNO <sub>3</sub>	100	100ml
PDY2A2	DY <sub>2</sub> O <sub>3</sub> 99.99+	2 - 5% HNO <sub>3</sub>	1,000	100ml
PDY2B2	DY <sub>2</sub> O <sub>3</sub> 99.99+	2 - 5% HNO <sub>3</sub>	1,000	250ml
PDY2C2	DY <sub>2</sub> O <sub>3</sub> 99.99+	2 - 5% HNO <sub>3</sub>	1,000	500ml
PDY4A2	DY <sub>2</sub> O <sub>3</sub> 99.99+	2 - 5% HNO <sub>3</sub>	10,000	100ml
PDY4B2	DY <sub>2</sub> O <sub>3</sub> 99.99+	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Erbium</b>				
PER1A2	Er <sub>2</sub> O <sub>3</sub> 99.99+	2 - 5% HNO <sub>3</sub>	100	100ml
PER2A2	Er <sub>2</sub> O <sub>3</sub> 99.99+	2 - 5% HNO <sub>3</sub>	1,000	100ml
PER2B2	Er <sub>2</sub> O <sub>3</sub> 99.99+	2 - 5% HNO <sub>3</sub>	1,000	250ml
PER2C2	Er <sub>2</sub> O <sub>3</sub> 99.99+	2 - 5% HNO <sub>3</sub>	1,000	500ml
PER4A2	Er <sub>2</sub> O <sub>3</sub> 99.99+	2 - 5% HNO <sub>3</sub>	10,000	100ml
PER4B2	Er <sub>2</sub> O <sub>3</sub> 99.99+	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Europium</b>				
PEU1A2	Eu <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PEU2A2	Eu <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PEU2B2	Eu <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PEU2C2	Eu <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PEU4A2	Eu <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PEU4B2	Eu <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Gadolinium</b>				
PGD1A2	Gd <sub>2</sub> O <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	100	100ml
PGD2A2	Gd <sub>2</sub> O <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	1,000	100ml
PGD2B2	Gd <sub>2</sub> O <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	1,000	250ml
PGD2C2	Gd <sub>2</sub> O <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	1,000	500ml
PGD4A2	Gd <sub>2</sub> O <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	10,000	100ml
PGD4B2	Gd <sub>2</sub> O <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	10,000	250ml

## ICP-MS Single Element Standards

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Gallium</b>				
PGA1A2	Ga 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PGA2A2	Ga 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PGA2B2	Ga 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PGA2C2	Ga 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PGA4A2	Ga 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PGA4B2	Ga 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Germanium</b>				
PGE1A7	Ge 99.999	1% HF + 5% HNO <sub>3</sub>	100	100ml
PGE2A7	Ge 99.999	1% HF + 5% HNO <sub>3</sub>	1,000	100ml
PGE2B7	Ge 99.999	1% HF + 5% HNO <sub>3</sub>	1,000	250ml
PGE2C7	Ge 99.999	1% HF + 5% HNO <sub>3</sub>	1,000	500ml
PGE4A7	Ge 99.999	1% HF + 5% HNO <sub>3</sub>	10,000	100ml
PGE4B7	Ge 99.999	1% HF + 5% HNO <sub>3</sub>	10,000	250ml
<b>Gold</b>				
PAU001A2	Au 99.998	5% HCl	1	100ml
PAU1A8	Au 99.998	5% HCl	100	100ml
PAU2A8	Au 99.998	5% HCl	1,000	100ml
PAU2B8	Au 99.998	5% HCl	1,000	250ml
PAU2C8	Au 99.998	5% HCl	1,000	500ml
PAU4A8	Au 99.998	5% HCl	10,000	100ml
PAU001C8	Au 99.998	10% HCl	1	500ml
PAU002C8	Au 99.998	10% HCl	2	500ml
PAU005C8	Au 99.998	10% HCl	5	500ml
PAU4B8	Au 99.998	10% HCl	10,000	250ml
PAU4B8-500ml	Au 99.998	10% HCl	10,000	500ml
PAU-1G/L	Au 99.998	2M HCl	1,000	250ml
PAU-3G/L	Au 99.998	2M HCl	3,000	250ml
PAU-10G/L	Au 99.998	2M HCl	10,000	250ml
<b>Hafnium</b>				
PHF1A3	Hf 99.9	1% HF + 5% HNO <sub>3</sub>	100	100ml
PHF2A3	Hf 99.9	1% HF + 5% HNO <sub>3</sub>	1,000	100ml
PHF2C3	Hf 99.9	1% HF + 5% HNO <sub>3</sub>	1,000	500ml
PHF4A3	Hf 99.9	1% HF + 5% HNO <sub>3</sub>	10,000	100ml
PHF2B3	HfOCl <sub>2</sub> ·8H <sub>2</sub> O 99.9	2 - 5% HCl	1,000	250ml
PHF4B3	HfOCl <sub>2</sub> ·8H <sub>2</sub> O 99.9	2 - 5% HCl	10,000	250ml



Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Holmium</b>				
PHO1A3	Ho <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PHO2A2	Ho <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PHO2B2	Ho <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PHO2C2	Ho <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PHO4A2	Ho <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PHO4B2	Ho <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Indium</b>				
PIN1A2	In 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PIN1A2-125ml	In 99.999	2 - 5% HNO <sub>3</sub>	100	125ml
PIN1A2-500ml	In 99.999	2 - 5% HNO <sub>3</sub>	100	500ml
PIN2A2	In 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PIN2B2	In 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PIN2C2	In 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PIN2B4-500ML	In 99.999	3.5% HNO <sub>3</sub>	1,000	500ml
PIN4A2	In 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PIN4B2	In 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PIN4C2	In 99.999	2 - 5% HNO <sub>3</sub>	10,000	500ml
<b>Iridium</b>				
PIR1A8	(NH <sub>4</sub> ) <sub>2</sub> IrCl <sub>6</sub> 99.998	5% HCl	100	100ml
PIR2A8	(NH <sub>4</sub> ) <sub>2</sub> IrCl <sub>6</sub> 99.998	10% HCl	1,000	100ml
PIR2B8	(NH <sub>4</sub> ) <sub>2</sub> IrCl <sub>6</sub> 99.998	10% HCl	1,000	250ml
PIR2C8	(NH <sub>4</sub> ) <sub>2</sub> IrCl <sub>6</sub> 99.998	5% HCl	1,000	500ml
PIR4A8	(NH <sub>4</sub> ) <sub>2</sub> IrCl <sub>6</sub> 99.998	5% HCl	10,000	100ml
PIR4B8	(NH <sub>4</sub> ) <sub>2</sub> IrCl <sub>6</sub> 99.998	10% HCl	10,000	250ml
<b>Iron</b>				
PFE1A2	Fe 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PFE1C3	Fe 99.999	2 - 5% HNO <sub>3</sub>	100	500ml
PFE2A2	Fe 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PFE2B2	Fe 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PFE2B4-500ML	Fe 99.999	3.5% HNO <sub>3</sub>	1,000	500ml
ICP-GLO-FE-100	Fe 99.999	0.5M HNO <sub>3</sub>	1,000	100ml
PFE2C2	Fe 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PFE4A2	Fe 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PFE4B2	Fe 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PFE4C2	Fe 99.999	2 - 5% HNO <sub>3</sub>	10,000	500ml
PFE4B4-500ML	Fe 99.999	3.5% HNO <sub>3</sub>	10,000	500ml
PFE2A3	Fe 99.999	2 - 5% HCl	1,000	100ml
PFE2B3	Fe 99.999	2 - 5% HCl	1,000	250ml
PFE2C3	Fe 99.999	2 - 5% HCl	1,000	500ml
PFE4A3	Fe 99.999	2 - 5% HCl	10,000	100ml
PFE4B3	Fe 99.999	2 - 5% HCl	10,000	250ml
PFE4C3	Fe 99.999	2 - 5% HCl	10,000	500ml

## ICP-MS Single Element Standards

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Lanthanum</b>				
PLA1A2	LA <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PLA2A2	LA <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PLA2B2	LA <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PLA2C2	LA <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PLA4A2	LA <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PLA4B2	LA <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Lead</b>				
PPB01D6	Pb 99.999	2% HNO <sub>3</sub>	10	50ml
PPB01A6	Pb 99.999	2% HNO <sub>3</sub>	10	100ml
PPB1A2	Pb 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PPB1C3	Pb 99.999	2 - 5% HNO <sub>3</sub>	100	500ml
PPB2A2	Pb 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PPB2B2	Pb 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PPB2C2	Pb 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PPB4A2	Pb 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PPB4B2	Pb 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PPB4B4-500ML	Pb 99.999	3.5% HNO <sub>3</sub>	10,000	500ml
<b>Lithium</b>				
PLI1A2	Li <sub>2</sub> CO <sub>3</sub> 99.997	2 - 5% HNO <sub>3</sub>	100	100ml
PLI1A2-500ml	Li <sub>2</sub> CO <sub>3</sub> 99.997	2 - 5% HNO <sub>3</sub>	100	500ml
PLI2A2	Li <sub>2</sub> CO <sub>3</sub> 99.997	2 - 5% HNO <sub>3</sub>	1,000	100ml
PLI2B2	Li <sub>2</sub> CO <sub>3</sub> 99.997	2 - 5% HNO <sub>3</sub>	1,000	250ml
PLI2C2	Li <sub>2</sub> CO <sub>3</sub> 99.997	2 - 5% HNO <sub>3</sub>	1,000	500ml
PLI4A2	Li <sub>2</sub> CO <sub>3</sub> 99.997	2 - 5% HNO <sub>3</sub>	10,000	100ml
PLI4B2	Li <sub>2</sub> CO <sub>3</sub> 99.997	2 - 5% HNO <sub>3</sub>	10,000	250ml
PLI2C4	Li <sub>2</sub> CO <sub>3</sub> 99.997	0.5M HNO <sub>3</sub>	1,000	500ml
PLI2A3	Li <sub>2</sub> CO <sub>3</sub> 99.997	2 - 5% HCl	1,000	100ml
PLI2B3	Li <sub>2</sub> CO <sub>3</sub> 99.997	2 - 5% HCl	1,000	250ml
PLI2C3	Li <sub>2</sub> CO <sub>3</sub> 99.997	2 - 5% HCl	1,000	500ml
PLI4A3	Li <sub>2</sub> CO <sub>3</sub> 99.997	2 - 5% HCl	10,000	100ml
PLI4B3	Li <sub>2</sub> CO <sub>3</sub> 99.997	2 - 5% HCl	10,000	250ml
<b>Lutetium</b>				
PLU1A2	Lu <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	100	100ml
PLU2A2	Lu <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	100ml
PLU2B2	Lu <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	250ml
PLU2C2	Lu <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	500ml
PLU4A2	Lu <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	100ml
PLU4B2	Lu <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	250ml

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Magnesium</b>				
PMG1A2	Mg 99.99	2 - 5% HNO <sub>3</sub>	100	100ml
PMG2A2	Mg 99.99	2 - 5% HNO <sub>3</sub>	1,000	100ml
PMG2B2	Mg 99.99	2 - 5% HNO <sub>3</sub>	1,000	250ml
PMG2C2	Mg 99.99	2 - 5% HNO <sub>3</sub>	1,000	500ml
PMG2B4-500ML	Mg 99.99	3.5% HNO <sub>3</sub>	1,000	500ml
PMG2C4	Mg 99.99	0.5M HNO <sub>3</sub>	1,000	500ml
PMG5A2	Mg 99.99	2 - 5% HNO <sub>3</sub>	5,000	100ml
PMG4A2	Mg 99.99	2 - 5% HNO <sub>3</sub>	10,000	100ml
PMG4B2	Mg 99.99	2 - 5% HNO <sub>3</sub>	10,000	250ml
PMG4B4-500ML	Mg 99.99	3.5% HNO <sub>3</sub>	10,000	500ml
PMG2A3	Mg 99.99	2 - 5% HCl	1,000	100ml
PMG2B3	Mg 99.99	2 - 5% HCl	1,000	250ml
PMG2C3	Mg 99.99	2 - 5% HCl	1,000	500ml
PMG4A3	Mg 99.99	2 - 5% HCl	10,000	100ml
PMG4B3	Mg 99.99	2 - 5% HCl	10,000	250ml
PMG4C3	Mg 99.99	2 - 5% HCl	10,000	500ml
<b>Manganese</b>				
PMN1D2	Mn 99.98	5% HNO <sub>3</sub>	1	100ml
PMN1A2	Mn 99.98	2 - 5% HNO <sub>3</sub>	100	100ml
PMN1C3	Mn 99.98	2 - 5% HNO <sub>3</sub>	100	500ml
PMN2A2	Mn 99.98	2 - 5% HNO <sub>3</sub>	1,000	100ml
PMN2B2	Mn 99.98	2 - 5% HNO <sub>3</sub>	1,000	250ml
PMN2C2	Mn 99.98	2 - 5% HNO <sub>3</sub>	1,000	500ml
PMN2C3	Mn 99.98	0.5M HNO <sub>3</sub>	1,000	500ml
PMN4A2	Mn 99.98	2 - 5% HNO <sub>3</sub>	10,000	100ml
PMN4B2	Mn 99.98	2 - 5% HNO <sub>3</sub>	10,000	250ml
PMN4B4-500ML	Mn 99.98	3.5% HNO <sub>3</sub>	10,000	500ml
PMN4C3	Mn 99.98	2-5% HCl	10,000	500ml

## ICP-MS Single Element Standards

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Mercury</b>				
PHG0001A2	Hg 99.999+	5% HNO <sub>3</sub>	0.1	100ml
PHG0005A2	Hg 99.999+	5% HNO <sub>3</sub>	0.5	100ml
PHG001A2	Hg 99.999+	5% HNO <sub>3</sub>	1	100ml
PHG001A6	Hg 99.999+	2 - 5% HNO <sub>3</sub>	1	100ml
PHG6A6	Hg 99.999+	10% HNO <sub>3</sub>	1	100ml
PHG002A2	Hg 99.999+	5% HNO <sub>3</sub>	2	100ml
PHG7A2	Hg 99.999+	2 - 5% HNO <sub>3</sub>	5	100ml
PHG005A2	Hg 99.999+	5% HNO <sub>3</sub>	5	100ml
PHG10C3	Hg 99.999+	5% HNO <sub>3</sub>	10	50ml
ICP-Hg-CYM	Hg 99.999+	5% HNO <sub>3</sub>	10	100ml
PHG10C2	Hg 99.999+	5% HNO <sub>3</sub>	10	500ml
PHG34-10-20ML	Hg 99.999+	10% HNO <sub>3</sub>	10	20 mL
PHG1A6	Hg 99.999+	2 - 5% HNO <sub>3</sub>	100	100ml
PHG1C3	Hg 99.999+	2 - 5% HNO <sub>3</sub>	100	500ml
PHG2A4	Hg 99.999+	4% HNO <sub>3</sub>	100	100ml
PHG2C3	Hg 99.999+	2M HNO <sub>3</sub>	100	500ml
PHG2A6	Hg 99.999+	2 - 5% HNO <sub>3</sub>	1,000	100ml
PHG2B6	Hg 99.999+	10% HNO <sub>3</sub>	1,000	250ml
PHG2A2	Hg 99.999+	2 - 5% HNO <sub>3</sub>	1,000	100ml
PHG2C6	Hg 99.999+	2 - 5% HNO <sub>3</sub>	1,000	500ml
PHG4A6	Hg 99.999+	2 - 5% HNO <sub>3</sub>	10,000	100ml
PHG4B6	Hg 99.999+	10% HNO <sub>3</sub>	10,000	250ml
<b>Molybdenum</b>				
PMO1A7	Mo 99.999	2% NH <sub>4</sub> OH	100	100ml
PMO1C3	Mo 99.999	2% NH <sub>4</sub> OH	100	500ml
PMO2A7	Mo 99.999	2% NH <sub>4</sub> OH	1,000	100ml
PMO2B7	Mo 99.999	2% NH <sub>4</sub> OH	1,000	250ml
PMO2C1L	Mo 99.999	H <sub>2</sub> O	1,000	1L
PMO2C7	Mo 99.999	2% NH <sub>4</sub> OH	1,000	500ml
PMO4A7	Mo 99.999	2% NH <sub>4</sub> OH	10,000	100ml
PMO4B4-500ML	Mo 99.999	3.5% NH <sub>4</sub> OH	10,000	500ml
PMO4B7	Mo 99.999	H <sub>2</sub> O	10,000	250ml
PMO2A10	(NH <sub>4</sub> ) <sub>6</sub> Mo <sub>7</sub> O <sub>24</sub> ·4H <sub>2</sub> O 99.9	2 - 5% HNO <sub>3</sub> , tr. HF	1,000	100ml
PMO2A11	(NH <sub>4</sub> ) <sub>6</sub> Mo <sub>7</sub> O <sub>24</sub> ·4H <sub>2</sub> O 99.9	1% HCl	1,000	100ml
<b>Neodymium</b>				
PND1A2	Nd <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	100	100ml
PND2A2	Nd <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	100ml
PND2B2	Nd <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	250ml
PND2C2	Nd <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	500ml
PND4A2	Nd <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	100ml
PND4B2	Nd <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	250ml

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Nickel</b>				
PNI1A2	Ni 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PNI1C3	Ni 99.999	2% HNO <sub>3</sub>	100	500ml
PNI2A2	Ni 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PNI2B2	Ni 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PNI2C2	Ni 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PNI4A2	Ni 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PNI4B2	Ni 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PNI4B4-500ML	Ni 99.999	3.5% HNO <sub>3</sub>	10,000	500ml
PNI4C3	Ni 99.999	2 - 5% HCl	10,000	500ml
<b>Niobium</b>				
PNB1A9	Nb 99.9+	1% HF + 5% HNO <sub>3</sub>	100	100ml
PNB2A9	Nb 99.9+	1% HF + 5% HNO <sub>3</sub>	1,000	100ml
PNB2C9	Nb 99.9+	1% HF + 5% HNO <sub>3</sub>	1,000	500ml
PNB4A9	Nb 99.9+	1% HF + 5% HNO <sub>3</sub>	10,000	100ml
PNB2B9	Nb 99.9+	H <sub>2</sub> O, tr. HF	1,000	250ml
PNB4B9	Nb 99.9+	H <sub>2</sub> O, tr. HF	10,000	250ml
<b>Osmium</b>				
ICP-HR-15	(NH <sub>4</sub> ) <sub>2</sub> O <sub>5</sub> Cl <sub>6</sub> 99.99	H <sub>2</sub> O	100	500ml
ICP-HR-15HCL	(NH <sub>4</sub> ) <sub>2</sub> O <sub>5</sub> Cl <sub>6</sub> 99.99	2% HCl	100	500ml
POS2A2-100	(NH <sub>4</sub> ) <sub>2</sub> O <sub>5</sub> Cl <sub>6</sub> 99.99	5% HCl	1,000	100ml
POS2A2	(NH <sub>4</sub> ) <sub>2</sub> O <sub>5</sub> Cl <sub>6</sub> 99.99	5% HCl	1,000	1L
POS4B4-500ML	(NH <sub>4</sub> ) <sub>2</sub> O <sub>5</sub> Cl <sub>6</sub> 99.99	5% HCl	10,000	500ml
<b>Palladium</b>				
PPD1A8	Pd 99.999	5% HCl	100	100ml
PPD2A8	Pd 99.999	5% HCl	1,000	100ml
PPD2B8	Pd 99.999	5% HCl	1,000	250ml
PPD2C8	Pd 99.999	5% HCl	1,000	500ml
PPB4H8	Pd 99.999	5% HCl	10,000	30 mL
PPD4B8	Pd 99.999	5% HCl	10,000	250ml
PPD2A9	Pd 99.999	10% HCl	1,000	100ml
<b>Phosphorus</b>				
PP1A7	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	0.05% H <sub>2</sub> SO <sub>4</sub>	100	100ml
PP2A7	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	0.05% H <sub>2</sub> SO <sub>4</sub>	1,000	100ml
PP2C7	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	0.05% H <sub>2</sub> SO <sub>4</sub>	1,000	500ml
PP4A7	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	0.05% H <sub>2</sub> SO <sub>4</sub>	10,000	100ml
PP1C3	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	H <sub>2</sub> O	100	500ml
PP2B7	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	H <sub>2</sub> O	1,000	250ml
PP2B4-500ML	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	H <sub>2</sub> O	1,000	500ml
PP5A7	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	H <sub>2</sub> O	5,000	100ml
PP4B7	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	H <sub>2</sub> O	10,000	250ml
PP4B4-500ML	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	H <sub>2</sub> O	10,000	500ml
PP2A2	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PP2C7-1000ML	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	2% HNO <sub>3</sub>	1,000	1L
PP4A2	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml

## ICP-MS Single Element Standards

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Phosphate</b>				
PPT2C3	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> 99.999	H <sub>2</sub> O	1,000	500ml
<b>Platinum</b>				
PPT1A8	Pt 99.995	5% HCl	100	100ml
PPT2A8	Pt 99.995	5% HCl	1,000	100ml
PPT2B8	Pt 99.995	5% HCl	1,000	250ml
PPT2C8	Pt 99.995	5% HCl	1,000	500ml
PPT4A8	Pt 99.995	5% HCl	10,000	100ml
PPT2A13	Pt 99.995	10% HCl	1,000	100ml
PPT4B8	Pt 99.995	10% HCl	10,000	250ml
PPT2C1L	Pt 99.995	2M HCl	1,000	1L
<b>Potassium</b>				
PK1A2	KNO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PK2A2	KNO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PK2B2	KNO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PK2C2	KNO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PK2B4-500ML	KNO <sub>3</sub> 99.999	3.5% HNO <sub>3</sub>	1,000	500ml
PK5A2	KNO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	5,000	100ml
PK4A2	KNO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PK4B2	KNO <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PK4B4-500ML	KNO <sub>3</sub> 99.999	3.5% HNO <sub>3</sub>	10,000	500ml
PK2A3	KCl 99.999	H <sub>2</sub> O	1,000	100ml
PK2C3	KCl 99.999	H <sub>2</sub> O	1,000	500ml
PK4A3	KCl 99.999	H <sub>2</sub> O	10,000	100ml
PK2B3	KCl 99.999	2-5% HCl	1,000	250ml
PK4B3	KCl 99.999	2-5% HCl	10,000	250ml
<b>Praseodymium</b>				
PPR1A2	Pr <sub>6</sub> O <sub>11</sub> 99.999	5% HCl	100	100ml
PPR2A2	Pr <sub>6</sub> O <sub>11</sub> 99.999	5% HCl	1,000	100ml
PPR2B2	Pr <sub>6</sub> O <sub>11</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PPR2C2	Pr <sub>6</sub> O <sub>11</sub> 99.999	5% HCl	1,000	500ml
PPR4A2	Pr <sub>6</sub> O <sub>11</sub> 99.999	5% HCl	10,000	100ml
PPR4B2	Pr <sub>6</sub> O <sub>11</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Rhenium</b>				
PRE1A7	NH <sub>4</sub> ReO <sub>4</sub> 99.999	H <sub>2</sub> O	100	100ml
PRE2A7	NH <sub>4</sub> ReO <sub>4</sub> 99.999	H <sub>2</sub> O	1,000	100ml
PRE2B7	NH <sub>4</sub> ReO <sub>4</sub> 99.999	H <sub>2</sub> O	1,000	250ml
PRE2C7	NH <sub>4</sub> ReO <sub>4</sub> 99.999	H <sub>2</sub> O	1,000	500ml
PRE4A7	NH <sub>4</sub> ReO <sub>4</sub> 99.999	H <sub>2</sub> O	10,000	100ml
PRE4B7	NH <sub>4</sub> ReO <sub>4</sub> 99.999	H <sub>2</sub> O	10,000	250ml
PRE2A2	NH <sub>4</sub> ReO <sub>4</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Rhodium</b>				
PRH2A2	(NH <sub>4</sub> ) <sub>3</sub> RhCl <sub>6</sub> 99.99	5% HNO <sub>3</sub>	100	100ml
PRH2A6	(NH <sub>4</sub> ) <sub>3</sub> RhCl <sub>6</sub> 99.99	2 - 5% HNO <sub>3</sub>	100	100ml
PRH1A8	(NH <sub>4</sub> ) <sub>3</sub> RhCl <sub>6</sub> 99.99	5% HCl	100	100ml
PRH2A8	(NH <sub>4</sub> ) <sub>3</sub> RhCl <sub>6</sub> 99.99	5% HCl	1,000	100ml
ICP-CYMRH-100	(NH <sub>4</sub> ) <sub>3</sub> RhCl <sub>6</sub> 99.99	3% HNO <sub>3</sub>	1,000	100ml
PRH2C8	(NH <sub>4</sub> ) <sub>3</sub> RhCl <sub>6</sub> 99.99	5% HCl	1,000	500ml
PRH4A8	(NH <sub>4</sub> ) <sub>3</sub> RhCl <sub>6</sub> 99.99	5% HCl	10,000	100ml
PRH2B3144	(NH <sub>4</sub> ) <sub>3</sub> RhCl <sub>6</sub> 99.99	10% HCl	1,000	100ml
PRH2B8	(NH <sub>4</sub> ) <sub>3</sub> RhCl <sub>6</sub> 99.99	10% HCl	1,000	250ml
PRH4B8	(NH <sub>4</sub> ) <sub>3</sub> RhCl <sub>6</sub> 99.99	10% HCl	10,000	250ml
<b>Rubidium</b>				
PRB1A2	RbNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	100	100ml
PRB2A2	RbNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	100ml
PRB2B2	RbNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	250ml
PRB2C2	RbNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	500ml
PRB4A2	RbNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	100ml
PRB4B2	RbNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Ruthenium</b>				
PRU1A8	(NH <sub>4</sub> ) <sub>3</sub> RuCl <sub>6</sub> 99.99	5% HCl	100	100ml
PRU2A8	(NH <sub>4</sub> ) <sub>3</sub> RuCl <sub>6</sub> 99.99	5% HCl	1,000	100ml
PRU2C8	(NH <sub>4</sub> ) <sub>3</sub> RuCl <sub>6</sub> 99.99	5% HCl	1,000	500ml
PRU4A8	(NH <sub>4</sub> ) <sub>3</sub> RuCl <sub>6</sub> 99.99	5% HCl	10,000	100ml
PRU2B8	(NH <sub>4</sub> ) <sub>3</sub> RuCl <sub>6</sub> 99.99	10% HCl	1,000	250ml
PRU3A8	(NH <sub>4</sub> ) <sub>3</sub> RuCl <sub>6</sub> 99.99	10% HCl	5,000	100ml
PRU3B8	(NH <sub>4</sub> ) <sub>3</sub> RuCl <sub>6</sub> 99.99	10% HCl	10,000	100ml
PRU4B8	(NH <sub>4</sub> ) <sub>3</sub> RuCl <sub>6</sub> 99.99	10% HCl	10,000	250ml
<b>Samarium</b>				
PSM1A2	Sm <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	100	100ml
PSM2A2	Sm <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	100ml
PSM2B2	Sm <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	250ml
PSM2C2	Sm <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	500ml
PSM4A2	Sm <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	100ml
PSM4B2	Sm <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Scandium</b>				
PSC1A2	Sc <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PSC1A2-500ml	Sc <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	500ml
PSC2A2	Sc <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PSC2B2	Sc <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PSC2C2	Sc <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PSC4A2	Sc <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PSC4B2	Sc <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PSC2B4-500ML	Sc <sub>2</sub> O <sub>3</sub> 99.999	3.5% HNO <sub>3</sub>	1,000	500ml

## ICP-MS Single Element Standards

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Selenium</b>				
PSE001A5	SeO <sub>2</sub> 99.9	1% HCl	1	100ml
PSE005A5	SeO <sub>2</sub> 99.9	1% HCl	5	100ml
PSE010A5	SeO <sub>2</sub> 99.9	1% HCl	10	100ml
PSE9A2	Se 99.999	2 - 5% HNO <sub>3</sub>	0.5	100ml
PSE1A2	Se 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PSE1C3	Se 99.999	2 - 5% HNO <sub>3</sub>	100	500ml
PSE2A2	Se 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PSE2B2	Se 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PSE2C2	Se 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PSE4A2	Se 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PSE4B2	Se 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PSE2C3	Se 99.999	0.5M HNO <sub>3</sub>	1,000	500ml
<b>Silicon</b>				
PSI05A5	Na <sub>2</sub> SiO <sub>3</sub> 99.9	1% HCl	50	100ml
PSI1A5	Na <sub>2</sub> SiO <sub>3</sub> 99.9	1% HCl	100	100ml
PSI1A9	(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> 99.99	0.05% HF	100	100ml
PSI2A9	(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> 99.99	0.05% HF	1,000	100ml
PSI2C9	(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> 99.99	0.05% HF	1,000	500ml
PSI4A9	(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> 99.99	0.05% HF	10,000	100ml
PSI4C9	(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> 99.99	0.05% HF	10,000	500ml
PSI2A7	Na <sub>2</sub> SiO <sub>3</sub> 99.9	H <sub>2</sub> O	1,000	100ml
PSI2B7	Na <sub>2</sub> SiO <sub>3</sub> 99.9	H <sub>2</sub> O	1,000	250ml
PSI2C7	Na <sub>2</sub> SiO <sub>3</sub> 99.9	H <sub>2</sub> O	1,000	500ml
PSI4A7	Na <sub>2</sub> SiO <sub>3</sub> 99.9	H <sub>2</sub> O	10,000	100ml
PSI4B7	Na <sub>2</sub> SiO <sub>3</sub> 99.9	H <sub>2</sub> O	10,000	250ml
PSi4B4-500ML	Na <sub>2</sub> SiO <sub>3</sub> 99.9	H <sub>2</sub> O	10,000	500ml
ICP-GLO-SI-100	(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> 99.99	1M HNO <sub>3</sub> + 1- 2% HF	1,000	100ml
PSI2A10	(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> 99.99	2 - 5% HNO <sub>3</sub> , tr. HF	1,000	100ml
PSI2C10	(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> 99.99	2 - 5% HNO <sub>3</sub> , tr. HF	1,000	500ml
PSI2A2	Na <sub>2</sub> SiO <sub>3</sub> 99.9	2 - 5% HNO <sub>3</sub>	1,000	100ml
PSI2C2	Na <sub>2</sub> SiO <sub>3</sub> 99.9	2 - 5% HNO <sub>3</sub>	1,000	500ml
PSI2B9	(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> 99.99	H <sub>2</sub> O, tr. HF	1,000	250ml
PSI4B9	(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> 99.99	H <sub>2</sub> O, tr. HF	10,000	250ml
<b>Silver</b>				
PAG1A2	Ag 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PAG2A2	Ag 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PAG2B2	Ag 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PAG2C2	Ag 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PAG4A2	Ag 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PAG4B2	Ag 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PAG4B4-500ml	Ag 99.999	3.5% HNO <sub>3</sub>	10,000	500ml



Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Sodium</b>				
PNA10A2	NaNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10	500ml
PNA1A2	NaNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	100	100ml
PNA2A2	NaNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	100ml
PNA2B2	NaNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	250ml
PNA2B4-500ML	NaNO <sub>3</sub> 99.99	3.5% HNO <sub>3</sub>	1,000	500ml
PNA2C2	NaNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	500ml
PNA5A2	NaNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	5,000	100ml
PNA4A2	NaNO <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	100ml
PNA4B4-500ML	NaNO <sub>3</sub> 99.99	3.5% HNO <sub>3</sub>	10,000	500ml
PNA2A3	NaCl 99.999	H <sub>2</sub> O	1,000	100ml
PNA2C3	NaCl 99.999	H <sub>2</sub> O	1,000	500ml
PNA4A3	NaCl 99.999	H <sub>2</sub> O	10,000	100ml
PNA2B3	NaCl 99.999	2 - 5% HCl	1,000	250ml
PNA4B3	NaCl 99.999	2 - 5% HCl	10,000	250ml
PNA4C3	NaCl 99.999	2 - 5% HCl	10,000	500ml
<b>Strontium</b>				
PSR1A2	SrCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	100	100ml
PSR2A2	SrCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	1,000	100ml
PSR2B2	SrCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	1,000	250ml
PSR2C2	SrCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	1,000	500ml
PSR4A2	SrCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	10,000	100ml
PSR4B2	SrCO <sub>3</sub> 99.995	2 - 5% HNO <sub>3</sub>	10,000	250ml
PSR4B4-500ML	SrCO <sub>3</sub> 99.995	3.5% HNO <sub>3</sub>	10,000	500ml
PSR2A3	SrCO <sub>3</sub> 99.995	2 - 5% HCl	1,000	100ml
PSR2B3	SrCO <sub>3</sub> 99.995	2 - 5% HCl	1,000	250ml
PSR2C3	SrCO <sub>3</sub> 99.995	2 - 5% HCl	1,000	500ml
PSR4A3	SrCO <sub>3</sub> 99.995	2 - 5% HCl	10,000	100ml
PSR4B3	SrCO <sub>3</sub> 99.995	2 - 5% HCl	10,000	250ml
<b>Sulphur</b>				
PS015A5	H <sub>2</sub> SO <sub>4</sub> 99.9	1% HCl	15	100ml
PS030A5	H <sub>2</sub> SO <sub>4</sub> 99.9	1% HCl	30	100ml
PS1A7	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 99.999	H <sub>2</sub> O	100	100ml
PS1C9	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 99.999	H <sub>2</sub> O	100	500ml
PS2A7	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 99.999	H <sub>2</sub> O	1,000	100ml
PS2B7	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 99.999	H <sub>2</sub> O	1,000	250ml
PS2C7	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 99.999	H <sub>2</sub> O	1,000	500ml
PS5A7	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 99.999	H <sub>2</sub> O	5,000	100ml
PS4A7	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 99.999	H <sub>2</sub> O	10,000	100ml
PS4B7	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 99.999	H <sub>2</sub> O	10,000	250ml
PS4B4-500ML	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 99.999	H <sub>2</sub> O	10,000	500ml
PS4A2	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml

## ICP-MS Single Element Standards

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Tantalum</b>				
PTA1A9	Ta 99.98	1% HF + 5% HNO <sub>3</sub>	100	100ml
PTA2A9	Ta 99.98	1% HF + 5% HNO <sub>3</sub>	1,000	100ml
PTA2B9	Ta 99.98	1% HF + 5% HNO <sub>3</sub>	1,000	250ml
PTA2C9	Ta 99.98	1% HF + 5% HNO <sub>3</sub>	1,000	500ml
PTA4A9	Ta 99.98	1% HF + 5% HNO <sub>3</sub>	10,000	100ml
PTA4B9	Ta 99.98	H <sub>2</sub> O, tr. HF	10,000	250ml
<b>Tellurium</b>				
PTE1A10	Te 99.999	20% HCl	100	100ml
PTE2A10	Te 99.999	20% HCl	1,000	100ml
PTE2C10	Te 99.999	20% HCl	1,000	500ml
PTE2A11	Te 99.999	1% HCl	1,000	100ml
PTE2A8	Te 99.999	10% HCl	1,000	100ml
PTE2B8	Te 99.999	10% HCl	1,000	250ml
PTE2B10	Te 99.999	5% HNO <sub>3</sub>	1,000	250ml
PTE4B11	Te 99.999	20% HNO <sub>3</sub>	10,000	250ml
PTE4B9	Te 99.999	30% HCl	10,000	100ml
PTE4B12	Te 99.999	30% HCl	10,000	250ml
<b>Terbium</b>				
PTB1A2	Tb <sub>4</sub> O <sub>7</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PTB1A2-125ml	Tb <sub>4</sub> O <sub>7</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	125ml
PTB1A2-500ml	Tb <sub>4</sub> O <sub>7</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	500ml
PTB2A2	Tb <sub>4</sub> O <sub>7</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PTB2B2	Tb <sub>4</sub> O <sub>7</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PTB2C2	Tb <sub>4</sub> O <sub>7</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PTB4A2	Tb <sub>4</sub> O <sub>7</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PTB4B2	Tb <sub>4</sub> O <sub>7</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Thallium</b>				
PTL1A2	TlNO <sub>3</sub> 99.9995	2 - 5% HNO <sub>3</sub>	100	100ml
PTL2A2	TlNO <sub>3</sub> 99.9995	2 - 5% HNO <sub>3</sub>	1,000	100ml
PTL2B2	TlNO <sub>3</sub> 99.9995	2 - 5% HNO <sub>3</sub>	1,000	250ml
PTL2C2	TlNO <sub>3</sub> 99.9995	2 - 5% HNO <sub>3</sub>	1,000	500ml
PTL4A2	TlNO <sub>3</sub> 99.9995	2 - 5% HNO <sub>3</sub>	10,000	100ml
PTL4B2	TlNO <sub>3</sub> 99.9995	2 - 5% HNO <sub>3</sub>	10,000	250ml
PTI4B4-500ML	Tl 99.99	20% HCl	10,000	500ml
<b>Thorium</b>				
PTH1A2	ThO <sub>2</sub> 99.95	2 - 5% HNO <sub>3</sub>	100	100ml
PTH2A2	ThO <sub>2</sub> 99.95	2 - 5% HNO <sub>3</sub>	1,000	100ml
PTH2B2	ThO <sub>2</sub> 99.95	2 - 5% HNO <sub>3</sub>	1,000	250ml
PTH2C2	ThO <sub>2</sub> 99.95	2 - 5% HNO <sub>3</sub>	1,000	500ml
PTH4A2	ThO <sub>2</sub> 99.95	2 - 5% HNO <sub>3</sub>	10,000	100ml
PTH4B2	ThO <sub>2</sub> 99.95	2 - 5% HNO <sub>3</sub>	10,000	250ml
PTH4B4-500ML	ThO <sub>2</sub> 99.95	3.5% HNO <sub>3</sub>	10,000	500ml

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Thulium</b>				
PTM1A2	Tm <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	100	100ml
PTM2A2	Tm <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	100ml
PTM2B2	Tm <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	250ml
PTM2C2	Tm <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	500ml
PTM4A2	Tm <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	100ml
PTM4B2	Tm <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Tin</b>				
PSN1A5	Sn 99.999	1% HF + 5% HNO <sub>3</sub>	100	100ml
PSN2A5	Sn 99.999	1% HF + 5% HNO <sub>3</sub>	1,000	100ml
PSN2C5	Sn 99.999	1% HF + 5% HNO <sub>3</sub>	1,000	500ml
PSN2C5-1000ML	Sn 99.999	1% HF + 5% HNO <sub>3</sub>	1,000	1L
PSN4A5	Sn 99.999	1% HF + 5% HNO <sub>3</sub>	10,000	100ml
PSN2A13	Sn 99.999	10% HCl	1,000	100ml
PSN2C13	Sn 99.999	10% HCl	1,000	500ml
PSN4A19	Sn 99.999	20% HCl	10,000	100ml
PSN2A10	Sn 99.999	H <sub>2</sub> O, tr. HF	10	100ml
PSN2A11	Sn 99.999	1% HCl	1,000	100ml
PSN2B13	Sn 99.999	1% HNO <sub>3</sub> , 1% HF	1,000	250ml
PSN2B5	Sn 99.999	20% HCl, 1% HF	1,000	250ml
PSN4B5	Sn 99.999	20% HCl, 1% HF	10,000	100ml
PSN2C4	Sn 99.999	2M HCl	1,000	500ml
PSN4B19	Sn 99.999	2% HNO <sub>3</sub>	10,000	250ml
PSN4B4-500ML	Sn 99.999	3.5% HNO <sub>3</sub>	10,000	500ml
<b>Titanium</b>				
PTI1A9	Ti 99.98	1% HF + 5% HNO <sub>3</sub>	100	100ml
PTI2A9	Ti 99.98	1% HF + 5% HNO <sub>3</sub>	1,000	100ml
PTI2C9	Ti 99.98	1% HF + 5% HNO <sub>3</sub>	1,000	500ml
PTI4A9	Ti 99.98	1% HF + 5% HNO <sub>3</sub>	10,000	100ml
PTI2A10	Ti 99.98	2 - 5% HNO <sub>3</sub> , tr. HF	1,000	100ml
PTI2A6	Ti 99.98	2 - 5% HNO <sub>3</sub>	1,000	100ml
PTI2B5	Ti 99.98	20% HCl	1,000	250ml
PTI4B5	Ti 99.98	20% HCl	10,000	250ml
PTI4B4-500ML	Ti 99.98	20% HCl	10,000	500ml
PTI2B9	Ti 99.98	H <sub>2</sub> O, tr. HF	1,000	250ml
PTI4B9	Ti 99.98	H <sub>2</sub> O, tr. HF	10,000	250ml
<b>Tungsten</b>				
PW2A7	W 99.99+	2% NH <sub>4</sub> OH	1,000	100ml
PW2B7	W 99.99+	2% NH <sub>4</sub> OH	1,000	250ml
PW2C7	W 99.99+	2% NH <sub>4</sub> OH	1,000	500ml
PW4A7	W 99.99+	2% NH <sub>4</sub> OH	10,000	100ml
PW4B7	W 99.99+	2% NH <sub>4</sub> OH	10,000	250ml
PW2A14	W 99.99+	1% HNO <sub>3</sub> + 2% HF	1,000	100ml
PW2B14	W 99.99+	1% HNO <sub>3</sub> + 2% HF	1,000	250ml
PW4B15	W 99.99+	2% HNO <sub>3</sub> + 5% HF	10,000	250ml

## ICP-MS Single Element Standards

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Uranium</b>				
PU1A2	U <sub>3</sub> O <sub>8</sub> 99.95	2 - 5% HNO <sub>3</sub>	100	100ml
PU2A2	U <sub>3</sub> O <sub>8</sub> 99.95	2 - 5% HNO <sub>3</sub>	1,000	100ml
PU2B2	U <sub>3</sub> O <sub>8</sub> 99.95	2 - 5% HNO <sub>3</sub>	1,000	250ml
PU2C2	U <sub>3</sub> O <sub>8</sub> 99.95	2 - 5% HNO <sub>3</sub>	1,000	500ml
PU4B4-500ML	U <sub>3</sub> O <sub>8</sub> 99.95	3.5% HNO <sub>3</sub>	10,000	500ml
<b>Vanadium</b>				
PV1A19	NH <sub>4</sub> VO <sub>3</sub> 99.95+	2 - 5% HNO <sub>3</sub>	100	100ml
PV2A19	NH <sub>4</sub> VO <sub>3</sub> 99.95+	2 - 5% HNO <sub>3</sub>	1,000	100ml
PV2C19	NH <sub>4</sub> VO <sub>3</sub> 99.95+	2 - 5% HNO <sub>3</sub>	1,000	500ml
PV4A19	NH <sub>4</sub> VO <sub>3</sub> 99.95+	2 - 5% HNO <sub>3</sub>	10,000	100ml
PV2B19	NH <sub>4</sub> VO <sub>3</sub> 99.95+	2% HNO <sub>3</sub>	1,000	250ml
PV2B3	V <sub>2</sub> O <sub>4</sub> 99.0	2% HCl	1,000	250ml
PV4B16	NH <sub>4</sub> VO <sub>3</sub> 99.95+	15% HNO <sub>3</sub>	10,000	250ml
PV4B18	V <sub>2</sub> O <sub>4</sub> 99.0	15% HCl	10,000	250ml
PV4B4-500ML	NH <sub>4</sub> VO <sub>3</sub> 99.95+	10% HNO <sub>3</sub>	10,000	500ml
<b>Ytterbium</b>				
PYB2A2	Yb <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	100ml
PYB2B2	Yb <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	250ml
PYB2C2	Yb <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	1,000	500ml
PYB4A2	Yb <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	100ml
PYB4B2	Yb <sub>2</sub> O <sub>3</sub> 99.99	2 - 5% HNO <sub>3</sub>	10,000	250ml
<b>Yttrium</b>				
PY1A2	Y <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PY1A2-125ml	Y <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	125ml
PY1C3	Y <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	100	500ml
PY2A2	Y <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PY2B2	Y <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PY2C2	Y <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PY4A2	Y <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PY4B2	Y <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	250ml
PY4B2-500ml	Y <sub>2</sub> O <sub>3</sub> 99.999	2 - 5% HNO <sub>3</sub>	10,000	500ml

Product No.	Starting Material and its Purity %	Matrix	Conc µg/ml	Pack Size
<b>Zinc</b>				
PZN1A2	Zn 99.999	2 - 5% HNO <sub>3</sub>	100	100ml
PZN1C3	Zn 99.999	2 - 5% HNO <sub>3</sub>	100	500ml
PZN2A2	Zn 99.999	2 - 5% HNO <sub>3</sub>	1,000	100ml
PZN2B2	Zn 99.999	2 - 5% HNO <sub>3</sub>	1,000	250ml
PZN2C2	Zn 99.999	2 - 5% HNO <sub>3</sub>	1,000	500ml
PZN4A2	Zn 99.999	2 - 5% HNO <sub>3</sub>	10,000	100ml
PZN4B4-500ML	Zn 99.999	3.5% HNO <sub>3</sub>	10,000	500ml
PZN2A3	Zn 99.999	2% HCl	1,000	100ml
PZN2B3	Zn 99.999	2 - 5% HCl	1,000	250ml
PZN2C3	Zn 99.999	2% HCl	1,000	500ml
PZN4A3	Zn 99.999	2% HCl	10,000	100ml
PZN4B3	Zn 99.999	2 - 5% HCl	10,000	250ml
PZN4C3	Zn 99.999	2 - 5% HCl	10,000	500ml
<b>Zirconium</b>				
PZR1A2	Zr 99.98	1% HF + 5% HNO <sub>3</sub>	100	100ml
PZR2A2	Zr 99.98	1% HF + 5% HNO <sub>3</sub>	1,000	100ml
PZR2C2	Zr 99.98	1% HF + 5% HNO <sub>3</sub>	1,000	500ml
PZR2C2-1000ml	Zr 99.98	1% HF + 5% HNO <sub>3</sub>	1,000	1L
PZR4A2	Zr 99.98	1% HF + 5% HNO <sub>3</sub>	10,000	100ml
PZR2B2	Zr 99.98	2 - 5% HNO <sub>3</sub>	1,000	250ml
PZR4B2	Zr 99.98	2 - 5% HNO <sub>3</sub>	10,000	250ml
PZR2B8	ZrOCl <sub>2</sub> ·8H <sub>2</sub> O 99.5	10% HCl	1,000	250ml

## ICP - MS Multi Element Standards

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Tuning Standard, 33 Elements</b>				
REICPTUNE33A	Ag	5	20% Hydrochloric Acid & tr. Hydrofluoric Acid	100ml
	As	20		
	Ba	5		
	Be	20		
	Bi	5		
	Cd	20		
	Co	5		
	Cr	5		
	Cu	5		
	Ge	10		
	In	5		
	Ir	5		
	Li	5		
	Lu	5		
	Mg	10		
	Mn	5		
	Mo	10		
	Na	5		
	Ni	10		
	Pb	10		
	Pd	10		
	Ru	10		
	Sb	10		
	Sc	5		
	Sn	10		
	Sr	5		
	Tb	2.5		
	Th	5		
	Ti	5		
	Tl	5		
	U	5		
	V	5		
	Y	2.5		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Calibration Standard, 29 Elements</b>				
REICPCAL29A	Ag	10	2-5% Nitric Acid	100ml
	Al	10		
	As	100		
	B	100		
	Ba	10		
	Be	100		
	Bi	10		
	Ca	1000		
	Cd	10		
	Co	10		
	Cr	10		
	Cu	10		
	Fe	100		
	Ga	10		
	K	10		
	Li	10		
	Mg	10		
	Mn	10		
	Mo	10		
	Na	10		
	Ni	10		
	Pb	10		
	Rb	10		
	Se	100		
	Sr	10		
	Te	10		
	Tl	10		
	U	10		
	V	10		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Calibration Standard, 26 Elements</b>				
REICPCAL26A	Ag	10	2-5% Nitric Acid	100ml
	Al	10		
	As	10		
	Ba	10		
	Be	10		
	Ca	10		
	Cd	10		
	Co	10		
	Cr	10		
	Cs	10		
	Cu	10		
	Fe	10		
	Ga	10		
	K	10		
	Li	10		
	Mg	10		
	Mn	10		
	Na	10		
	Ni	10		
	Pb	10		
	Rb	10		
Se	10			
Sr	10			
Tl	10			
U	10			
V	10			
<b>Multi Element Tuning Standard, 25 Elements</b>				
REICPTUNE25A	Ag	10	5% Nitric Acid & tr. Hydrofluoric Acid & tr. Tartaric Acid	100ml
	Al	10		
	As	10		
	Ba	10		
	Be	10		
	Ca	1000		
	Cd	10		
	Co	10		
	Cr	10		
	Cu	10		
	Fe	1000		
	K	1000		
	Mg	1000		
	Mn	10		
	Mo	10		
	Na	1000		
	Ni	10		
	Pb	10		
	Sb	10		
	Se	10		
	Sr	10		
	Ta	10		
	Th	10		
	U	10		
	V	10		



Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Verification Standard, 24 Elements according to Test Method 200.8</b>				
REICPVER24A	Ag	10	2-5% Nitric Acid	100ml
	Al	10		
	As	10		
	Ba	10		
	Be	10		
	Ca	10		
	Cd	10		
	Co	10		
	Cr	10		
	Cu	10		
	Fe	10		
	K	10		
	Mg	10		
	Mn	10		
	Mo	10		
	Na	10		
	Ni	10		
	Pb	10		
	Sb	10		
	Se	10		
	Th	10		
	Tl	10		
	U	10		
	V	10		
<b>Multi Element Tuning Standard, 23 Elements</b>				
REICPTUNE23A	Al	100	2-5% Nitric Acid	100ml
	B	100		
	Ba	100		
	Be	100		
	Bi	100		
	Ca	100		
	Cd	100		
	Co	100		
	Cr	100		
	Cu	100		
	Fe	100		
	Ga	100		
	K	100		
	Li	100		
	Mg	100		
	Mn	100		
	Na	100		
	Ni	100		
	Pb	100		
	Se	100		
	Sr	100		
	Te	100		
	Tl	100		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 23 Elements</b>				
ICP23A20	As	100	5% Nitric Acid & 0.2% Hydrofluoric Acid	100ml
	Be	100		
	Ca	100		
	Cd	100		
	Co	100		
	Cr	100		
	Cu	100		
	Fe	100		
	Li	100		
	Mg	100		
	Mn	100		
	Mo	100		
	Ni	100		
	P	100		
	Pb	100		
	Sb	100		
	Se	100		
	Sn	100		
	Sr	100		
	Ti	100		
	Tl	100		
	V	100		
	Zn	100		
<b>Multi Element Calibration Standard, 21 Elements according to Test Method 200.7</b>				
REICPCAL21A	Ag	50	5% Nitric Acid	100ml
	As	500		
	B	200		
	Ba	200		
	Be	200		
	Ca	1000		
	Cd	200		
	Ce	200		
	Co	200		
	Cr	200		
	Cu	200		
	K	1000		
	Mg	1000		
	Mn	200		
	Ni	200		
	P	1000		
	Pb	200		
	Se	500		
	Sr	200		
	Tl	500		
	V	200		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Verification Standard, 21 Elements according to Test Method 200.7</b>				
REICPVER21A	Ag	100	5% Nitric Acid	100ml
	As	100		
	B	100		
	Ba	100		
	Be	100		
	Ca	100		
	Cd	100		
	Ce	100		
	Co	100		
	Cr	100		
	Cu	100		
	Hg	100		
	Mg	100		
	Mn	100		
	Ni	100		
	P	100		
	Pb	100		
	Se	100		
	Sr	100		
	Tl	100		
	V	100		
<b>Multi Element Verification Standard, 21 Elements according to Test Method 200.7</b>				
REICPVER21B	Ag	20	5% Nitric Acid	100ml
	As	100		
	B	100		
	Ba	100		
	Be	100		
	Ca	100		
	Cd	100		
	Ce	100		
	Co	100		
	Cr	100		
	Cu	100		
	K	500		
	Mg	100		
	Mn	100		
	Ni	100		
	P	500		
	Pb	100		
	Se	100		
	Sr	100		
	Tl	100		
	V	100		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 21 Elements</b>				
ICP21-100-100	As	100	2-5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	Be	100		
	Ca	100		
	Cd	100		
	Co	100		
	Cr	100		
	Cu	100		
	Fe	100		
	Li	100		
	Mg	100		
	Mn	100		
	Mo	100		
	Ni	100		
	Pb	100		
	Sb	100		
	Se	100		
	Sr	100		
	Ti	100		
	Tl	100		
	V	100		
	Zn	100		
<b>Multi Element Calibration Standard, 20 Elements according to Test Method 6020</b>				
REICPCAL20A	Ag	10	2% Nitric Acid & tr. Tartaric Acid	100ml
	As	10		
	Ba	10		
	Be	10		
	Ca	10		
	Cd	10		
	Co	10		
	Cr	10		
	Cu	10		
	Fe	10		
	K	10		
	Mg	10		
	Mn	10		
	Na	10		
	Ni	10		
	Pb	10		
	Sb	10		
	Se	10		
	Tl	10		
	V	10		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Verification Standard, 20 Elements</b>				
REICPVER20A	As	100	5% Nitric Acid & tr. Hydrofluoric Acid & tr. Tartaric Acid	100ml
	Be	100		
	Ca	100		
	Cd	100		
	Co	100		
	Cr	100		
	Cu	100		
	Fe	100		
	Li	100		
	Mg	100		
	Mn	100		
	Mo	100		
	Ni	100		
	Pb	100		
	Sb	100		
	Se	100		
	Sr	100		
	Ti	100		
	Tl	100		
	V	100		
<b>Multi Element Calibration Standard, 19 Elements</b>				
REICPCAL19A	Ag	10	5% Nitric Acid & tr. Hydrofluoric Acid & tr. Tartaric Acid	100ml
	Al	10		
	As	10		
	Ba	10		
	Be	10		
	Cd	10		
	Co	10		
	Cu	10		
	Fe	1000		
	Mg	1000		
	Mn	10		
	Na	1000		
	Pb	10		
	Sb	10		
	Sr	10		
	Th	10		
	Tl	10		
	U	10		
	V	10		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 19 Elements</b>				
ICP-HR-195	Al	100	2-5% Nitric Acid	500ml
	As	100		
	Ba	100		
	Bi	100		
	Ca	100		
	Cd	100		
	Co	100		
	Cr	100		
	Cu	100		
	Mg	100		
	Mn	100		
	Mo	100		
	K	100		
	Pb	100		
	Ni	100		
	Se	100		
	Ti	100		
	V	100		
	Zn	100		
<b>Multi Element Standard, 19 Elements</b>				
ICP19A10	Al	100	2% Nitric Acid	100ml
	Ba	5		
	Be	1		
	Bi	200		
	B	15		
	Cd	20		
	Cr	25		
	Co	20		
	Cu	30		
	Ga	150		
	In	200		
	Fe	15		
	Pb	200		
	Mn	5		
	Ni	50		
	Ag	50		
	Sr	1		
	Tl	40		
	Zn	20		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 18 Elements</b>				
ICP-JM-ME4A	Al	8	5% Hydrochloric Acid	500ml
	Ca	4		
	Ce	4		
	Co	4		
	Cr	4		
	Cu	4		
	Fe	4		
	Ni	4		
	P	4		
	S	4		
	Zn	4		
	K	4		
	La	4		
	Si	4		
	Mg	1.6		
	Mn	1.6		
	Na	1.6		
Pd	1.6			
<b>Multi Element Standard, 18 Elements</b>				
ICP-JM-ME10A	Al	20	5% Hydrochloric Acid	500ml
	Ca	10		
	Ce	10		
	Co	10		
	Cr	10		
	Cu	10		
	Fe	10		
	Ni	10		
	P	10		
	S	10		
	Zn	10		
	K	10		
	La	10		
	Si	10		
	Mg	4		
	Mn	4		
	Na	4		
Pd	4			

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Verification Standard, 18 Elements</b>				
REICPVER18A	As	100	5% Nitric Acid & tr. Hydrofluoric Acid & tr. Tartaric Acid	100ml
	Be	100		
	Ca	100		
	Cd	100		
	Co	100		
	Cr	100		
	Cu	100		
	Fe	100		
	Mg	100		
	Mn	100		
	Mo	100		
	Ni	100		
	Pb	100		
	Sb	100		
	Se	100		
	Th	100		
	Tl	100		
	V	100		
<b>Multi Element Standard, 18 Elements</b>				
ICPM002	Ag	100	5% Nitric Acid	125ml
	Al	100		
	As	100		
	Ba	100		
	Be	100		
	Cd	100		
	Co	100		
	Cr	100		
	Cu	100		
	Mn	100		
	Ni	100		
	Pb	100		
	Se	100		
	Th	100		
	Tl	100		
	U	100		
	V	100		
	Zn	100		



Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 18 Elements</b>				
ICP-MIX1-CYM	As	10	2% Nitric Acid	100ml
	Cd	10		
	Se	10		
	Cr	10		
	Cu	10		
	Ni	100		
	Pb	100		
	Zn	100		
	Ba	100		
	Al	100		
	B	100		
	Be	100		
	Co	100		
	Fe	100		
	Mn	100		
	Sr	100		
	Tl	100		
V	100			
<b>Multi Element Verification Standard, 17 Elements according to Test Method 6010</b>				
REICPVER17A	Ag	10	5% Nitric Acid & tr. Hydrofluoric Acid & tr. Tartaric Acid	100ml
	Al	200		
	As	15		
	Ba	200		
	Be	5		
	Cd	5		
	Co	50		
	Cr	10		
	Cu	25		
	Fe	100		
	Mn	15		
	Ni	40		
	Pb	10		
	Sb	60		
	Se	35		
	Tl	25		
	V	50		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Spiking Standard, 17 Elements</b>				
REICPSPIK17A	Ag	25	5% Nitric Acid & tr. Hydrofluoric Acid & tr. Tartaric Acid	100ml
	Al	2000		
	As	1000		
	Ba	1000		
	Be	25		
	Cd	25		
	Co	100		
	Cr	200		
	Fe	2000		
	Mn	200		
	Mo	200		
	Ni	200		
	Pb	200		
	Sb	200		
	Se	1000		
	Tl	200		
	V	200		
<b>Multi Element Calibration Standard, 17 Elements according to Test Method 200.8</b>				
REICPCAL17A	Al	10	5% Nitric Acid & tr. Tartaric Acid	100ml
	As	10		
	Be	10		
	Cd	10		
	Co	10		
	Cr	10		
	Cu	10		
	Mn	10		
	Mo	10		
	Ni	10		
	Pb	10		
	Sb	10		
	Se	10		
	Th	10		
	Tl	10		
	U	10		
	V	10		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Calibration Standard, 17 Elements according to Test Method 200.8</b>				
REICPCAL17B	Al	10	5% Nitric Acid & tr. Tartaric Acid	100ml
	As	10		
	Be	10		
	Cd	10		
	Co	10		
	Cr	10		
	Cu	10		
	Mn	10		
	Mo	10		
	Ni	10		
	Pb	10		
	Sb	10		
	Se	50		
	Th	10		
	Tl	10		
	U	10		
	V	10		
<b>Multi Element Calibration Standard, 17 Elements</b>				
REICPCAL17D	Ag	100	2-5% Nitric Acid	100ml
	Al	100		
	As	100		
	Ba	100		
	Be	100		
	Cd	100		
	Co	100		
	Cr	100		
	Cu	100		
	Mn	100		
	Ni	100		
	Pb	100		
	Se	100		
	Th	100		
	Tl	100		
	U	100		
	V	100		
<b>Multi Element Calibration Standard, 17 Elements according to Test Method 200.8</b>				
REICPCAL17E	Ag	20	2-5% Nitric Acid	100ml
	Al	20		
	As	20		
	Ba	20		
	Be	20		
	Cd	20		
	Co	20		
	Cr	20		
	Cu	20		
	Mn	20		
	Ni	20		
	Pb	20		
	Se	20		
	Th	20		
	Tl	20		
	U	20		
	V	20		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Calibration Standard, 17 Elements according to Test Method 200.8</b>				
REICPCAL17F	Al	10	5% Nitric Acid & tr. Tartaric Acid	100ml
	As	10		
	Be	10		
	Cd	10		
	Co	10		
	Cr	10		
	Mg	10		
	Mn	10		
	Mo	10		
	Ni	10		
	Pb	10		
	Sb	10		
	Se	10		
	Th	10		
	Tl	10		
	U	10		
	V	10		
<b>Multi Element Verification Standard, 16 Elements</b>				
REICPVER16A	Ag	10	5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	Al	300		
	As	10		
	Ba	100		
	Be	10		
	Cd	10		
	Co	5		
	Cr	20		
	Cu	20		
	Mn	5		
	Ni	10		
	Pb	10		
	Sb	20		
	Se	50		
	Ta	10		
	V	10		
<b>Multi Element Interference Standard, 16 Elements according to Test Method 05.2</b>				
REICPINTF16A	Ag	10	5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	Al	10		
	As	10		
	Ba	10		
	Be	10		
	Cd	10		
	Co	10		
	Cr	10		
	Cu	10		
	Mn	10		
	Ni	10		
	Pb	10		
	Sb	10		
	Se	10		
	Tl	10		
	V	10		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Interference Standard, 16 Elements according to Test Method 200.7</b>				
REICPINTF16B	Ag	300	5% Nitric Acid	100ml
	As	1000		
	Ba	300		
	Be	100		
	Ca	300		
	Co	300		
	Cr	300		
	Cu	300		
	Hg	50		
	K	20000		
	Mn	200		
	Ni	300		
	Pb	1000		
	Se	500		
	Tl	1000		
	V	1000		
<b>Multi Element Calibration Standard, 16 Elements</b>				
REICPCAL16A	Ag	10	2-5% Nitric Acid	100ml
	Al	10		
	Ca	10		
	Co	10		
	Cr	10		
	Cs	10		
	Cu	10		
	Fe	10		
	K	10		
	Li	10		
	Mg	10		
	Mn	10		
	Na	10		
	Ni	10		
	Rb	10		
	Sr	10		
<b>Multi Element Calibration Standard, 16 Elements</b>				
REICPCAL16B	Al	100	2-5% Nitric Acid	100ml
	As	100		
	Ba	100		
	Be	100		
	Bi	100		
	Ca	100		
	Cs	100		
	Ga	100		
	In	100		
	K	100		
	Li	100		
	Mg	100		
	Na	100		
	Rb	100		
	Se	100		
	Sr	100		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Verification Standard, 16 Elements</b>				
REICPVER16B	Ag	10	Nitric Acid & tr. Hydrofluoric Acid	100ml
	Al	10		
	As	10		
	Ba	10		
	Be	10		
	Cd	10		
	Co	10		
	Cr	10		
	Cu	10		
	Mn	10		
	Ni	10		
	Pb	10		
	Sb	10		
	Se	10		
	Tl	10		
	V	10		
<b>Multi Element Standard, 16 Elements</b>				
ICP-LAN16-100	Ce	100	5% Nitric Acid	100ml
	La	100		
	Nd	100		
	Pr	100		
	Dy	20		
	Er	20		
	Eu	20		
	Gd	20		
	Ho	20		
	Lu	20		
	Sc	20		
	Sm	20		
	Tb	20		
	Tm	20		
	Y	20		
	Yb	20		
<b>Multi Element Calibration Standard, 15 Elements according to Test Method 200.8</b>				
REICPCAL15B	Al	10	5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	As	10		
	Be	10		
	Cd	10		
	Co	10		
	Mn	10		
	Mo	10		
	Ni	10		
	Pb	10		
	Sb	10		
	Se	10		
	Th	10		
	Tl	10		
	U	10		
	V	10		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Interference Standard, 15 Elements according to Test Method 6010</b>				
REICPINTF15A	Ag	20	5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	As	10		
	Ba	50		
	Be	50		
	Cd	100		
	Co	50		
	Cr	50		
	Cu	50		
	Mn	50		
	Ni	100		
	Pb	5		
	Sb	60		
	Se	5		
	Tl	10		
	V	50		
<b>Multi Element Tuning Standard, 15 Elements</b>				
REICPTUNE15A	B	10	Nitric Acid tr. Hydrochloric Acid	100ml
	Ba	10		
	Co	10		
	Fe	10		
	Ga	10		
	In	10		
	K	10		
	Li	10		
	Lu	10		
	Na	10		
	Rh	10		
	Sc	10		
	Th	10		
	U	10		
	Y	10		
<b>Multi Element Interference Standard, 15 Elements according to Test Method 200.7</b>				
REICPINTF15B	Ag	300	2-5% Nitric Acid	100ml
	As	1000		
	Ba	300		
	Be	100		
	Cd	300		
	Co	300		
	Cr	300		
	Cu	300		
	K	20000		
	Mn	200		
	Ni	300		
	Pb	1000		
	Se	500		
	Tl	1000		
	V	300		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 15 Elements</b>				
ICP15A10	Al	100	2-5% Nitric Acid	100ml
	Ba	100		
	Ca	100		
	Cd	100		
	Co	100		
	Cr	100		
	Cu	100		
	Fe	100		
	Mg	100		
	Mn	100		
	Na	100		
	Ni	100		
	Pb	100		
	Ti	100		
Zn	100			
<b>Multi Element Standard, 15 Elements</b>				
ICPMIX15-100	Al	1000	5% Nitric Acid	100ml
	Ba	1000		
	Ca	1000		
	Cd	1000		
	Co	1000		
	Cr	1000		
	Cu	1000		
	Fe	1000		
	Mg	1000		
	Mn	1000		
	Na	1000		
	Ni	1000		
	Pb	1000		
	Ti	1000		
Zn	1000			
<b>Multi Element Verification Standard, 14 Elements</b>				
REICPVER14A	Ag	20	5% Nitric Acid tr. Hydrochloric Acid	100ml
	As	20		
	Be	10		
	Cd	10		
	Co	100		
	Cr	20		
	Cu	50		
	Mn	30		
	Ni	80		
	Pb	6		
	Sb	120		
	Se	10		
	Tl	20		
	V	100		



Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Calibration Standard, 14 Elements</b>				
REICPCAL14A	Al	500	5% Nitric Acid	100ml
	As	100		
	Be	100		
	Cd	25		
	Co	100		
	Cr	100		
	Cu	100		
	Fe	100		
	Hg	100		
	Mn	100		
	Ni	100		
	Pb	100		
	Se	25		
	V	250		
<b>Multi Element Calibration Standard, 14 Elements</b>				
REICPCAL14B	B	100	Nitric Acid & tr. Hydrofluoric Acid	100ml
	Ge	100		
	Hf	100		
	Mo	100		
	Nb	100		
	P	100		
	Re	100		
	S	100		
	Sb	100		
	Si	100		
	Sn	100		
	Ta	100		
	Ti	100		
	W	100		
<b>Multi Element Calibration Standard, 14 Elements</b>				
REICPCAL14C	Al	5	5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	As	5		
	Ba	5		
	Cd	5		
	Co	5		
	Cr	5		
	Cu	5		
	K	50		
	Mn	5		
	Mo	5		
	Ni	5		
	Pb	5		
	Se	5		
	Sr	5		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Calibration Standard, 14 Elements</b>				
REICPCAL14D	Al	50	2-5% Nitric Acid	100ml
	As	50		
	Ba	50		
	Cd	50		
	Co	50		
	Cr	50		
	Cu	50		
	K	500		
	Mn	50		
	Mo	50		
	Ni	50		
	Pb	50		
	Se	50		
	Sr	50		
<b>Multi Element Calibration Standard, 13 Elements</b>				
REICPCAL13A	As	10	2-5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	B	10		
	Ba	10		
	Be	10		
	Bi	10		
	Cd	10		
	Ga	10		
	In	10		
	Pb	10		
	Sb	10		
	Se	10		
	Tl	10		
	V	10		
<b>Multi Element Calibration Standard, 13 Elements</b>				
REICPCAL13B	Al	500	2-5% Nitric Acid	100ml
	As	100		
	Be	100		
	Cd	25		
	Co	100		
	Cr	100		
	Cu	100		
	Fe	100		
	Mn	100		
	Ni	100		
	Pb	100		
	Se	25		
	V	250		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 13 Elements</b>				
ICP13-MIX-100	Al	100	2% Nitric Acid	100ml
	Ba	100		
	Fe	100		
	V	100		
	Zn	100		
	Cu	50		
	Mn	50		
	Pb	20		
	Ni	10		
	Be	5		
	Cd	5		
	Co	5		
	Cr	5		
<b>Multi Element Standard, 12 Elements</b>				
ICP12MIX3A	Al	100	2-5% Nitric Acid	100ml
	As	100		
	Ba	100		
	Cd	100		
	Cu	100		
	K	100		
	Mg	100		
	Mn	100		
	P	100		
	Pb	100		
	Se	100		
	Zn	100		
<b>Multi Element Standard, 12 Elements</b>				
ICP-STL-136	Al	1000	2-5% Nitric Acid & tr. Hydrofluoric Acid	500ml
	As	1000		
	Ba	1000		
	Cd	1000		
	Cu	1000		
	Cr	1000		
	Fe	1000		
	Ni	1000		
	Pb	1000		
	Se	1000		
	V	1000		
	Zn	1000		
<b>Multi Element Standard, 12 Elements</b>				
ICP12-100-100	Ag	100	2-5% Nitric Acid tr. Hydrofluoric Acid	100ml
	As	100		
	Cd	100		
	Cr	100		
	Cu	100		
	Fe	100		
	Mn	100		
	Ni	100		
	Pb	100		
	Sb	100		
	Se	100		
	Zn	100		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 12 Elements</b>				
ICP12-10-100	Be	10	2% Nitric Acid	100ml
	Co	10		
	Cs	10		
	In	10		
	Li	10		
	Mg	10		
	Pb	10		
	Sc	10		
	Tb	10		
	Tm	10		
	U	10		
	Y	10		
<b>Multi Element Standard, 12 Elements</b>				
ICP12-102-100	Ag	10	2-5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	As	10		
	Cd	10		
	Cr	10		
	Cu	10		
	Fe	10		
	Mn	10		
	Ni	10		
	Pb	10		
	Sb	10		
	Se	10		
	Zn	10		
<b>Multi Element Standard, 12 Elements</b>				
ICP12-50-100	Be	50	2% Nitric Acid	100ml
	Co	50		
	Ca	50		
	In	50		
	Li	50		
	Mg	50		
	Pb	50		
	Sc	50		
	Tb	50		
	Tm	50		
	U	50		
	Y	50		
<b>Multi Element Standard, 12 Elements</b>				
ICP12-KEF-100	B	10	2% Nitric Acid & tr. Hydrofluoric Acid	100ml
	Ge	10		
	Mo	10		
	Nb	10		
	P	10		
	Re	10		
	S	10		
	Si	10		
	Ta	10		
	Ti	10		
	W	10		
	Zr	10		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Calibration Standard, 12 Elements</b>				
REICPCAL12A	Ag	100	2-5% Nitric Acid	100ml
	Cd	100		
	Co	100		
	Cr	100		
	Cu	100		
	Fe	100		
	Hg	100		
	Mn	100		
	Ni	100		
	Pb	100		
	Tl	100		
	V	100		
<b>Multi Element Standard, 12 Elements</b>				
ICPMIX12-100	Bi	100	2% Nitric Acid & tr. Hydrofluoric Acid	100ml
	Cd	100		
	Co	100		
	Cu	100		
	Fe	100		
	Pb	100		
	Mn	100		
	Ni	100		
	Ag	100		
	Sn	100		
	Ti	100		
	Zn	100		
<b>Multi Element Tuning Standard, 11 Elements</b>				
REICPTUNE11A	Ba	10	5% Nitric Acid	100ml
	Be	10		
	Ce	10		
	Co	10		
	In	10		
	Li	10		
	Mg	10		
	Pb	10		
	Tb	10		
	U	10		
	Y	10		
<b>Multi Element Verification Standard, 11 Elements</b>				
REICPVER11A	Ag	100	5% Nitric Acid	100ml
	Ba	500		
	Be	200		
	Cd	250		
	Co	500		
	Cu	500		
	Fe	500		
	Mn	500		
	Ni	500		
	Pb	500		
	Tl	500		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Verification Standard, 11 Elements according to Test Method 6020</b>				
REICPVER11B	Ag	20	5% Nitric Acid	100ml
	Ba	100		
	Be	40		
	Cd	50		
	Co	100		
	Cu	100		
	Fe	100		
	Mn	100		
	Ni	100		
	Pb	100		
Tl	100			
<b>Multi Element Standard, 11 Elements</b>				
ICP-MIX-CYM12	Ge	1000	3.5% Nitric Acid & 0.5% Hydrofluoric Acid	250ml
	Hf	1000		
	Mo	1000		
	Nb	1000		
	Si	1000		
	Sn	1000		
	Ta	1000		
	Te	1000		
	Ti	1000		
	W	1000		
Zr	1000			
<b>Multi Element Interference Standard, 11 Elements</b>				
REICPINTF11A	Ag	100	2-5% Nitric Acid	100ml
	Ba	50		
	Be	50		
	Cd	100		
	Co	50		
	Cr	50		
	Cu	50		
	Mn	50		
	Ni	100		
	Pb	100		
V	50			
<b>Multi Element Standard, 11 Elements</b>				
ICP11-MIX-100	As	20	2% Hydrochloric Acid	100ml
	La	20		
	Li	20		
	Mo	20		
	Mn	20		
	Ni	20		
	Sc	20		
	Na	20		
	P	100		
	S	100		
K	100			

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 10 Elements</b>				
ICP-10-1000-100	Ti	1000	5% Nitric Acid & 1% Hydrochloric Acid	100ml
	V	1000		
	Cr	1000		
	Mn	1000		
	Ni	1000		
	Bi	1000		
	Cu	1000		
	Mo	1000		
	Pb	1000		
	U	1000		
<b>Multi Element Standard, 10 Elements</b>				
ICP-STD3-100	Au	10	10% Hydrochloric Acid	100ml
	Hf	10		
	Ir	10		
	Pd	10		
	Pt	10		
	Rh	10		
	Ru	10		
	Sb	10		
	Sn	10		
	Te	10		
<b>Multi Element Standard, 10 Elements</b>				
ICP10-1000-100	Al	1000	2% Nitric Acid	100ml
	B	1000		
	Ca	1000		
	Cu	1000		
	Fe	1000		
	K	1000		
	Li	1000		
	Mg	1000		
	Mo	1000		
	Na	1000		
<b>Multi Element Standard, 10 Elements</b>				
ICP10-MIX-100	P	10	2% Nitric Acid	100ml
	K	5		
	Ni	5		
	Al	1		
	Cu	1		
	Mn	1		
	Ba	0.2		
	Ca	0.2		
	Mg	0.2		
	Zn	0.2		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 10 Elements</b>				
ICP10MIX1A	Se	40	2-5% Nitric Acid	100ml
	Cu	100		
	Li	100		
	Ni	100		
	Sr	100		
	Zn	100		
	Al	200		
	Fe	200		
	P	500		
	B	1000		
<b>Multi Element Standard, 10 Elements</b>				
ICP10-MIX2-100	P	10	5% Nitric Acid	100ml
	K	5		
	Ni	5		
	Al	1		
	Cu	1		
	Mn	1		
	Ba	0.2		
	Ca	0.2		
	Mg	0.2		
	Zn	0.2		
<b>Multi Element Standard, 10 Elements</b>				
ICP10-STATION-1	Al	2.5	1% Hydrochloric Acid	100ml
	Co	2.5		
	Cr	2.5		
	Fe	2.5		
	Ni	2.5		
	Mn	2.5		
	Zn	2.5		
	Cu	2		
	P	1.65		
	Sn	1		
<b>Multi Element Standard, 10 Elements</b>				
ICP10-STATION-2	Al	5	1% Hydrochloric Acid	100ml
	Co	5		
	Cr	5		
	Fe	5		
	Ni	5		
	Mn	5		
	Zn	5		
	Cu	4		
	P	3.25		
	Sn	2		



Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Calibration Standard, 10 Elements</b>				
REICPCAL10A	Be	100	5% Nitric Acid	100ml
	Co	20		
	In	10		
	Li	50		
	Mg	25		
	Sc	25		
	Tb	5		
	Tl	10		
	U	5		
	Y	10		
<b>Multi Element Interference Standard, 10 Elements according to Test Method 6020</b>				
REICPINTF10A	Ag	5	2% Nitric Acid	100ml
	As	10		
	Cd	10		
	Co	20		
	Cr	20		
	Cu	20		
	Mn	20		
	Ni	20		
	Se	10		
	V	20		
<b>Multi Element Spiking Standard, 10 Elements</b>				
REICPSPIK10A	Ag	5	5% Nitric Acid	100ml
	Be	5		
	Cd	5		
	Co	50		
	Cu	25		
	Fe	100		
	Mn	50		
	Ni	50		
	Pb	50		
	Ti	200		
<b>Multi Element Calibration Standard, 10 Elements according to Test Method 6010</b>				
REICPCAL10B	Ag	200	5% Nitric Acid	100ml
	Ba	1000		
	Be	400		
	Cd	500		
	Co	1000		
	Fe	1000		
	Mn	1000		
	Ni	1000		
	Pb	1000		
	Tl	1000		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Calibration Standard, 10 Elements according to Test Method 6010</b>				
REICPCAL10C	Al	1000	20% Hydrochloric Acid	100ml
	As	1000		
	Ca	10000		
	Cr	1000		
	K	10000		
	Mg	10000		
	Na	10000		
	Sb	1000		
	Se	1000		
	V	1000		
<b>Multi Element Calibration Standard, 10 Elements</b>				
REICPCAL10D	Al	20	2% Nitric Acid & tr. Hydrofluoric Acid	100ml
	Be	5		
	Co	10		
	Cu	10		
	Fe	20		
	Mn	10		
	Ni	10		
	Sn	5		
	Tl	5		
	V	20		
<b>Multi Element Tuning Standard, 10 Elements</b>				
REICPTUNE10A	Ba	10	2-5% Nitric Acid	100ml
	Be	10		
	Bi	10		
	Ce	10		
	Co	10		
	In	10		
	Li	10		
	Ni	10		
	Pb	10		
	U	10		
<b>Multi Element Calibration Standard, 10 Elements according to Test Method 200.7</b>				
REICPCAL10G	Ag	50	2-5% Nitric Acid	100ml
	As	1000		
	B	100		
	Ba	100		
	Ca	1000		
	Cd	200		
	Cu	200		
	Mn	200		
	Se	500		
	Sr	100		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard USP 232/233 Compliance 1, 10 Elements</b>				
REICPUSP1	As	15	7% Nitric Acid	100ml
	Cd	5		
	Cr	250		
	Cu	2500		
	Hg	15		
	Mn	2500		
	Mo	250		
	Ni	250		
	Pb	10		
	V	250		
<b>Multi Element Tuning Solution 5, 10 Elements</b>				
REICPTUNE5	Ba	10	5% Nitric Acid	100ml
	Be	10		
	Bi	10		
	Ce	10		
	Co	10		
	In	10		
	Li	10		
	Ni	10		
	Pb	10		
	U	10		
<b>Multi Element Interference Standard, 9 Elements according to Test Method 6020</b>				
REICPINTF9A	Ag	10	5% Nitric Acid & tr. Tartaric Acid	100ml
	Al	10		
	As	10		
	Co	10		
	Cr	10		
	Mn	10		
	Ni	10		
	Se	10		
	V	10		
<b>Multi Element Standard, 9 Elements</b>				
ICPMIX-9-100	Ag	1000	2-5% Nitric Acid	100ml
	Cd	1000		
	Cr	1000		
	Cu	1000		
	Fe	1000		
	Mn	1000		
	Ni	1000		
	Pb	1000		
	Zn	1000		
<b>Multi Element Calibration Standard, 9 Elements</b>				
REICPCAL10H	Be	10	2-5% Nitric Acid	100ml
	Bi	10		
	Ce	10		
	Co	10		
	In	10		
	Mg	10		
	Ni	10		
	Pb	10		
	U	10		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Tuning Standard, 9 Elements</b>				
REICPTUNE9A	Fe	10	Hydrochloric Acid & tr. Hydrofluoric Acid	100ml
	K	10		
	La	10		
	Mg	5		
	Mn	5		
	P	10		
	S	50		
	Sc	10		
	Ti	10		
<b>Multi Element Tuning Standard, 9 Elements</b>				
REICPTUNE9B	Ba	10	2-5% Nitric Acid	100ml
	Be	10		
	Ce	10		
	Co	10		
	In	10		
	Mg	10		
	Pb	10		
	Th	10		
	Tl	10		
<b>Multi Element Standard, 9 Elements</b>				
ICP-WY-95	K	1000	2% Nitric Acid	500ml
	Ca	500		
	P	400		
	Na	240		
	Mg	100		
	Fe	10		
	Zn	6		
	Cu	1		
	Mn	1		
<b>Multi Element Standard, 9 Elements</b>				
ICP-MET-9-100	Cr	100	2% Nitric Acid	100ml
	Pb	100		
	Mn	100		
	Cu	100		
	Ni	100		
	Cd	100		
	Sb	100		
	As	100		
	Fe	100		
<b>Multi Element Standard, 8 Elements</b>				
ICP-TG-85	Ca	50	0.1% Nitric Acid	500ml
	K	13		
	Mg	10		
	Na	10		
	Cu	0.6		
	Zn	0.6		
	Mn	0.6		
	Fe	0.6		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Interference Standard, 8 Elements according to Test Method 6010</b>				
REICPINTF8A	Be	50	5% Nitric Acid	100ml
	Cd	100		
	Co	50		
	Cu	50		
	Mn	50		
	Ni	100		
	Pb	100		
	S	100		
<b>Multi Element Spiking Standard, 8 Elements</b>				
REICPSPIK8B	B	1000	5% Nitric Acid	100ml
	Ca	10000		
	K	10000		
	Li	1000		
	Mg	10000		
	Na	10000		
	P	1000		
	Sr	1000		
<b>Multi Element Standard, 8 Elements</b>				
MSICPS002	Si	1000	5% Nitric Acid & 1% Hydrofluoric Acid	100ml
	S	1000		
	Mo	1000		
	W	1000		
	Ti	1000		
	Nb	1000		
	Hf	1000		
	Ta	1000		
<b>Multi Element Calibration Standard, 8 Elements</b>				
REICPCAL8A	Ge	10	Hydrochloric Acid & tr. Nitric Acid	100ml
	Hf	10		
	Mo	10		
	Nb	10		
	Sn	10		
	Ta	10		
	Ti	10		
	W	10		
<b>Multi Element Standard, 8 Elements</b>				
ICP-MUL8	Al	100	2% Nitric Acid	100ml
	Ca	100		
	Fe	100		
	K	100		
	Na	100		
	S	100		
	Si	100		
	Zn	100		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 8 Elements</b>				
ICP-MUL8-250ML	Ca	10000	2% Nitric Acid	250ml
	Cu	20		
	Fe	200		
	Mg	1000		
	Mn	10		
	K	10000		
	Na	5000		
	Zn	100		
<b>Multi Element Calibration Standard, 8 Elements</b>				
REICPCAL8B	Au	10	10% Hydrochloric Acid	100ml
	Ir	10		
	Pd	10		
	Pt	10		
	Re	10		
	Rh	10		
	Ru	10		
	Te	10		
<b>Multi Element Calibration Standard, 8 Elements</b>				
REICPCAL8C	Ag	200	2-5% Nitric Acid	100ml
	Be	100		
	Co	1000		
	Cr	200		
	Cu	500		
	Mn	300		
	Ni	8000		
	V	1000		
<b>Multi Element Standard, 8 Elements</b>				
ICP-MIX8	Co	20	2% Nitric Acid tr. Hydrofluoric Acid	250ml
	Mo	20		
	Sn	20		
	Tl	20		
	As	10		
	Sb	10		
	Se	10		
	V	10		
<b>Multi Element Standard, 7 Elements</b>				
ICPMIX7-100	Ti	100	5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	W	100		
	Gd	100		
	Pd	100		
	Rb	100		
	Te	100		
	Th	100		
<b>Multi Element Internal Standard, 7 Elements</b>				
REICPIS7A	Bi	100	5% Nitric Acid	100ml
	Ga	100		
	In	100		
	Li	100		
	Sc	100		
	Tb	100		
	Y	100		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Internal Standard, 7 Elements</b>				
REICPIS7B	Bi	20	5% Nitric Acid	100ml
	Ga	20		
	In	20		
	Li	100		
	Sc	100		
	Tb	20		
	Y	20		
<b>Multi Element Internal Standard, 7 Elements</b>				
REICPIS7C	Bi	100	5% Nitric Acid	100ml
	Ge	100		
	In	100		
	Li	100		
	Lu	100		
	Sc	100		
	Tb	100		
<b>Multi Element Spiking Standard, 7 Elements</b>				
REICPSPIK7A	Al	200	20% Hydrochloric Acid	100ml
	As	200		
	Ba	200		
	Cr	20		
	Sb	50		
	Se	200		
	V	50		
<b>Multi Element Internal Standard, 7 Elements according to Test Method 200.8</b>				
REICPIS7D	Bi	10	5% Nitric Acid	100ml
	In	10		
	Li	10		
	Lu	10		
	Sc	10		
	Te	10		
	Y	10		
<b>Multi Element Internal Standard, 7 Elements according to Test Method 6020</b>				
REICPIS7E	Bi	10	2% Nitric Acid	100ml
	Ho	10		
	In	10		
	Li	10		
	Sc	10		
	Tb	10		
	Y	10		
<b>Multi Element Verification Standard, 7 Elements</b>				
REICPVER7A	Ag	100	5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	Al	100		
	B	100		
	Ba	100		
	K	1000		
	Na	100		
	Si	50		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Verification Standard, 7 Elements</b>				
REICPVER7B	Ag	50	5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	Al	100		
	B	100		
	Ba	100		
	K	1000		
	Na	100		
	Si	500		
<b>Multi Element Calibration Standard, 7 Elements according to Test Method 200.8 &amp; 05.2</b>				
REICPCAL7A	Ag	25	2% Nitric Acid	100ml
	As	25		
	Ba	500		
	Cd	5		
	Cr	25		
	Pb	25		
	Se	5		
<b>Multi Element Calibration Standard, 7 Elements</b>				
REICPCAL7B	Cr	10	2-5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	Hf	100		
	Ir	100		
	Sb	100		
	Sn	100		
	Ta	100		
	Ti	100		
<b>Multi Element Calibration Standard, 7 Elements</b>				
REICPCAL7C	As	100	2-5% Nitric Acid	100ml
	Be	100		
	Cd	100		
	Ni	100		
	Pb	100		
	Se	100		
	Tl	100		
<b>Multi Element Standard, 7 Elements</b>				
ICP7A20	Ag	50	5% Nitric Acid & 0.2% Hydrofluoric Acid	100ml
	Al	100		
	B	100		
	Ba	100		
	Na	100		
	K	1000		
	Si	500		
<b>Multi Element Standard, 7 Elements</b>				
ICP-MIX-CYM1	As	500	2% Nitric Acid	100ml
	Pb	500		
	Cu	100		
	Mn	100		
	Zn	100		
	Se	200		
	Be	50		



Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Tuning Standard, 6 Elements</b>				
REICPTUNE6A	Ba	10	1% Nitric Acid	100ml
	Ce	10		
	Co	10		
	In	10		
	Mg	10		
	Pb	10		
<b>Multi Element Calibration Standard, 6 Elements</b>				
REICPCAL6A	Al	200	5% Nitric Acid	100ml
	Ca	1000		
	Cr	20		
	K	400		
	Na	200		
	Ni	20		
<b>Multi Element Calibration Standard, 6 Elements</b>				
REICPCAL6B	Ba	500	2% Nitric Acid	100ml
	Ca	500		
	K	100		
	Mg	100		
	Mo	500		
	Na	500		
<b>Multi Element Calibration Standard, 6 Elements</b>				
REICPCAL6C	Au	100	10% Hydrochloric Acid	100ml
	Ir	100		
	Pd	100		
	Pt	100		
	Rh	100		
	Ru	100		
<b>Multi Element Calibration Standard, 6 Elements</b>				
REICPCAL6D	Ir	100	15% Hydrochloric Acid	100ml
	Os	100		
	Pd	100		
	Pt	100		
	Rh	100		
	Ru	100		
<b>Multi Element Calibration Standard, 6 Elements according to Test Method 200.7</b>				
REICPCAL6E	Be	100	2-5% Nitric Acid	100ml
	Fe	1000		
	Mg	1000		
	Ni	200		
	Pb	1000		
	Tl	500		
<b>Multi Element Standard USP 232/233 Compliance, 6 Elements</b>				
REICPUSP2	Ir	100	15% Hydrochloric Acid	100ml
	Os	100		
	Pd	100		
	Pt	100		
	Rh	100		
	Ru	100		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element USP 232/233 Compliance 6 Elements</b>				
REICPUSPIV	Ir	10	15% Hydrochloric Acid	100ml
	Os	10		
	Pd	10		
	Pt	10		
	Rh	10		
	Ru	10		
<b>Multi Element Tuning Standard, 6 Elements</b>				
REICPTUNE7A	Ba	10	2-5% Nitric Acid	100ml
	Ce	10		
	Co	10		
	In	10		
	Li	10		
	U	10		
<b>Multi Element Internal Standard, 6 Elements</b>				
REICPIS2	Bi	100	3% Nitric Acid	100ml
	In	100		
	Li	100		
	Sc	100		
	Tb	100		
	Y	100		
<b>Multi Element Standard, 6 Elements</b>				
ICP-MUL06	Al	100	2% Nitric Acid	100ml
	As	100		
	Cd	100		
	Cu	100		
	Fe	100		
	Pb	100		
<b>Multi Element Standard, 5 Elements</b>				
ICP-MS10042	Ce	10	2% Nitric Acid	100ml
	Co	10		
	Li	10		
	Tl	10		
	Y	10		
<b>Multi Element Standard, 5 Elements</b>				
STD-GLO-5-500	Al	1000	6% Nitric Acid	500ml
	Ca	1000		
	K	1000		
	Mg	1000		
	Na	1000		
<b>Multi Element Standard, 5 Elements</b>				
ICP-VL-51	Mg	1500	2% Nitric Acid	100ml
	Fe	100		
	K	25		
	S	25		
	Mn	5		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Tuning Solution, 5 Elements</b>				
REICPTUNE6	Ca	10	5% Nitric Acid	100ml
	Fe	10		
	K	10		
	Li	10		
	Na	10		
<b>Multi Element Calibration Standard, 5 Elements according to Test Method 6020</b>				
REICPCAL5A	Ca	2000	5% Nitric Acid	100ml
	Fe	2000		
	K	2000		
	Mg	2000		
	Na	2000		
<b>Multi Element Interference Standard, 5 Elements according to Test Method 200.7</b>				
REICPINTF5A	Al	1200	5% Nitric Acid	100ml
	Ca	6000		
	Fe	5000		
	Mg	3000		
	Na	1000		
<b>Multi Element Calibration Standard, 5 Elements according to Test Method 200.7</b>				
REICPCAL5D	Be	50	2% Nitric Acid & tr. Hydrofluoric Acid	100ml
	Cd	150		
	Mn	100		
	Pb	500		
	Se	200		
<b>Multi Element Calibration Standard, 5 Elements according to Test Method 200.7</b>				
REICPCAL5E	Ba	100	5% Nitric Acid	100ml
	Co	100		
	Cu	100		
	Fe	10000		
	V	100		
<b>Multi Element Calibration Standard, 5 Elements according to Test Method 200.7</b>				
REICPCAL5F	Ag	50	5% Nitric Acid & tr. Hydrofluoric Acid	100ml
	B	100		
	Mg	1000		
	Sb	200		
	Tl	200		
<b>Multi Element Tuning Standard, 5 Elements according to Test Method 200.8 &amp; 05.2</b>				
REICPTUNE5C	Be	10	5% Nitric Acid	100ml
	Co	10		
	In	10		
	Mg	10		
	Pb	10		
<b>Multi Element Calibration Standard, 5 Elements</b>				
REICPCAL5H	Ca	1000	2-5% Nitric Acid	100ml
	Fe	1000		
	K	1000		
	Mg	1000		
	Na	1000		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Calibration Standard, 5 Elements</b>				
REICPCAL5I	Ca	500	2-5% Nitric Acid	100ml
	Fe	500		
	K	500		
	Mg	500		
	Na	500		
<b>Multi Element Verification Standard, 5 Elements</b>				
REICPVER5A	Be	10	2-5% Nitric Acid tr. Hydrofluoric Acid	100ml
	Co	10		
	In	10		
	Ti	10		
	U	10		
<b>Multi Element Calibration Standard, 5 Elements</b>				
REICPCAL5J	Ca	1000	2-5% Nitric Acid	100ml
	Fe	1000		
	Li	1000		
	Tl	1000		
	Y	1000		
<b>Multi Element Tuning Standard, 5 Elements</b>				
REICPTUNE5A	Ce	10	2-5% Nitric Acid	100ml
	Co	10		
	Li	10		
	Tl	10		
	Y	10		
<b>Multi Element Calibration Standard, 5 Elements</b>				
REICPCAL5K	Al	1000	2-5% Nitric Acid	100ml
	Cd	500		
	Pb	1000		
	Se	1000		
	Tl	1000		
<b>Multi Element Calibration Standard, 5 Elements</b>				
REICPCAL5L	As	500	2-5% Nitric Acid	100ml
	Cd	250		
	Pb	500		
	Se	500		
	Tl	500		
<b>Multi Element Calibration Standard, 5 Elements</b>				
REICPCAL5N	As	100	2-5% Nitric Acid	100ml
	Cd	50		
	Pb	30		
	Se	50		
	Tl	100		
<b>Multi Element Calibration Standard, 5 Elements according to Test Method 200.7</b>				
REICPCAL5O	K	2000	5% Nitric Acid & 1% Hydrofluoric Acid	100ml
	Li	500		
	Mo	1000		
	Na	1000		
	Ti	1000		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Calibration Standard, 5 Elements according to Test Method 200.7</b>				
REICPCAL5P	Al	3000	2-5% Nitric Acid	100ml
	Ca	15000		
	Fe	12500		
	Mg	7500		
	Na	2500		
<b>Multi Element Internal Standard, 5 Elements according to Test Method 200.8</b>				
REICPIS5A	Bi	20	2-5% Nitric Acid	100ml
	In	20		
	Sc	20		
	Tb	20		
	Y	20		
<b>Multi Element Tuning Standard, 5 Elements according to Test Method 200.8</b>				
REICPTUNE5B	Be	10	2-5% Nitric Acid	100ml
	Co	10		
	In	10		
	Mg	10		
	Pb	10		
<b>Multi Element Standard, 5 Elements</b>				
ICPM003	K	500	2% Nitric Acid	125ml
	Na	500		
	Ca	500		
	Mg	500		
	Fe	500		
<b>Multi Element Standard, 5 Elements</b>				
ICP-MIX2	Sc	100	2% Nitric Acid	125ml
	Y	100		
	In	100		
	Tb	100		
	Bi	100		
<b>Multi Element Standard, 5 Elements</b>				
REICPTUNE1	Ce		2% Nitric Acid	100ml
	Co			
	Li			
	Tl			
	Y			
<b>Multi Element Standard, 5 Elements</b>				
REICPTUNE5A1	Ce	10	2-5% Nitric Acid	100ml
	Co	10		
	Li	10		
	Ti	10		
	Y	10		
<b>Multi Element Standard, 5 Elements</b>				
ICPMIX5-100	Ir	100	5% Hydrochloric Acid	100ml
	Pd	100		
	Pt	100		
	Rh	100		
	Ru	100		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 5 Elements</b>				
ICP-MIX3-CYM	Ca	1000	2% Nitric Acid	100ml
	Mg	1000		
	K	1000		
	Na	1000		
	P	1000		
<b>Multi Element Standard, 4 Elements</b>				
ICPMIX4-100	Pd	100	10% Hydrochloric Acid	100ml
	Pt	100		
	Sb	100		
	Sn	100		
<b>Multi Element Calibration Standard, 4 Elements</b>				
REICPCAL4A	As	100	2% Nitric Acid	100ml
	Cr	100		
	Fe	100		
	Se	100		
<b>Multi Element Calibration Standard, 4 Elements</b>				
REICPCAL4B	Ca	100	5% Nitric Acid	100ml
	Fe	100		
	K	100		
	Na	100		
<b>Multi Element Tuning Standard, 4 Elements</b>				
REICPTUNE4A	Ce	10	5% Nitric Acid	100ml
	Li	10		
	Tl	10		
	Y	10		
<b>Multi Element Calibration Standard, 4 Elements according to Test Method 200.8</b>				
REICPCAL4R	Ca	1000	2% Nitric Acid	100ml
	K	1000		
	Mg	1000		
	Na	1000		
<b>Multi Element Calibration Standard, 4 Elements according to Test Method 200.8</b>				
REICPCAL4C	Ag	100	5% Nitric Acid	100ml
	Ba	100		
	Cu	100		
	Fe	100		
<b>Multi Element Calibration Standard, 4 Elements according to Test Method 200.8</b>				
REICPCAL4D	Ca	10000	2% Nitric Acid	100ml
	Mg	1000		
	Na	10000		
	P	1000		
<b>Multi Element Interference Standard, 4 Elements according to Test Method 6010</b>				
REICPINTF4A	Al	5000	20% Hydrochloric Acid	100ml
	Ca	5000		
	Fe	2000		
	Mg	5000		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Tuning Standard, 4 Elements according to Test Method 6020</b>				
REICPTUNE4C	Co	10	5% Nitric Acid	100ml
	In	10		
	Li	10		
	Ti	10		
<b>Multi Element Verification Standard, 4 Elements according to Test Method 200.7</b>				
REICPVER4B	As	10	5% Nitric Acid	100ml
	Pb	10		
	Se	10		
	Ti	10		
<b>Multi Element Calibration Standard, 4 Elements</b>				
REICPCAL4E	Ca	500	2% Nitric Acid	100ml
	K	100		
	Mg	100		
	Na	500		
<b>Multi Element Calibration Standard, 4 Elements</b>				
REICPCAL4F	Ba	1000	2-5% Nitric Acid	100ml
	Ca	1000		
	Mg	1000		
	Sr	1000		
<b>Multi Element Calibration Standard, 4 Elements</b>				
REICPCAL4G	Cd	10	2-5% Nitric Acid	100ml
	Cu	800		
	Ni	200		
	Pb	500		
<b>Multi Element Calibration Standard, 4 Elements</b>				
REICPCAL4H	Ca	10000	2-5% Nitric Acid	100ml
	K	10000		
	Mg	10000		
	Na	10000		
<b>Multi Element Calibration Standard, 4 Elements</b>				
REICPCAL4I	Ca	1000	2-5% Nitric Acid	100ml
	K	1000		
	Mg	1000		
	Na	1000		
<b>Multi Element Calibration Standard, 4 Elements according to Test Method 6010</b>				
REICPCAL4J	Ca	5000	2-5% Nitric Acid	100ml
	K	5000		
	Mg	5000		
	Na	5000		
<b>Multi Element Calibration Standard, 4 Elements</b>				
REICPCAL4K	Mo	100	5% Nitric Acid & 1% Hydrofluoric Acid	100ml
	Sb	100		
	Sn	100		
	Ti	100		
<b>Multi Element Interference Standard, 4 Elements</b>				
REICPINTF4C	Al	5000	2-5% Nitric Acid	100ml
	Ca	5000		
	Fe	2000		
	Mg	5000		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Calibration Standard, 4 Elements according to Test Method 200.7</b>				
REICPCAL4L	Ce	200	2-5% Nitric Acid	100ml
	Co	200		
	P	1000		
	V	200		
<b>Multi Element Calibration Standard, 4 Elements according to Test Method 200.7</b>				
REICPCAL4M	B	500	5% Nitric Acid & 1% Hydrofluoric Acid	100ml
	Mo	300		
	Si	230		
	Ti	1000		
<b>Multi Element Calibration Standard, 4 Elements</b>				
REICPCAL4N	Ce	10	2-5% Nitric Acid	100ml
	Li	10		
	Tl	10		
	Y	10		
<b>Multi Element Standard, 4 Elements</b>				
ICP-LX-4-25	Sn	1	7% Hydrochloric Acid	250ml
	Au	1		
	Pd	1		
	Rh	1		
<b>Multi Element Tuning Solution 2, 4 Elements</b>				
REICPTUNE2	Ce	10	2% Nitric Acid	100ml
	Li	10		
	Tl	10		
	Y	10		
<b>Multi Element Standard, 4 Elements</b>				
ICPM001	Mo	100	5% Nitric Acid & 0.5% Hydrofluoric Acid	125ml
	Sb	100		
	Sn	100		
	Ti	100		
<b>Multi Element Standard, 4 Elements</b>				
ICP-MIX1	Li	10	2% Nitric Acid	125ml
	Y	10		
	Ce	10		
	Tl	10		
<b>Multi Element Standard, 4 Elements</b>				
ICP-MIX2-CYM	Mo	10	5% Nitric Acid & 0.5% Hydrofluoric Acid	100ml
	Sb	10		
	Sn	100		
	Ti	100		
<b>Multi Element Standard, 4 Elements</b>				
ICP-SDHT-401	Na	25	2.5% Glucose Monohydrate	100ml
	K	100		
	Mg	5		
	Ca	50		
<b>Multi Element Standard, 4 Elements</b>				
ICP-THE-4-100	K	200	10% Nitric Acid	100ml
	Mg	400		
	Na	1000		
	Ca	2000		



Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 3 Elements</b>				
ICPMIX3-100	Pt	100	10% Hydrochloric Acid	100ml
	Sb	100		
	Sn	100		
<b>Multi Element Interference Standard, 3 Elements according to Test Method 6010</b>				
REICPINTF3A	Ba	50	20% Hydrochloric Acid	100ml
	Cr	50		
	V	50		
<b>Multi Element Calibration Standard, 3 Elements according to Test Method 200.7</b>				
REICPCAL3A	As	500	2% Nitric Acid & tr. Hydrofluoric Acid	100ml
	Mo	100		
	Si	100		
<b>Multi Element Calibration Standard, 3 Elements</b>				
REICPCAL3B	Au	100	10% Hydrochloric Acid	100ml
	Pd	100		
	Pt	100		
<b>Multi Element Tuning Standard, 3 Elements</b>				
REICPTUNE3A	Ce	10	1% Nitric Acid	100ml
	Co	10		
	Li	10		
<b>Multi Element Calibration Standard, 3 Elements according to Test Method 200.7</b>				
REICPCAL3C	Al	1000	2-5% Nitric Acid	100ml
	Cr	500		
	Hg	200		
<b>Multi Element Standard, 3 Elements</b>				
ICP-PS-325M	Ga	50	5% Nitric Acid & 0.5% Hydrochloric Acid	250ml
	Ir	10		
	Rh	10		
<b>Multi Element Standard, 3 Elements</b>				
ICP-HR-35	Ag	100	2-5% Nitric Acid & tr. Hydrofluoric Acid	500ml
	Sb	100		
	Sn	100		
<b>Multi Element Standard, 3 Elements</b>				
ICP-MET-3-100	Hg	100	2% Hydrochloric Acid	100ml
	Ca	100		
	Mg	100		
<b>Multi Element Standard, 3 Elements</b>				
ICP-MIX10	Co	20	2% Nitric Acid	125ml
	V	20		
	P	100		
<b>Multi Element Standard, 3 Elements</b>				
ICP-PS325M	Ga	50	5% Nitric Acid & 0.5% Hydrochloric Acid	250ml
	Ir	10		
	Rh	10		
<b>Multi Element Standard, 3 Elements</b>				
ICP-PC-35A	Ag	10	2% Nitric Acid	500ml
	Hg	10		
	Tl	10		

Product No.	Elements	Conc µg/ml	Matrix	Pack Size
<b>Multi Element Standard, 3 Elements</b>				
MSICP001	As	100	5% Nitric Acid	100ml
	Mn	100		
	Pb	100		
<b>Multi Element Standard, 3 Elements</b>				
MXSTD301	Chloride	1000	H <sub>2</sub> O	100ml
	Sulphate	1000		
	Nitrate	200		
<b>Multi Element Standard, 3 Elements</b>				
ICP3-100-100	K	500	2% Nitric Acid	100ml
	Mg	500		
	P	500		
<b>Multi Element Standard, 2 Elements</b>				
ICP2MIX-100	Fe	500	2% Nitric Acid	100ml
	Mn	500		
<b>Multi Element Standard, 2 Elements</b>				
ICP2MIX2-100	Cd	100	2-5% Nitric Acid	100ml
	Pb	100		
<b>Multi Element Standard, 2 Elements</b>				
MEICP2	Si	100	5% Nitric Acid & 1% Hydrofluoric Acid	100ml
	W	100		
<b>Multi Element Tuning Standard, 2 Elements according to Test Method 200.7</b>				
REICPTUNE2A	Cu	10	5% Nitric Acid	100ml
	Pb	10		
<b>Multi Element Calibration Standard, 2 Elements according to Test Method 200.8</b>				
REICPCAL2A	Mo	20	Nitric Acid tr. Hydrofluoric Acid	100ml
	Sb	20		
<b>Multi Element Standard, 2 Elements</b>				
ICP-HR-25	S	100	H <sub>2</sub> O	500ml
	Si	100		

# Ion Chromatography Standards



These standards are prepared, tested, certified and verified by following the exact same regime as already presented for ICP-MS Standards. The raw material specifications are in most cases identical to the materials used for ICP-MS. Additionally, the elemental cations are also analysed by ICP-MS. All results are verified on a state of the art Ion Chromatograph, which is calibrated using high purity ISO Guide 34 accredited standards, similar in concentration to the products listed below.

## Controlled Environment

Reagecon's standards are manufactured in a highly controlled clean room environment using:

- High purity starting materials
- Ultra-pure water, specially treated for Mass Spectroscopy Standards
- High purity matrix materials
- Pre-leached and pre-cleaned bottles

## Options

Reagecon offers more options than almost any other manufacturer.

- At least 18 anion and 18 cation standards
- Many multi - element mix's
- Concentration options
- Pack size options
- Customised Standards

All at the highest quality and at an affordable price.

## Verification of Raw Materials

All metal raw materials are assayed by titration and ICP-MS prior to manufacture. Separate CRM's are used to control or calibrate the titration and ICP-MS respectively. This dual process enables the assays to be cross-checked against each other, provides two layers of traceability and quantifies the combined level of impurities in the starting material. The product is then manufactured gravimetrically using the mass balance approach: 100% - sum of all impurities (w/w). The assay of the final product is certified using the gravimetric result corrected for density. Prior to bottling, the finished product is again tested and verified using an ICP-MS instrument calibrated with appropriate CRM's and a state of the art Ion Chromatograph.

## Certification

Reagecon's Ion Chromatography Standards are prepared gravimetrically on a weight/weight basis from the purest available raw materials on the market. Both solute and solvent are weighed on balances calibrated by Reagecon's engineers using OIML traceable weights. Reagecon holds ISO/IEC 17025 accreditation for calibration of laboratory balances (INAB Ref:265C). The resulting Balance Certificate of Calibration is issued in accordance with the requirements of ISO/IEC 17025.

## Traceability

The content of the starting material for each single element or multi-element standard is established by titration. The resulting analysis is directly traceable to a relevant NIST standard where available. All of the resulting uncertainties of measurement are calculated according to EURACHEM/CITAC guidelines and reported as expanded uncertainties at the 95% confidence level. Reagecon holds ISO/IEC 17025 (INAB Ref:264T) accreditation for several classes of titrimetric analysis relevant to the assay of Raw Materials, for the manufacture of Ion Chromatography Standards.

## Elemental Metallic Impurities

All Reagecon Standards are manufactured from the purest available raw materials. For cations a lot of the starting materials are metals of > 99.999% purity. Several others are at least 99.995% pure. Most of the remaining metals or salts of metals are at least 99.99% pure. The level of impurities are quantified using ICP-MS and are measured and reported both on the starting materials and on the finished product. All of Reagecon's Ion Chromatography standards are manufactured in a Class 10,000 (ISO 7) clean room environment.

## Final Assay & Result

Each batch of Reagecon's finalised IC standards are subjected to an assay on the ICP-MS or IC prior to bottling. This assay verifies the target element assay and verifies that the level of impurities have not changed significantly during the manufacturing process. The results are then reported and certified in mg/Kg and mg/L on the basis of weight and the density measurement of the standard. All of the volumetric, titrimetric and gravimetric functions are carried out under a highly regulated temperature regime, using equipment calibrated by Reagecon's engineers. Reagecon holds ISO/IEC 17025 accreditation for temperature calibration in the range of -196 to +1200°C (INAB Ref:265C). The density measurements are also highly temperature dependent and are carried out in Reagecon's specialised Density Laboratory. Reagecon is ISO/IEC 17025 (INAB Ref:264T) Accredited, for density measurement using an Oscillating U-Tube Method in accordance with the ASTM D4052 method. The company is an extensive producer of density standards and the range is presented in our compendium of Physical and Chemical Standards.

## Anion Standards

Product No.	Ion	Starting Material	Matrix	Concentration	Pack Size
<b>Acetate</b>					
ICAU35	CH <sub>3</sub> COO <sup>-</sup>	Sodium Acetate	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT35	CH <sub>3</sub> COO <sup>-</sup>	Sodium Acetate	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAS35	CH <sub>3</sub> COO <sup>-</sup>	Sodium Acetate	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
<b>Bromate</b>					
ICAS3301	BrO <sub>3</sub> <sup>-</sup>	Potassium Bromate	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAS3301-50ml	BrO <sub>3</sub> <sup>-</sup>	Potassium Bromate	H <sub>2</sub> O	1mg/ml (1,000ppm)	50ml
ICAS3305	BrO <sub>3</sub> <sup>-</sup>	Potassium Bromate	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Bromide</b>					
ICAU01	Br <sup>-</sup>	KBr	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT01	Br <sup>-</sup>	KBr	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAS01	Br <sup>-</sup>	KBr	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAS01-50ml	Br <sup>-</sup>	KBr	H <sub>2</sub> O	1mg/ml (1,000ppm)	50ml
ICAB01	Br <sup>-</sup>	KBr	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Chlorate</b>					
ICACL001	ClO <sub>3</sub> <sup>-</sup>	Potassium Chlorate	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICACL001-50ml	ClO <sub>3</sub> <sup>-</sup>	Potassium Chlorate	H <sub>2</sub> O	1mg/ml (1,000ppm)	50ml

## Anion Standards

Product No.	Ion	Starting Material	Matrix	Concentration	Pack Size
<b>Chloride</b>					
ICAU02	Cl <sup>-</sup>	KCl	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT02	Cl <sup>-</sup>	KCl	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAS02	Cl <sup>-</sup>	KCl	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAB02	Cl <sup>-</sup>	KCl	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
ICAS021	Cl <sup>-</sup>	KCl	H <sub>2</sub> O	1mg/ml (1,000ppm)	1L
ICAS02-10000	Cl <sup>-</sup>	KCl	H <sub>2</sub> O	10mg/ml (10,000ppm)	500ml
<b>Chlorite</b>					
ICAS321	ClO <sub>2</sub> <sup>-</sup>	Sodium Chlorite	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAS321-50ml	ClO <sub>2</sub> <sup>-</sup>	Sodium Chlorite	H <sub>2</sub> O	1mg/ml (1,000ppm)	50ml
<b>Chromate</b>					
ICAX29	CrO <sub>4</sub> <sup>2-</sup>	NH <sub>4</sub> Cr <sub>2</sub> O <sub>7</sub>	H <sub>2</sub> O	0.002mg/ml (2ppm)	100ml
ICAU29	CrO <sub>4</sub> <sup>2-</sup>	NH <sub>4</sub> Cr <sub>2</sub> O <sub>7</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT29	CrO <sub>4</sub> <sup>2-</sup>	NH <sub>4</sub> Cr <sub>2</sub> O <sub>7</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAS29	CrO <sub>4</sub> <sup>2-</sup>	NH <sub>4</sub> Cr <sub>2</sub> O <sub>7</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAB29	CrO <sub>4</sub> <sup>2-</sup>	NH <sub>4</sub> Cr <sub>2</sub> O <sub>7</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Cyanide</b>					
ICAZ08	CN <sup>-</sup>	NaCN	H <sub>2</sub> O	0.0001mg/ml (0.1ppm)	100ml
ICAU08	CN <sup>-</sup>	NaCN	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAS08	CN <sup>-</sup>	NaCN	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAB08	CN <sup>-</sup>	NaCN	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Fluoride</b>					
ICAU03	F <sup>-</sup>	NaF	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT03	F <sup>-</sup>	NaF	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAT411	F <sup>-</sup>	NaF	H <sub>2</sub> O	0.5mg/ml (500ppm)	1L
ICAS03	F <sup>-</sup>	NaF	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAS03-B	F <sup>-</sup>	NaF	H <sub>2</sub> O	1mg/ml (1,000ppm)	250ml
ICAB03	F <sup>-</sup>	NaF	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Formate</b>					
ICAU34	HCOO <sup>-</sup>	Sodium Formate	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT34	HCOO <sup>-</sup>	Sodium Formate	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAS34	HCOO <sup>-</sup>	Sodium Formate	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAB34	HCOO <sup>-</sup>	Sodium Formate	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Iodide</b>					
ICAU40	I <sup>-</sup>	NH <sub>4</sub> I	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT40	I <sup>-</sup>	NH <sub>4</sub> I	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAS40	I <sup>-</sup>	NH <sub>4</sub> I	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAB40	I <sup>-</sup>	NH <sub>4</sub> I	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Nitrate</b>					
ICAU04	NO <sub>3</sub> <sup>-</sup>	NH <sub>4</sub> NO <sub>3</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT04	NO <sub>3</sub> <sup>-</sup>	NH <sub>4</sub> NO <sub>3</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAS04	NO <sub>3</sub> <sup>-</sup>	NH <sub>4</sub> NO <sub>3</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAS04-B	NO <sub>3</sub> <sup>-</sup>	NH <sub>4</sub> NO <sub>3</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	250ml
ICAB04	NO <sub>3</sub> <sup>-</sup>	NH <sub>4</sub> NO <sub>3</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
ICAS04-10000	NO <sub>3</sub> <sup>-</sup>	NH <sub>4</sub> NO <sub>3</sub>	H <sub>2</sub> O	10mg/ml (10,000ppm)	500ml

## Anion Standards

Product No.	Ion	Starting Material	Matrix	Concentration	Pack Size
<b>Nitrite</b>					
ICA11305	NO <sub>2</sub> <sup>-</sup>	NaNO <sub>2</sub>	H <sub>2</sub> O	0.03mg/ml (30ppm)	500ml
ICAU11	NO <sub>2</sub> <sup>-</sup>	NaNO <sub>2</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAS151005	NO <sub>2</sub> <sup>-</sup>	NaNO <sub>2</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	500ml
ICAS151001	NO <sub>2</sub> <sup>-</sup>	NaNO <sub>2</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	1L
ICAS11	NO <sub>2</sub> <sup>-</sup>	NaNO <sub>2</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAS11-B	NO <sub>2</sub> <sup>-</sup>	NaNO <sub>2</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	250ml
ICAB11	NO <sub>2</sub> <sup>-</sup>	NaNO <sub>2</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
ICAS11-10000	NO <sub>2</sub> <sup>-</sup>	NaNO <sub>2</sub>	H <sub>2</sub> O	10mg/ml (10,000ppm)	500ml
<b>Oxalate</b>					
ICAU13	(COO) <sub>2</sub> <sup>2-</sup>	K <sub>2</sub> C <sub>2</sub> O <sub>4</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT13	(COO) <sub>2</sub> <sup>2-</sup>	K <sub>2</sub> C <sub>2</sub> O <sub>4</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAS13	(COO) <sub>2</sub> <sup>2-</sup>	K <sub>2</sub> C <sub>2</sub> O <sub>4</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAB13	(COO) <sub>2</sub> <sup>2-</sup>	K <sub>2</sub> C <sub>2</sub> O <sub>4</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Phosphate</b>					
ICAU05	PO <sub>4</sub> <sup>3-</sup>	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT05	PO <sub>4</sub> <sup>3-</sup>	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAS05	PO <sub>4</sub> <sup>3-</sup>	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAS05-B	PO <sub>4</sub> <sup>3-</sup>	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	250ml
ICAB05	PO <sub>4</sub> <sup>3-</sup>	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
ICAS051	PO <sub>4</sub> <sup>3-</sup>	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	1L
ICAS05-10000	PO <sub>4</sub> <sup>3-</sup>	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>	H <sub>2</sub> O	10mg/ml (10,000ppm)	500ml
<b>Silica</b>					
ICAU12	SiO <sub>2</sub>	Na <sub>2</sub> O <sub>3</sub> Si	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT12	SiO <sub>2</sub>	Na <sub>2</sub> O <sub>3</sub> Si	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAS12	SiO <sub>2</sub>	Na <sub>2</sub> O <sub>3</sub> Si	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAB12	SiO <sub>2</sub>	Na <sub>2</sub> O <sub>3</sub> Si	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
ICAB12-1L	SiO <sub>2</sub>	Na <sub>2</sub> O <sub>3</sub> Si	H <sub>2</sub> O	1mg/ml (1,000ppm)	1L
ICAD12-1L	SiO <sub>2</sub>	Na <sub>2</sub> O <sub>3</sub> Si	H <sub>2</sub> O	0.01mg/ml (10ppb)	1L
<b>Sulphate</b>					
ICAU06	SO <sub>4</sub> <sup>2-</sup>	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT06	SO <sub>4</sub> <sup>2-</sup>	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAS0650	SO <sub>4</sub> <sup>2-</sup>	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> O	0.05mg/ml (50ppm)	500ml
ICAS06	SO <sub>4</sub> <sup>2-</sup>	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAB06	SO <sub>4</sub> <sup>2-</sup>	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
ICAS061	SO <sub>4</sub> <sup>2-</sup>	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	1L
<b>Tartrate</b>					
ICAU36	(CHOH) <sub>2</sub> (COO) <sub>2</sub> <sup>2-</sup>	Tartaric Acid	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICAT36	(CHOH) <sub>2</sub> (COO) <sub>2</sub> <sup>2-</sup>	Tartaric Acid	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICAS36	(CHOH) <sub>2</sub> (COO) <sub>2</sub> <sup>2-</sup>	Tartaric Acid	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICAB36	(CHOH) <sub>2</sub> (COO) <sub>2</sub> <sup>2-</sup>	Tartaric Acid	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml

## Cation Standards

Product No.	Ion	Starting Material	Matrix	Concentration	Pack Size
<b>Aluminium</b>					
ICCU06	Al <sup>3+</sup>	Al(NO <sub>3</sub> ) <sub>3</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICCT06	Al <sup>3+</sup>	Al(NO <sub>3</sub> ) <sub>3</sub>	H <sub>2</sub> O	0.2mg/ml (200 ppm)	100ml
ICCS06	Al <sup>3+</sup>	Al(NO <sub>3</sub> ) <sub>3</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICCB06	Al <sup>3+</sup>	Al(NO <sub>3</sub> ) <sub>3</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Ammonium</b>					
ICCU01	NH <sub>4</sub> <sup>+</sup>	NH <sub>4</sub> Cl	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICCT01	NH <sub>4</sub> <sup>+</sup>	NH <sub>4</sub> Cl	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICCS01	NH <sub>4</sub> <sup>+</sup>	NH <sub>4</sub> Cl	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICCB01	NH <sub>4</sub> <sup>+</sup>	NH <sub>4</sub> Cl	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
ICCS01-10000	NH <sub>4</sub> <sup>+</sup>	NH <sub>4</sub> Cl	H <sub>2</sub> O	10mg/ml (10,000ppm)	500ml
<b>Barium</b>					
ICCU44	Ba <sup>2+</sup>	Ba(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICCT44	Ba <sup>2+</sup>	Ba(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICCS44	Ba <sup>2+</sup>	Ba(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICCB44	Ba <sup>2+</sup>	Ba(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Cadmium</b>					
ICCU09	Cd <sup>2+</sup>	Cd Metal	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCS09	Cd <sup>2+</sup>	Cd Metal	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB09	Cd <sup>2+</sup>	Cd Metal	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml
<b>Calcium</b>					
ICCU08	Ca <sup>2+</sup>	Ca(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICCT08	Ca <sup>2+</sup>	Ca(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICCS08	Ca <sup>2+</sup>	Ca(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICCB08	Ca <sup>2+</sup>	Ca(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
ICCCA01	Ca <sup>2+</sup>	Ca(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	1.5mg/ml (1,500ppm)	100ml
ICCCA05	Ca <sup>2+</sup>	Ca(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	1.5mg/ml (1,500ppm)	500ml
<b>Cesium</b>					
ICCU91	Cs <sup>+</sup>	CsNO <sub>3</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICCT91	Cs <sup>+</sup>	CsNO <sub>3</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICCS91	Cs <sup>+</sup>	CsNO <sub>3</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICCB91	Cs <sup>+</sup>	CsNO <sub>3</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Cobalt</b>					
ICCU15	Co <sup>2+</sup>	Co Metal	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCS15	Co <sup>2+</sup>	Co Metal	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB15	Co <sup>2+</sup>	Co Metal	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml
ICCS95	Co <sup>2+</sup>	Co Metal	0.5% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
<b>Copper</b>					
ICCU16	Cu <sup>2+</sup>	Cu Metal	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCS16	Cu <sup>2+</sup>	Cu Metal	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB16	Cu <sup>2+</sup>	Cu Metal	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml
<b>Iron</b>					
ICCU12	Fe <sup>2+</sup>	Fe(NO <sub>3</sub> ) <sub>3</sub>	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCT12	Fe <sup>2+</sup>	Fe(NO <sub>3</sub> ) <sub>3</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICCS12	Fe <sup>2+</sup>	Fe(NO <sub>3</sub> ) <sub>3</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB12	Fe <sup>2+</sup>	Fe(NO <sub>3</sub> ) <sub>3</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml

Product No.	Ion	Starting Material	Matrix	Concentration	Pack Size
<b>Lead</b>					
ICCU19	Pb <sup>2+</sup>	Pb(NO <sub>3</sub> ) <sub>2</sub>	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCS19	Pb <sup>2+</sup>	Pb(NO <sub>3</sub> ) <sub>2</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB19	Pb <sup>2+</sup>	Pb(NO <sub>3</sub> ) <sub>2</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml
<b>Lithium</b>					
ICCU02	Li <sup>+</sup>	LiNO <sub>3</sub>	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCT02	Li <sup>+</sup>	LiNO <sub>3</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICCS02	Li <sup>+</sup>	LiNO <sub>3</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB02	Li <sup>+</sup>	LiNO <sub>3</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml
<b>Magnesium</b>					
ICCU07	Mg <sup>2+</sup>	Mg(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	0.1mg/ml (100ppm)	100ml
ICCT07	Mg <sup>2+</sup>	Mg(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICCMG01	Mg <sup>2+</sup>	Mg(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	0.5mg/ml (500ppm)	100ml
ICCMG05	Mg <sup>2+</sup>	Mg(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	0.5mg/ml (500ppm)	500ml
ICCS07	Mg <sup>2+</sup>	Mg(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICCB07	Mg <sup>2+</sup>	Mg(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Manganese</b>					
ICCU11	Mn <sup>2+</sup>	Mn Metal	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCT11	Mn <sup>2+</sup>	Mn Metal	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICCS11	Mn <sup>2+</sup>	Mn Metal	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB11	Mn <sup>2+</sup>	Mn Metal	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml
<b>Nickel</b>					
ICCU14	Ni <sup>2+</sup>	Ni Metal	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCS14	Ni <sup>2+</sup>	Ni Metal	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB14	Ni <sup>2+</sup>	Ni Metal	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml
ICCS96	Ni <sup>2+</sup>	Ni Metal	0.5% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
<b>Potassium</b>					
ICCU03	K <sup>+</sup>	KNO <sub>3</sub>	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCT03	K <sup>+</sup>	KNO <sub>3</sub>	H <sub>2</sub> O	0.2mg/ml (200 ppm)	100ml
ICCK01	K <sup>+</sup>	KNO <sub>3</sub>	0.005% HNO <sub>3</sub>	0.2mg/ml (200 ppm)	100ml
ICCK05	K <sup>+</sup>	KNO <sub>3</sub>	0.005% HNO <sub>3</sub>	0.2mg/ml (200 ppm)	500ml
ICCS03	K <sup>+</sup>	KNO <sub>3</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB03	K <sup>+</sup>	KNO <sub>3</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml
ICCKS03	K <sup>+</sup>	KNO <sub>3</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	100ml
ICCKB03	K <sup>+</sup>	KNO <sub>3</sub>	H <sub>2</sub> O	1mg/ml (1,000ppm)	500ml
<b>Rubidium</b>					
ICCU92	Rb <sup>+</sup>	RbNO <sub>3</sub>	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCS92	Rb <sup>+</sup>	RbNO <sub>3</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB92	Rb <sup>+</sup>	RbNO <sub>3</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml
<b>Sodium</b>					
ICCU04	Na <sup>+</sup>	NaNO <sub>3</sub>	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCT04	Na <sup>+</sup>	NaNO <sub>3</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICCN A01	Na <sup>+</sup>	NaNO <sub>3</sub>	0.005% HNO <sub>3</sub>	0.5mg/ml (500ppm)	100ml
ICCN A05	Na <sup>+</sup>	NaNO <sub>3</sub>	0.005% HNO <sub>3</sub>	0.5mg/ml (500ppm)	500ml
ICCS04	Na <sup>+</sup>	NaNO <sub>3</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB04	Na <sup>+</sup>	NaNO <sub>3</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml



Product No.	Ion	Starting Material	Matrix	Concentration	Pack Size
<b>Strontium</b>					
ICCU43	Sr <sup>2+</sup>	Sr(NO <sub>3</sub> ) <sub>2</sub>	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCT43	Sr <sup>2+</sup>	Sr(NO <sub>3</sub> ) <sub>2</sub>	H <sub>2</sub> O	0.2mg/ml (200ppm)	100ml
ICCS43	Sr <sup>2+</sup>	Sr(NO <sub>3</sub> ) <sub>2</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB43	Sr <sup>2+</sup>	Sr(NO <sub>3</sub> ) <sub>2</sub>	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml
<b>Zinc</b>					
ICCU33	Zn <sup>2+</sup>	Zn Metal	0.005% HNO <sub>3</sub>	0.1mg/ml (100ppm)	100ml
ICCS33	Zn <sup>2+</sup>	Zn Metal	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	100ml
ICCB33	Zn <sup>2+</sup>	Zn Metal	0.005% HNO <sub>3</sub>	1mg/ml (1,000ppm)	500ml

## IC Multi-Element Standards

IC Multi-Element Standard, 9 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC9-100-100	NH <sub>4</sub> <sup>+</sup>	100	H <sub>2</sub> O, tr. HNO <sub>3</sub>	100ml
	Ba <sup>2+</sup>	100		
	Ca <sup>2+</sup>	100		
	K <sup>+</sup>	100		
	Li <sup>+</sup>	100		
	Na <sup>+</sup>	100		
	Mg <sup>2+</sup>	100		
	Mn <sup>2+</sup>	100		
	Sr <sup>2+</sup>	100		
IC Multi-Element Standard, 8 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC7MIX5B	F <sup>-</sup>	0.08	H <sub>2</sub> O	250ml
	NO <sub>2</sub> <sup>-</sup>	0.08		
	Br <sup>-</sup>	0.08		
	NO <sub>3</sub> <sup>-</sup>	0.15		
	PO <sub>4</sub> <sup>3-</sup>	0.15		
	CrO <sub>4</sub>	0.15		
	Cl <sup>-</sup>	3		
	SO <sub>4</sub> <sup>2-</sup>	3		
IC Multi-Element Standard, 8 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-LGC-8-100	Li <sup>+</sup>	100	0.005% HNO <sub>3</sub>	100ml
	Na <sup>+</sup>	100		
	NH <sub>4</sub> <sup>+</sup>	100		
	K <sup>+</sup>	100		
	Ca <sup>2+</sup>	100		
	Mg <sup>2+</sup>	100		
	Sr <sup>2+</sup>	100		
	Ba <sup>2+</sup>	100		

IC Multi-Element Standard, 8 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7MIX10B	F <sup>-</sup>	1.5	H <sub>2</sub> O	250ml
	NO <sub>2</sub> <sup>-</sup>	1.5		
	Br <sup>-</sup>	1.5		
	NO <sub>3</sub> <sup>-</sup>	3.5		
	PO <sub>4</sub> <sup>3-</sup>	3.5		
	CrO <sub>4</sub>	3.5		
	Cl <sup>-</sup>	70		
	SO <sub>4</sub> <sup>2-</sup>	35		
IC Multi-Element Standard, 8 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7MIX1B	F <sup>-</sup>	0.08	H <sub>2</sub> O	250ml
	NO <sub>2</sub> <sup>-</sup>	0.08		
	Br <sup>-</sup>	0.08		
	NO <sub>3</sub> <sup>-</sup>	0.015		
	PO <sub>4</sub> <sup>3-</sup>	0.015		
	CrO <sub>4</sub>	0.015		
	Cl <sup>-</sup>	0.3		
	SO <sub>4</sub> <sup>2-</sup>	0.15		
IC Multi-Element Standard, 8 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7MIX2B	F <sup>-</sup>	0.02	H <sub>2</sub> O	250ml
	NO <sub>2</sub> <sup>-</sup>	0.02		
	Br <sup>-</sup>	0.02		
	NO <sub>3</sub> <sup>-</sup>	0.03		
	PO <sub>4</sub> <sup>3-</sup>	0.03		
	CrO <sub>4</sub>	0.03		
	Cl <sup>-</sup>	0.6		
	SO <sub>4</sub> <sup>2-</sup>	0.3		
IC Multi-Element Standard, 8 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7MIX3B	F <sup>-</sup>	0.04	H <sub>2</sub> O	250ml
	NO <sub>2</sub> <sup>-</sup>	0.04		
	Br <sup>-</sup>	0.04		
	NO <sub>3</sub> <sup>-</sup>	0.04		
	PO <sub>4</sub> <sup>3-</sup>	0.04		
	CrO <sub>4</sub>	0.04		
	Cl <sup>-</sup>	0.8		
	SO <sub>4</sub> <sup>2-</sup>	0.4		
IC Multi-Element Standard, 8 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7MIX4B	F <sup>-</sup>	0.06	H <sub>2</sub> O	250ml
	NO <sub>2</sub> <sup>-</sup>	0.06		
	Br <sup>-</sup>	0.06		
	NO <sub>3</sub> <sup>-</sup>	0.07		
	PO <sub>4</sub> <sup>3-</sup>	0.07		
	CrO <sub>4</sub>	0.07		
	Cl <sup>-</sup>	1.5		
	SO <sub>4</sub> <sup>2-</sup>	1.5		

IC Multi-Element Standard, 8 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7MIX5B	F <sup>-</sup>	0.08	H <sub>2</sub> O	250ml
	NO <sub>2</sub> <sup>-</sup>	0.08		
	Br <sup>-</sup>	0.08		
	NO <sub>3</sub> <sup>-</sup>	0.15		
	PO <sub>4</sub> <sup>3-</sup>	0.15		
	CrO <sub>4</sub>	0.15		
	Cl <sup>-</sup>	3		
	SO <sub>4</sub> <sup>2-</sup>	3		
IC Multi-Element Standard, 8 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7MIX6B	F <sup>-</sup>	0.15	H <sub>2</sub> O	250ml
	NO <sub>2</sub> <sup>-</sup>	0.15		
	Br <sup>-</sup>	0.15		
	NO <sub>3</sub> <sup>-</sup>	0.3		
	PO <sub>4</sub> <sup>3-</sup>	0.3		
	CrO <sub>4</sub>	0.3		
	Cl <sup>-</sup>	6		
	SO <sub>4</sub> <sup>2-</sup>	6		
IC Multi-Element Standard, 8 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7MIX7B	F <sup>-</sup>	0.3	H <sub>2</sub> O	250ml
	NO <sub>2</sub> <sup>-</sup>	0.3		
	Br <sup>-</sup>	0.3		
	NO <sub>3</sub> <sup>-</sup>	0.5		
	PO <sub>4</sub> <sup>3-</sup>	0.5		
	CrO <sub>4</sub>	0.5		
	Cl <sup>-</sup>	10		
	SO <sub>4</sub> <sup>2-</sup>	8		
IC Multi-Element Standard, 8 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7MIX8B	F <sup>-</sup>	0.4	H <sub>2</sub> O	250ml
	NO <sub>2</sub> <sup>-</sup>	0.4		
	Br <sup>-</sup>	0.4		
	NO <sub>3</sub> <sup>-</sup>	0.8		
	PO <sub>4</sub> <sup>3-</sup>	0.8		
	CrO <sub>4</sub>	0.8		
	Cl <sup>-</sup>	30		
	SO <sub>4</sub> <sup>2-</sup>	15		
IC Multi-Element Standard, 8 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7MIX9B	F <sup>-</sup>	0.75	H <sub>2</sub> O	250ml
	NO <sub>2</sub> <sup>-</sup>	0.75		
	Br <sup>-</sup>	0.75		
	NO <sub>3</sub> <sup>-</sup>	1.5		
	PO <sub>4</sub> <sup>3-</sup>	1.5		
	CrO <sub>4</sub>	1.5		
	Cl <sup>-</sup>	55		
	SO <sub>4</sub> <sup>2-</sup>	25		

IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7-MIX1-500	F <sup>-</sup>	1000	H <sub>2</sub> O	1L
	Cl <sup>-</sup>	1000		
	Br <sup>-</sup>	1000		
	NO <sub>2</sub> <sup>-</sup>	1000		
	NO <sub>3</sub> <sup>-</sup>	1000		
	PO <sub>4</sub> <sup>3-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-MIX1	F <sup>-</sup>	25	H <sub>2</sub> O	250ml
	Cl <sup>-</sup>	25		
	NO <sub>2</sub> <sup>-</sup>	25		
	Br <sup>-</sup>	25		
	NO <sub>3</sub> <sup>-</sup>	25		
	PO <sub>4</sub> <sup>3-</sup>	25		
	SO <sub>4</sub> <sup>2-</sup>	25		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-DX-711	F <sup>-</sup>	20	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	30		
	Br <sup>-</sup>	100		
	NO <sub>2</sub> <sup>-</sup>	100		
	NO <sub>3</sub> <sup>-</sup>	100		
	PO <sub>4</sub> <sup>3-</sup>	150		
	SO <sub>4</sub> <sup>2-</sup>	150		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICMIX-7-100	Br <sup>-</sup>	1000	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	1000		
	F <sup>-</sup>	1000		
	NO <sub>2</sub> <sup>-</sup>	1000		
	NO <sub>3</sub> <sup>-</sup>	1000		
	PO <sub>4</sub> <sup>3-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-NHS-7	Na <sup>+</sup>	2500	5% HNO <sub>3</sub>	250ml
	Ca <sup>2+</sup>	100		
	K <sup>+</sup>	100		
	Mg <sup>2+</sup>	100		
	Zn <sup>2+</sup>	5		
	Al <sup>3+</sup>	0.5		
	Hg <sup>2+</sup>	0.05		

IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7-MIX-CYM-1000ml	F <sup>-</sup>	2	H <sub>2</sub> O	1L
	Cl <sup>-</sup>	300		
	NO <sub>2</sub> <sup>-</sup>	10		
	Br <sup>-</sup>	5		
	NO <sub>3</sub> <sup>-</sup>	100		
	PO <sub>4</sub> <sup>3-</sup>	100		
	SO <sub>4</sub> <sup>2-</sup>	400		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7-MIX-CYM-500ml	F <sup>-</sup>	2	H <sub>2</sub> O	500ml
	Cl <sup>-</sup>	300		
	NO <sub>2</sub> <sup>-</sup>	10		
	Br <sup>-</sup>	5		
	NO <sub>3</sub> <sup>-</sup>	100		
	PO <sub>4</sub> <sup>3-</sup>	100		
	SO <sub>4</sub> <sup>2-</sup>	400		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-DX-721	PO <sub>4</sub> <sup>3-</sup>	200	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	100		
	Br <sup>-</sup>	100		
	NO <sub>2</sub> <sup>-</sup>	100		
	NO <sub>3</sub> <sup>-</sup>	100		
	SO <sub>4</sub> <sup>2-</sup>	100		
	F <sup>-</sup>	20		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7-100-75	Cl <sup>-</sup>	100	H <sub>2</sub> O	75ml
	F <sup>-</sup>	100		
	Br <sup>-</sup>	100		
	NO <sub>2</sub> <sup>-</sup>	100		
	NO <sub>3</sub> <sup>-</sup>	100		
	SO <sub>4</sub> <sup>2-</sup>	100		
	PO <sub>4</sub> <sup>3-</sup>	100		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7-50-100	F <sup>-</sup>	50	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	50		
	Br <sup>-</sup>	50		
	NO <sub>2</sub> <sup>-</sup>	50		
	NO <sub>3</sub> <sup>-</sup>	50		
	PO <sub>4</sub> <sup>3-</sup>	50		
	SO <sub>4</sub> <sup>2-</sup>	50		

IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7-50-500	F <sup>-</sup>	50	H <sub>2</sub> O	500ml
	Cl <sup>-</sup>	50		
	Br <sup>-</sup>	50		
	NO <sub>2</sub> <sup>-</sup>	50		
	NO <sub>3</sub> <sup>-</sup>	50		
	PO <sub>4</sub> <sup>3-</sup>	50		
	SO <sub>4</sub> <sup>2-</sup>	50		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7-CYM-100	Cl <sup>-</sup>	1000	H <sub>2</sub> O	100ml
	NO <sub>3</sub> <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
	PO <sub>4</sub> <sup>3-</sup>	1000		
	F <sup>-</sup>	100		
	Br <sup>-</sup>	100		
	NO <sub>2</sub> <sup>-</sup>	100		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA7-CYM-250	Cl <sup>-</sup>	1000	H <sub>2</sub> O	250ml
	NO <sub>3</sub> <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
	PO <sub>4</sub> <sup>3-</sup>	1000		
	F <sup>-</sup>	100		
	Br <sup>-</sup>	100		
	NO <sub>2</sub> <sup>-</sup>	100		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-ENV-6-5	F <sup>-</sup>	100	H <sub>2</sub> O	500ml
	NO <sub>2</sub> <sup>-</sup>	1000		
	NO <sub>3</sub> <sup>-</sup>	1000		
	PO <sub>4</sub> <sup>3-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
	Br <sup>-</sup>	1000		
	Cl <sup>-</sup>	1000		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICASP725	F <sup>-</sup>	10	H <sub>2</sub> O	250ml
	Cl <sup>-</sup>	10		
	Br <sup>-</sup>	10		
	NO <sub>2</sub> <sup>-</sup>	10		
	NO <sub>3</sub> <sup>-</sup>	10		
	PO <sub>4</sub> <sup>3-</sup>	10		
	SO <sub>4</sub> <sup>2-</sup>	10		

IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICASS07	Br <sup>-</sup>	10	H <sub>2</sub> O	250ml
	Cl <sup>-</sup>	10		
	F <sup>-</sup>	10		
	NO <sub>3</sub> <sup>-</sup>	10		
	NO <sub>2</sub> <sup>-</sup>	10		
	PO <sub>4</sub> <sup>3-</sup>	10		
	SO <sub>4</sub> <sup>2-</sup>	10		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-GLO-7-100	Cl <sup>-</sup>	1000	H <sub>2</sub> O	100ml
	SO <sub>4</sub> <sup>2-</sup>	1000		
	NO <sub>3</sub> <sup>-</sup>	1000		
	Br <sup>-</sup>	100		
	NO <sub>2</sub> <sup>-</sup>	100		
	PO <sub>4</sub> <sup>3-</sup>	100		
	F <sup>-</sup>	100		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-SYN-7	Cl <sup>-</sup>	100	H <sub>2</sub> O	100ml
	Br <sup>-</sup>	100		
	NO <sub>2</sub> <sup>-</sup>	100		
	NO <sub>3</sub> <sup>-</sup>	100		
	SO <sub>4</sub> <sup>2-</sup>	100		
	F <sup>-</sup>	20		
	PO <sub>4</sub> <sup>3-</sup>	200		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-LIS-601	F <sup>-</sup>	50	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	1000		
	Br <sup>-</sup>	100		
	NO <sub>2</sub> <sup>-</sup>	20		
	NO <sub>3</sub> <sup>-</sup>	200		
	PO <sub>4</sub> <sup>3-</sup>	15		
	SO <sub>4</sub> <sup>2-</sup>	5000		
IC Multi-Element Standard, 7 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-MIX3	F <sup>-</sup>	100	H <sub>2</sub> O	500ml
	PO <sub>4</sub> <sup>3-</sup>	100		
	Cl <sup>-</sup>	200		
	NO <sub>2</sub> <sup>-</sup>	20		
	Br <sup>-</sup>	40		
	NO <sub>3</sub> <sup>-</sup>	20		
	SO <sub>4</sub> <sup>2-</sup>	5000		

IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-GLO-6-500	Br <sup>-</sup>	1000	H <sub>2</sub> O	500ml
	NO <sub>3</sub> <sup>-</sup>	1000		
	Cl <sup>-</sup>	1000		
	PO <sub>4</sub> <sup>3-</sup>	1000		
	F <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-MIX4	Li <sup>+</sup>	20	H <sub>2</sub> O	250ml
	Na <sup>+</sup>	20		
	NH <sub>4</sub> <sup>+</sup>	20		
	K <sup>+</sup>	20		
	Mg <sup>2+</sup>	40		
	Ca <sup>2+</sup>	40		
IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-LGC-6-100	F <sup>-</sup>	100	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	100		
	SO <sub>4</sub> <sup>2-</sup>	100		
	NO <sub>3</sub> <sup>-</sup>	100		
	NO <sub>2</sub> <sup>-</sup>	100		
	PO <sub>4</sub> <sup>3-</sup>	100		
IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-10PPM-6	F <sup>-</sup>	10	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	10		
	Br <sup>-</sup>	10		
	NO <sub>3</sub> <sup>-</sup>	10		
	PO <sub>4</sub> <sup>3-</sup>	10		
	SO <sub>4</sub> <sup>2-</sup>	10		
IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC-DX-611	Ca <sup>2+</sup>	1000	H <sub>2</sub> O	100ml
	NH <sub>4</sub> <sup>+</sup>	400		
	Na <sup>+</sup>	200		
	K <sup>+</sup>	200		
	Mg <sup>2+</sup>	200		
	Li <sup>+</sup>	50		
IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-BMS-65	NO <sub>3</sub> <sup>-</sup>	200	H <sub>2</sub> O	500ml
	SO <sub>4</sub> <sup>2-</sup>	200		
	PO <sub>4</sub> <sup>3-</sup>	200		
	Br <sup>-</sup>	100		
	F <sup>-</sup>	100		



IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC6-100-100	NO <sub>2</sub> <sup>-</sup>	100	H <sub>2</sub> O	100ml
	NO <sub>3</sub> <sup>-</sup>	100		
	Cl <sup>-</sup>	100		
	SO <sub>4</sub> <sup>2-</sup>	100		
	F <sup>-</sup>	100		
	PO <sub>4</sub> <sup>3-</sup>	100		
IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA6-10-100	F <sup>-</sup>	10	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	10		
	Br <sup>-</sup>	10		
	NO <sub>3</sub> <sup>-</sup>	10		
	PO <sub>4</sub> <sup>3-</sup>	10		
	SO <sub>4</sub> <sup>2-</sup>	10		
IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA6-CYM	Cl <sup>-</sup>	1000	H <sub>2</sub> O	250ml
	PO <sub>4</sub> <sup>3-</sup>	1000		
	NO <sub>3</sub> <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
	F <sup>-</sup>	100		
	Br <sup>-</sup>	100		
IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA6-MIX1-500	F <sup>-</sup>	100	H <sub>2</sub> O	500ml
	Br <sup>-</sup>	100		
	Cl <sup>-</sup>	1000		
	NO <sub>3</sub> <sup>-</sup>	1000		
	PO <sub>4</sub> <sup>3-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA6-MIX2-100	F <sup>-</sup>	1000	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
	NO <sub>2</sub> <sup>-</sup>	1000		
	NO <sub>3</sub> <sup>-</sup>	1000		
	PO <sub>4</sub> <sup>3-</sup>	1000		
IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA6-MIX-THG	NO <sub>3</sub> <sup>-</sup>	100	H <sub>2</sub> O	100ml
	PO <sub>4</sub> <sup>3-</sup>	100		
	Cl <sup>-</sup>	250		
	SO <sub>4</sub> <sup>2-</sup>	250		
	NO <sub>2</sub> <sup>-</sup>	10		
	F <sup>-</sup>	30		

IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC-DX-621	Li <sup>+</sup>	50	H <sub>2</sub> O	100ml
	Na <sup>+</sup>	200		
	NH <sub>4</sub> <sup>+</sup>	250		
	Mg <sup>2+</sup>	250		
	Ca <sup>2+</sup>	500		
	K <sup>+</sup>	500		
IC Multi-Element Standard, 6 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-CL-7E6	Cl <sup>-</sup>	2500	H <sub>2</sub> O	500ml
	SO <sub>4</sub> <sup>2-</sup>	2500		
	NO <sub>3</sub> <sup>-</sup>	300		
	F <sup>-</sup>	50		
	NO <sub>2</sub> <sup>-</sup>	75		
	Br <sup>-</sup>	75		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC-MX-WRC5	Na <sup>+</sup>	100	H <sub>2</sub> O	500ml
	K <sup>+</sup>	100		
	Ca <sup>2+</sup>	400		
	Mg <sup>2+</sup>	200		
	NH <sub>4</sub> <sup>+</sup>	100		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-DX-51	F <sup>-</sup>	20	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	30		
	NO <sub>3</sub> <sup>-</sup>	100		
	PO <sub>4</sub> <sup>3-</sup>	150		
	SO <sub>4</sub> <sup>2-</sup>	150		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA5-MIX1-500	F <sup>-</sup>	100	H <sub>2</sub> O	500ml
	Cl <sup>-</sup>	1000		
	NO <sub>3</sub> <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
	PO <sub>4</sub> <sup>3-</sup>	1000		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA5-MIX2-100	F <sup>-</sup>	10	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	10		
	SO <sub>4</sub> <sup>2-</sup>	10		
	NO <sub>2</sub> <sup>-</sup>	10		
	NO <sub>3</sub> <sup>-</sup>	10		

IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5-1000-75	Li <sup>+</sup>	1000	2-5% HNO <sub>3</sub>	75ml
	Na <sup>+</sup>	1000		
	K <sup>+</sup>	1000		
	Mg <sup>2+</sup>	1000		
	Ca <sup>2+</sup>	1000		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX10B	Ca <sup>2+</sup>	15	H <sub>2</sub> O	250ml
	K <sup>+</sup>	15		
	Mg <sup>2+</sup>	15		
	Na <sup>+</sup>	15		
	NH <sub>4</sub> <sup>+</sup>	15		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5-MIX1-100	Na <sup>+</sup>	40	H <sub>2</sub> O	100ml
	NH <sub>4</sub> <sup>+</sup>	40		
	K <sup>+</sup>	40		
	Mg <sup>2+</sup>	40		
	Ca <sup>2+</sup>	200		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX11B	Ca <sup>2+</sup>	20	H <sub>2</sub> O	250ml
	K <sup>+</sup>	20		
	Mg <sup>2+</sup>	20		
	Na <sup>+</sup>	20		
	NH <sub>4</sub> <sup>+</sup>	20		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX12B	Ca <sup>2+</sup>	5000	H <sub>2</sub> O	250ml
	K <sup>+</sup>	5000		
	Mg <sup>2+</sup>	5000		
	Na <sup>+</sup>	5000		
	NH <sub>4</sub> <sup>+</sup>	5000		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX13B	Ca <sup>2+</sup>	10000	H <sub>2</sub> O	250ml
	K <sup>+</sup>	10000		
	Mg <sup>2+</sup>	10000		
	Na <sup>+</sup>	10000		
	NH <sub>4</sub> <sup>+</sup>	10000		

IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX14A	Ca <sup>2+</sup>	20	H <sub>2</sub> O	100ml
	K <sup>+</sup>	2		
	Mg <sup>2+</sup>	20		
	Na <sup>+</sup>	10		
	NH <sub>4</sub> <sup>+</sup>	2		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX1B	Ca <sup>2+</sup>	0.1	H <sub>2</sub> O	250ml
	K <sup>+</sup>	0.1		
	Mg <sup>2+</sup>	0.1		
	Na <sup>+</sup>	0.1		
	NH <sub>4</sub> <sup>+</sup>	0.1		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX2B	Ca <sup>2+</sup>	0.25	H <sub>2</sub> O	250ml
	K <sup>+</sup>	0.25		
	Mg <sup>2+</sup>	0.25		
	Na <sup>+</sup>	0.25		
	NH <sub>4</sub> <sup>+</sup>	0.25		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX3B	Ca <sup>2+</sup>	0.5	H <sub>2</sub> O	250ml
	K <sup>+</sup>	0.5		
	Mg <sup>2+</sup>	0.5		
	Na <sup>+</sup>	0.5		
	NH <sub>4</sub> <sup>+</sup>	0.5		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX4B	Ca <sup>2+</sup>	0.75	H <sub>2</sub> O	250ml
	K <sup>+</sup>	0.75		
	Mg <sup>2+</sup>	0.75		
	Na <sup>+</sup>	0.75		
	NH <sub>4</sub> <sup>+</sup>	0.75		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX5B	Ca <sup>2+</sup>	1	H <sub>2</sub> O	250ml
	K <sup>+</sup>	1		
	Mg <sup>2+</sup>	1		
	Na <sup>+</sup>	1		
	NH <sub>4</sub> <sup>+</sup>	1		

IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX6B	Ca <sup>2+</sup>	2.5	H <sub>2</sub> O	250ml
	K <sup>+</sup>	2.5		
	Mg <sup>2+</sup>	2.5		
	Na <sup>+</sup>	2.5		
	NH <sub>4</sub> <sup>+</sup>	2.5		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX7B	Ca <sup>2+</sup>	5	H <sub>2</sub> O	250ml
	K <sup>+</sup>	5		
	Mg <sup>2+</sup>	5		
	Na <sup>+</sup>	5		
	NH <sub>4</sub> <sup>+</sup>	5		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX8B	Ca <sup>2+</sup>	7.5	H <sub>2</sub> O	250ml
	K <sup>+</sup>	7.5		
	Mg <sup>2+</sup>	7.5		
	Na <sup>+</sup>	7.5		
	NH <sub>4</sub> <sup>+</sup>	7.5		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5MIX9B	Ca <sup>2+</sup>	10	H <sub>2</sub> O	250ml
	K <sup>+</sup>	10		
	Mg <sup>2+</sup>	10		
	Na <sup>+</sup>	10		
	NH <sub>4</sub> <sup>+</sup>	10		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC5-MIX-THG	NH <sub>4</sub> <sup>+</sup>	10	H <sub>2</sub> O	100ml
	Na <sup>+</sup>	100		
	K <sup>+</sup>	30		
	Mg <sup>2+</sup>	50		
	Ca <sup>2+</sup>	50		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICCS06	Ca <sup>2+</sup>	10	2% HNO <sub>3</sub>	250ml
	Li <sup>+</sup>	10		
	Mg <sup>2+</sup>	10		
	K <sup>+</sup>	10		
	Na <sup>+</sup>	10		

IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA5MIX2A	F <sup>-</sup>	8	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	24		
	NO <sub>3</sub> <sup>-</sup>	16		
	PO <sub>4</sub> <sup>3-</sup>	16		
	SO <sub>4</sub> <sup>2-</sup>	16		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA5-TYD-500	F <sup>-</sup>	100	H <sub>2</sub> O	500ml
	Cl <sup>-</sup>	250		
	NO <sub>3</sub> <sup>-</sup>	500		
	SO <sub>4</sub> <sup>2-</sup>	500		
	PO <sub>4</sub> <sup>3-</sup>	1000		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-AIT-5-100	Cl <sup>-</sup>	1000	H <sub>2</sub> O	100ml
	PO <sub>4</sub> <sup>3-</sup>	1000		
	NO <sub>2</sub> <sup>-</sup>	1000		
	NO <sub>3</sub> <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA5-TYD-ST-I	F <sup>-</sup>	100	H <sub>2</sub> O	500ml
	Cl <sup>-</sup>	250		
	NO <sub>3</sub> <sup>-</sup>	500		
	SO <sub>4</sub> <sup>2-</sup>	500		
	PO <sub>4</sub> <sup>3-</sup>	1000		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICAS501	F <sup>-</sup>	100	H <sub>2</sub> O	100ml
	Cl <sup>-</sup>	100		
	NO <sub>2</sub> <sup>-</sup>	200		
	PO <sub>4</sub> <sup>3-</sup>	200		
	SO <sub>4</sub> <sup>2-</sup>	200		
IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC-10PPM-5	Li <sup>+</sup>	10	H <sub>2</sub> O	100ml
	Na <sup>+</sup>	10		
	K <sup>+</sup>	10		
	Mg <sup>2+</sup>	10		
	Ca <sup>2+</sup>	10		

IC Multi-Element Standard, 5 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICMIX-5-100	NH <sub>4</sub> <sup>+</sup>	1000	H <sub>2</sub> O	100ml
	Ca <sup>2+</sup>	1000		
	Mg <sup>2+</sup>	1000		
	K <sup>+</sup>	1000		
	Na <sup>+</sup>	1000		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-NHS-4-500	Na <sup>+</sup>	100	H <sub>2</sub> O	500ml
	K <sup>+</sup>	10		
	Mg <sup>2+</sup>	1		
	Ca <sup>2+</sup>	5		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-SDN5-100	Na <sup>+</sup>	25	H <sub>2</sub> O	100ml
	K <sup>+</sup>	100		
	Mg <sup>2+</sup>	5		
	Ca <sup>2+</sup>	50		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-SDN5-500	Na <sup>+</sup>	25	H <sub>2</sub> O	500ml
	K <sup>+</sup>	100		
	Mg <sup>2+</sup>	5		
	Ca <sup>2+</sup>	50		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC4-MIX1-100	Na <sup>+</sup>	1000	H <sub>2</sub> O	100ml
	Mg <sup>2+</sup>	1000		
	Ca <sup>2+</sup>	1000		
	K <sup>+</sup>	1000		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC4-MIX1-250	Na <sup>+</sup>	1000	H <sub>2</sub> O	250ml
	Mg <sup>2+</sup>	1000		
	Ca <sup>2+</sup>	1000		
	K <sup>+</sup>	1000		

IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC4MIX2A	Na <sup>+</sup>	10	H <sub>2</sub> O	100ml
	Mg <sup>2+</sup>	10		
	Ca <sup>2+</sup>	10		
	K <sup>+</sup>	10		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-NHS-4	Na <sup>+</sup>	100	H <sub>2</sub> O	100ml
	K <sup>+</sup>	10		
	Mg <sup>2+</sup>	1		
	Ca <sup>2+</sup>	5		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC4-1000-500	Cl <sup>-</sup>	1000	H <sub>2</sub> O	500ml
	NO <sub>3</sub> <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
	NO <sub>2</sub> <sup>-</sup>	1000		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC4-100-100	Cl <sup>-</sup>	100	H <sub>2</sub> O	100ml
	NO <sub>3</sub> <sup>-</sup>	100		
	SO <sub>4</sub> <sup>2-</sup>	100		
	NO <sub>2</sub> <sup>-</sup>	100		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA4MIX2A	Cl <sup>-</sup>	10	H <sub>2</sub> O	100ml
	NO <sub>2</sub> <sup>-</sup>	2		
	NO <sub>3</sub> <sup>-</sup>	2		
	SO <sub>4</sub> <sup>2-</sup>	20		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA4-SER	Cl <sup>-</sup>	100	H <sub>2</sub> O	100ml
	NO <sub>3</sub> <sup>-</sup>	100		
	SO <sub>4</sub> <sup>2-</sup>	100		
	NO <sub>2</sub> <sup>-</sup>	100		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC4-1002-100	Ca <sup>2+</sup>	100	H <sub>2</sub> O	100ml
	Mg <sup>2+</sup>	100		
	Na <sup>+</sup>	100		
	K <sup>+</sup>	100		



IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-TG-45	PO <sub>4</sub> <sup>3-</sup>	10	H <sub>2</sub> O	500ml
	NO <sub>3</sub> <sup>-</sup>	300		
	NH <sub>4</sub> <sup>+</sup>	150		
	Cl <sup>-</sup>	3000		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-MX-WRC4	Cl <sup>-</sup>	1000	H <sub>2</sub> O	500ml
	NO <sub>3</sub> <sup>-</sup>	200		
	PO <sub>4</sub> <sup>3-</sup>	100		
	SO <sub>4</sub> <sup>2-</sup>	1200		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-CL-6E4	Cl <sup>-</sup>	2500	H <sub>2</sub> O	500ml
	SO <sub>4</sub> <sup>2-</sup>	2500		
	NO <sub>3</sub> <sup>-</sup>	300		
	F <sup>-</sup>	50		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-CL-8E4	Cl <sup>-</sup>	75	H <sub>2</sub> O	500ml
	SO <sub>4</sub> <sup>2-</sup>	75		
	NO <sub>3</sub> <sup>-</sup>	3		
	F <sup>-</sup>	1		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICCMX01	Ca <sup>2+</sup>	1500	H <sub>2</sub> O	100ml
	Mg <sup>2+</sup>	500		
	Na <sup>+</sup>	500		
	K <sup>+</sup>	250		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICCMX05	Ca <sup>2+</sup>	1500	H <sub>2</sub> O	500ml
	Mg <sup>2+</sup>	500		
	Na <sup>+</sup>	500		
	K <sup>+</sup>	250		
IC Multi-Element Standard, 4 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-MIX2	F <sup>-</sup>	1	H <sub>2</sub> O	250ml
	Cl <sup>-</sup>	250		
	SO <sub>4</sub> <sup>2-</sup>	250		
	NO <sub>3</sub> <sup>-</sup>	50		

IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-TG-35	PO <sub>4</sub> <sup>3-</sup>	100	H <sub>2</sub> O	500ml
	NH <sub>4</sub> <sup>+</sup>	1000		
	NO <sub>3</sub> <sup>-</sup>	1000		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-NHS-3	Na <sup>+</sup>	200	H <sub>2</sub> O, tr. HNO <sub>3</sub>	100ml
	K <sup>+</sup>	10		
	Mg <sup>2+</sup>	2		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC3-1000-500	F <sup>-</sup>	1000	H <sub>2</sub> O	500ml
	PO <sub>4</sub> <sup>3-</sup>	1000		
	Br <sup>-</sup>	1000		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC3-2-1000-100	F <sup>-</sup>	1000	H <sub>2</sub> O	100ml
	PO <sub>4</sub> <sup>3-</sup>	1000		
	Br <sup>-</sup>	1000		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC3-2-1000-500	Cl <sup>-</sup>	1000	H <sub>2</sub> O	500ml
	NO <sub>3</sub> <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA3-MIX1-100	SO <sub>4</sub> <sup>2-</sup>	1000	H <sub>2</sub> O	100ml
	F <sup>-</sup>	1000		
	Cl <sup>-</sup>	1000		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA3-MIX1-250	SO <sub>4</sub> <sup>2-</sup>	1000	H <sub>2</sub> O	250ml
	F <sup>-</sup>	1000		
	Cl <sup>-</sup>	1000		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA3-MIX1-500	SO <sub>4</sub> <sup>2-</sup>	1000	H <sub>2</sub> O	500ml
	F <sup>-</sup>	1000		
	Cl <sup>-</sup>	1000		

IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA3-MIX2-500	Cl <sup>-</sup>	150	H <sub>2</sub> O	500ml
	NO <sub>3</sub> <sup>-</sup>	100		
	SO <sub>4</sub> <sup>2-</sup>	500		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA3-MIX3-100	F <sup>-</sup>	10	H <sub>2</sub> O	100ml
	SO <sub>4</sub> <sup>2-</sup>	10		
	Cl <sup>-</sup>	10		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA3-MIX3-A	F <sup>-</sup>	10	H <sub>2</sub> O	100ml
	SO <sub>4</sub> <sup>2-</sup>	10		
	Cl <sup>-</sup>	10		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA3-SER	F <sup>-</sup>	1000	H <sub>2</sub> O	100ml
	PO <sub>4</sub> <sup>3-</sup>	1000		
	Br <sup>-</sup>	1000		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA3-TYD-ST-II	Cl <sup>-</sup>	1000	H <sub>2</sub> O	500ml
	NO <sub>3</sub> <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA3-TYD-ST-II	Cl <sup>-</sup>	1000	H <sub>2</sub> O	500ml
	NO <sub>3</sub> <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-AIT-35	Cl <sup>-</sup>	1000	H <sub>2</sub> O	500ml
	NO <sub>3</sub> <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-MIX-301	Br <sup>-</sup>	1000	H <sub>2</sub> O	100ml
	NO <sub>3</sub> <sup>-</sup>	1000		
	SO <sub>4</sub> <sup>2-</sup>	1000		

IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-MIX-TYD	F <sup>-</sup>	1000	H <sub>2</sub> O	500ml
	Br <sup>-</sup>	1000		
	PO <sub>4</sub> <sup>3-</sup>	1000		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICA-MX3-250	F <sup>-</sup>	100	H <sub>2</sub> O	250ml
	NO <sub>2</sub> <sup>-</sup>	100		
	PO <sub>4</sub> <sup>3-</sup>	100		
IC Multi-Element Standard, 3 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
IC-FBA-CUSTOM-100ML	K <sup>+</sup>	5000	1% HNO <sub>3</sub>	100ml
	Mg <sup>2+</sup>	5000		
	P	300		
IC Multi-Element Standard, 2 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
ICC-AIT-2-100	K <sup>+</sup>	1000	H <sub>2</sub> O	100ml
	Na <sup>+</sup>	1000		
IC Multi-Element Standard, 2 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
REICA2MIX1D	CH <sub>3</sub> COO <sup>-</sup>	100	H <sub>2</sub> O	50ml
	SO <sub>3</sub> <sup>2-</sup>	100		
IC Multi-Element Standard, 2 Elements				
Product No.	Elements	Conc. µg/ml	Matrix	Pack Size
REICA2MIX1A	CH <sub>3</sub> COO <sup>-</sup>	100	H <sub>2</sub> O	100ml
	SO <sub>3</sub> <sup>2-</sup>	100		

# Atomic Absorption Standards



Reagecon manufacture an extensive range of aqueous AA Standards. These include standards for the measurement of the most common alkali and transition metals.

There are two types of Atomic Absorption Spectrometry, (AAS). Flame Atomic Absorption Spectrometry, (FAAS) and Graphite Furnace Atomic Absorption Spectrometry (GFAAS).

Flame Atomic Absorption Spectrometry, (FAAS) either an air/acetylene or a nitrous oxide/acetylene flame can be used to evaporate the solvent and dissociate the sample into its component atoms. When light from a hollow cathode lamp (selected based on the element to be determined) passes through the cloud of atoms, the atoms of interest absorb the light from the lamp. This is measured by a detector, and used to calculate the concentration of that element in the original sample. The use of a flame limits the excitation temperature reached by a sample to a maximum of approximately 2600°C (with the Nitrous Oxide / acetylene flame). For many elements this is not a problem. However, there are a number of refractory elements like V, Zr, Mo and B which do not perform well with a flame source. This is because the maximum temperature reached, even with the N<sub>2</sub>O/acetylene flame, is insufficient to break down compounds of these elements. As a result, flame AAS sensitivity for these elements is not as good as other elemental analysis techniques.

FAAS is an inexpensive technique that is rapid for a few selected elements however it has poor sensitivity (high detection limits), is limited to single element determination each time and requires a large amount of sample. It has a narrow linear range.

Graphite Furnace Atomic Absorption Spectrometry (GFAAS) - This technique is essentially the same as FAAS, except the flame is replaced by a small, electrically heated graphite tube, or cuvette, which is heated to a temperature up to 3000°C to generate the cloud of atoms. The higher atom density and longer residence time in the tube improve furnace AAS detection limits by a factor of up to 1000x compared to flame AAS, down to the sub-ppb range. However, because of the temperature limitation and the use of graphite cuvettes, refractory element performance is still somewhat limited.

GFAAS is relatively inexpensive and requires small sample volume, it has excellent sensitivity (low detection limits) however it is also limited to single element determination and has a narrow linear range.

## Single Element Atomic Absorption Standards

Product No.	Description	Pack Size
AAALH	Aluminium Standard 1000ppm in 0.5M Nitric Acid	500ml
AAALM	Aluminium Standard 10000ppm in 1M Nitric Acid	500ml
AASBH	Antimony Standard 1000ppm in Water	500ml
AASBM	Antimony Standard 10000ppm in Water	500ml
AAASH	Arsenic (III) Standard 1000ppm in 1M Hydrochloric Acid	500ml
AAASM	Arsenic (III) Standard 10000ppm in 1M Hydrochloric Acid	500ml
AAAS05H	Arsenic (V) Standard 1000ppm in 1M Nitric Acid	500ml
AA-GLO-BA-500	Barium Standard 1000ppm Ba, as Barium Nitrate in 0.5M Nitric Acid, (trac. to NIST)	500ml
AABAH	Barium Standard 1000ppm in 0.5M Nitric Acid	500ml

Product No.	Description	Pack Size
AABAM	Barium Standard 10000ppm in 1M Nitric Acid	500ml
AABEH	Beryllium Standard 1000ppm in 1M Hydrochloric Acid	500ml
AABEM	Beryllium Standard 10000ppm in 1M Hydrochloric Acid	500ml
AABIH	Bismuth Standard 1000ppm in 0.5M Nitric Acid	500ml
AABIM	Bismuth Standard 10000ppm in 1M Nitric Acid	500ml
AA-GLO-B-500	Boron Standard 1000ppm B, as Boric Acid in Water, (traceable to NIST)	500ml
AAB-H	Boron Standard 1000ppm in Water	500ml
AAB-M	Boron Standard 10000ppm in Water	500ml
AACDH	Cadmium Standard 1000ppm in 0.5M Nitric Acid	500ml
AACDM	Cadmium Standard 10000ppm in 1M Nitric Acid	500ml
AACAD1	Calcium Standard 1ppm in 2% Nitric Acid	500ml
AACAD2	Calcium Standard 2ppm in 2% Nitric Acid	500ml
AACAD3	Calcium Standard 3ppm in 2% Nitric Acid	500ml
AACAD5	Calcium Standard 5ppm in 2% Nitric Acid	500ml
AACAH10A	Calcium Standard 10ppm in 0.5M Nitric Acid	100ml
AACAH10C	Calcium Standard 10ppm in 0.5M Nitric Acid	500ml
AACA1005	Calcium Standard 100ppm in Nitric Acid	500ml
AACA01	Calcium Standard 1000ppm in 0.5M Nitric Acid	100ml
AACAH	Calcium Standard 1000ppm in 0.5M Nitric Acid	500ml
AACAH1	Calcium Standard 1000ppm in 0.5M Nitric Acid	1L
AACAM	Calcium Standard 10000ppm in 1M Nitric Acid	500ml
AACEH1	Cerium Standard 1000ppm in 2.5% Nitric Acid	100ml
AACEH	Cerium Standard 1000ppm in 2.5% Nitric Acid	500ml
AACSH	Cesium Standard 1000ppm in 1M Nitric Acid	500ml
AACSM	Cesium Standard 10000ppm in 1M Nitric Acid	500ml
AA-BAE-STD12	Chromium Standard 0.1ppm in 2% Nitric Acid	250ml
AA-BAE-STD13	Chromium Standard 0.3ppm in 2% Nitric Acid	250ml
AA-BAE-STD14	Chromium Standard 0.65ppm in 2% Nitric Acid	250ml
AACRH	Chromium Standard 1000ppm in 0.5M Nitric Acid	500ml
AACRM	Chromium Standard 10000ppm in 1M Nitric Acid	500ml
AACOH	Cobalt Standard 1000ppm in 0.5M Nitric Acid	500ml
AACOM	Cobalt Standard 10000ppm in 1M Nitric Acid	500ml
AACUR	Copper Standard 1ppm in 2% Nitric Acid	100ml
AACU2PM100	Copper Standard 2ppm in 2% Nitric Acid	500ml
AACU20PB50	Copper Standard 20ppb in 2% Nitric Acid	50ml
AACUH	Copper Standard 1000ppm in 0.5M Nitric Acid	500ml
AACUH-250ML	Copper Standard 1000ppm in 0.5M Nitric Acid	250ml
AACUM	Copper Standard 10000ppm in 1M Nitric Acid	500ml
AAEUH	Europium Standard 1000ppm in 2% Nitric Acid	500ml
AAGDH	Gadolinium Standard 1000ppm in 1M Hydrochloric Acid	500ml
AAGDM	Gadolinium Standard 10000ppm in 1M Hydrochloric Acid	500ml
AAGAH	Gallium Standard 1000ppm in 1M Hydrochloric Acid	500ml

Product No.	Description	Pack Size
AAGAM	Gallium Standard 10000ppm in 1M Hydrochloric Acid	500ml
AAGEH	Germanium Standard 1000ppm in 1% Hydrofluoric Acid & 5% Nitric Acid	500ml
AAAU10	Gold Standard 10ppm in 5% Hydrochloric Acid	500ml
AAAU5	Gold Standard 1000ppm in 0.5N Hydrochloric Acid	500ml
AAAUH	Gold Standard 1000ppm in 2M Hydrochloric Acid	500ml
AAAUM	Gold Standard 10000ppm in 2M Hydrochloric Acid	500ml
AAINH	Indium Standard 1000ppm in 1M Nitric Acid	500ml
AAINM	Indium Standard 10000ppm in 1M Nitric Acid	500ml
AAIRH	Iridium Standard 1000ppm in 10% Hydrochloric Acid	500ml
AAIRM	Iridium Standard 10000ppm in 10% Hydrochloric Acid	500ml
AAFEN	Iron Standard 1ppm in 2% Nitric Acid	100ml
AAFEH	Iron Standard 1000ppm in 0.5M Nitric Acid	500ml
AAFEH-250ML	Iron Standard 1000ppm in 0.5M Nitric Acid	250ml
AAFEM	Iron Standard 10000ppm in 1M Nitric Acid	500ml
AALAH	Lanthanum Standard 1000ppm in 1M Nitric Acid	500ml
AALAM	Lanthanum Standard 10000ppm in 1M Nitric Acid	500ml
AAPBH-250ML	Lead Standard 1000ppm in 0.5M Nitric Acid	250ml
AAPBH	Lead Standard 1000ppm in 0.5M Nitric Acid	500ml
AAPBM	Lead Standard 10000ppm in 1M Nitric Acid	500ml
AALIH	Lithium Standard 1000ppm in 0.5M Nitric Acid	500ml
AALIM	Lithium Standard 10000ppm in 1M Nitric Acid	500ml
AALUH	Lutetium Standard 1000ppm in 2% Nitric Acid	500ml
AAMGH	Magnesium Standard 1000ppm in 0.5M Nitric Acid	500ml
AAMGM	Magnesium Standard 10000ppm in 1M Nitric Acid	500ml
AAMNE	Manganese Standard 1ppm in 2% Nitric Acid	100ml
AAMNH	Manganese Standard 1000ppm in 1M Hydrochloric Acid	500ml
AAMNH-250ML	Manganese Standard 1000ppm in 1M Hydrochloric Acid	250ml
AAMNH/2HNO3	Manganese Standard 1000ppm in 2% Nitric Acid	100ml
AAMNM	Manganese Standard 10000ppm in 1M Hydrochloric Acid	500ml
AAHG1	Mercury Standard 1ppm in 0.5M Nitric Acid	500ml
AAHG10	Mercury Standard 10ppm in 0.5M Nitric Acid	500ml
AAHG100	Mercury Standard 100ppm in 0.5M Nitric Acid	500ml
AAHGH	Mercury Standard 1000ppm in 0.5M Nitric Acid	500ml
AAHGM	Mercury Standard 10000ppm in 1M Nitric Acid	500ml
AAMOH	Molybdenum Standard 1000ppm in Water	500ml
AAMOM	Molybdenum Standard 10000ppm in Water	500ml
AANI05	Nickel Standard 0.05ppm in 5% Nitric Acid	500ml
AANIH	Nickel Standard 1000ppm in 0.5M Nitric Acid	500ml
AANIM	Nickel Standard 10000ppm in 1M Nitric Acid	500ml
AAPDF	Palladium Standard 10ppm in 10% Hydrochloric Acid	50ml
AAPDH	Palladium Standard 1000ppm in 1M Hydrochloric Acid	500ml
AAPDM	Palladium Standard 10000ppm in 1M Hydrochloric Acid	500ml

Product No.	Description	Pack Size
AAP-H	Phosphorus Standard 1000ppm in Water	500ml
AAP-M	Phosphorus Standard 10000ppm in Water	500ml
AAPTF	Platinum Standard 10ppm in 10% Hydrochloric Acid	50ml
AAPTH	Platinum Standard 1000ppm in 1M Hydrochloric Acid	500ml
AAPTM	Platinum Standard 10000ppm in 1M Hydrochloric Acid	500ml
AAKD1	Potassium Standard 1ppm in 2% Nitric Acid	500ml
AAKD2	Potassium Standard 2ppm in 2% Nitric Acid	500ml
AAKD5	Potassium Standard 5ppm in 2% Nitric Acid	500ml
AAKH10A	Potassium Standard 10ppm in 0.5M Nitric Acid	100ml
AAKH10C	Potassium Standard 10ppm in 0.5M Nitric Acid	500ml
AAKH-250ML	Potassium Standard 1000ppm in 0.5M Nitric Acid	250ml
AAK-H	Potassium Standard 1000ppm in 0.5M Nitric Acid	500ml
AAKH1	Potassium Standard 1000ppm in 0.5M Nitric Acid	1L
AAK-M	Potassium Standard 10000ppm in 0.5M Nitric Acid	500ml
AARHE	Rhodium Standard 1ppm in 10% Hydrochloric Acid	50ml
AARHH	Rhodium Standard 1000ppm in 1M Nitric Acid	500ml
AARHM	Rhodium Standard 10000ppm in 1M Nitric Acid	500ml
AASMH	Samarium Standard 1000ppm in 2-5% Nitric Acid	500ml
AASMH1	Samarium Standard 1000ppm in 2-5% Nitric Acid	100ml
AASEH	Selenium Standard 1000ppm in 0.5M Nitric Acid	500ml
AASEM	Selenium Standard 10000ppm in 1M Nitric Acid	500ml
AASIH	Silicon Standard 1000ppm in Water	500ml
AA-GLO-SIL-100	Silicon Standard 1000ppm Silicon as Sodium Silicate in Water	100ml
AASIM	Silicon Standard 10000ppm in Water	500ml
AAAGH	Silver Standard 1000ppm in 0.5M Nitric Acid	500ml
AAAGM	Silver Standard 10000ppm in 1M Nitric Acid	500ml
AANAD05	Sodium Standard 0.5ppm in 2% Nitric Acid	500ml
AANAD1	Sodium Standard 1ppm in 2% Nitric Acid	500ml
AANAD2	Sodium Standard 2ppm in 2% Nitric Acid	500ml
AANAH10A	Sodium Standard 10ppm in 0.5M Nitric Acid	100ml
AANAH10C	Sodium Standard 10ppm in 0.5M Nitric Acid	500ml
AANA1005	Sodium Standard 100ppm in Hydrochloric Acid	500ml
AANAH	Sodium Standard 1000ppm in 0.5M Nitric Acid	500ml
AANAH1	Sodium Standard 1000ppm in 0.5M Nitric Acid	1L
AANAH-250ML	Sodium Standard 1000ppm in 0.5M Nitric Acid	250ml
AANASP	Sodium Standard 1000ppm in 1M Nitric Acid	500ml
AANAM	Sodium Standard 10000ppm in 1M Nitric Acid	500ml
AASRH	Strontium Standard 1000ppm in 0.5M Nitric Acid	500ml
AASRM	Strontium Standard 10000ppm in 1M Nitric Acid	500ml
AAS-H	Sulphur Standard 1000ppm in Water	500ml
AAS-M	Sulphur Standard 10000ppm in Water	500ml
AATEH	Tellurium Standard 1000ppm in 1M HCl	500ml
AATEM	Tellurium Standard 10000ppm in 1M HCl	500ml



Product No.	Description	Pack Size
AATLA	Thallium Standard 1ppm in 2% Nitric Acid	100ml
AA-TL-1-250	Thallium Standard 1ppm in 2% Nitric Acid	250ml
AATL15	Thallium Standard 1ppm in 2% Nitric Acid	500ml
AA-TL-2-250	Thallium Standard 2ppm in 2% Nitric Acid	250ml
AATL25	Thallium Standard 2ppm in 2% Nitric Acid	500ml
AA-TL-3-250	Thallium Standard 3ppm in 2% Nitric Acid	250ml
AATL35	Thallium Standard 3ppm in 2% Nitric Acid	500ml
AA-TL-4-250	Thallium Standard 4ppm in 2% Nitric Acid	250ml
AATL45	Thallium Standard 4ppm in 2% Nitric Acid	500ml
AA-TL-5-250	Thallium Standard 5ppm in 2% Nitric Acid	250ml
AATL55	Thallium Standard 5ppm in 2% Nitric Acid	500ml
AA-TL-10-250	Thallium Standard 10ppm in 2% Nitric Acid	250ml
AATL105	Thallium Standard 10ppm in 2% Nitric Acid	500ml
AA-TL-25-250	Thallium Standard 25ppm in 2% Nitric Acid	250ml
AATLH	Thallium Standard 1000ppm in 0.5M Nitric Acid	500ml
AATLM	Thallium Standard 10000ppm in 0.5M Nitric Acid	500ml
AATTH	Thorium Standard 1000ppm in 1M Nitric Acid	500ml
AATTM	Thorium Standard 10000ppm 1M Nitric Acid	500ml
AASNH	Tin Standard 1000ppm in 1M Hydrochloric Acid	500ml
AASNM	Tin Standard 10000ppm in 1M Hydrochloric Acid	500ml
AATIH	Titanium Standard 1000ppm in Water	500ml
AATIM	Titanium Standard 10000ppm in Water	500ml
AAW-H	Tungsten Standard 1000ppm in Water	500ml
AAW-M	Tungsten Standard 10000ppm in Water	500ml
AAUH	Uranium Standard 1000ppm in 1M Nitric Acid	500ml
AAUM	Uranium Standard 10000ppm in 1M Nitric Acid	500ml
AAV-H	Vanadium Standard 1000ppm in 0.5M Nitric Acid	500ml
AAV-M	Vanadium Standard 10000ppm in 0.5M Nitric Acid	500ml
AAYBH	Ytterbium Standard 1000ppm in 2% Nitric Acid	500ml
AAZNC	Zinc Standard 1ppm in Nitric Acid	100ml
AAZNH	Zinc Standard 1000ppm in 0.5M Nitric Acid	500ml
AAZNH-250ML	Zinc Standard 1000ppm in 0.5M Nitric Acid	250ml
AAZNM	Zinc Standard 10000ppm in 0.5M Nitric Acid	500ml
AAZN501	Zinc Standard 5000ppm in 2-5% Nitric Acid	100ml
AAZN502	Zinc Standard 5000ppm in 2-5% Nitric Acid	250ml
AAZN505	Zinc Standard 5000ppm in 2-5% Nitric Acid	500ml
AAZRH	Zirconium Standard 1000ppm in 1M Hydrochloric Acid	500ml
AAZRM	Zirconium Standard 10000ppm in 1M Hydrochloric Acid	500ml

## Multi Element Standards

Product No.	Description	Pack Size
AA-BAE-STD10	Multi Element Standard Ag, Zn 0.75ppm in 2% Nitric Acid	250ml
AA-BAE-STD3	Multi Element Standard Cu,Ni,Pb,Cd 3ppm in 2% Nitric Acid	250ml
AA-BAE-STD8	Multi Element Standard Ag, Zn 0.25ppm in 2% Nitric Acid	250ml
AA-BAE-STD9	Multi Element Standard Ag, Zn 0.50ppm in 2% Nitric Acid	250ml
AA-BIB-3-100	Multi Element Standard Cd, Pb, Ni @1000ppm in 2% Nitric Acid	100ml
AA-BIB-3-500	Multi Element Standard Cd, Pb, Ni @1000ppm in 2% Nitric Acid	500ml
AAMIX13A	Multi Element Standard 13 elements @10µg/ml	100ml
AAMIX13B	Multi Element Standard 13 elements @100µg/ml	100ml
AAS16-100	Multi Element Standard at 1mg/L in 5% Nitric Acid	100ml
AAS16-250	Multi Element Standard at 1mg/L in 5% Nitric Acid	250ml
AAS16-500	Multi Element Standard at 1mg/L in 5% Nitric Acid	500ml

## Releasing Agents for Atomic Absorption

Product No.	Description	Pack Size
RA1N05	Release Agent 1.0% Lanthanum in Nitric Acid	500ml
RA1CO5	Release Agent 1.0% Lanthanum in Hydrochloric Acid	500ml
RA5NO5	Release Agent 5.0% Lanthanum in Nitric Acid	500ml
RA5CO5	Release Agent 5.0% Lanthanum in Hydrochloric Acid	500ml

## Matrix Modifier Solutions for Graphite Furnace AA

Description	Product No. 100ml	Product No. 500ml
AA Matrix Modifier Solution for Graphite Furnace Ammonium Dihydrogen Phosphate	MMS101	MMS105
AA Matrix Modifier Solution for Graphite Furnace Ammonium Nitrate	MMS201	MMS205
AA Matrix Modifier Solution for Graphite Furnace Calcium Nitrate	MMS301	MMS305
AA Matrix Modifier Solution for Graphite Furnace Lanthanum Chloride	MMS401	MMS405
AA Matrix Modifier Solution for Graphite Furnace Lanthanum Nitrate	MMS501	MMS505
AA Matrix Modifier Solution for Graphite Furnace Magnesium Nitrate	MMS601	MMS605
AA Matrix Modifier Solution for Graphite Furnace Nickel Nitrate	MMS701	MMS705
AA Matrix Modifier Solution for Graphite Furnace Palladium Nitrate	MMS801	MMS805
AA Matrix Modifier Solution for Graphite Furnace Palladium Nitrate	MMS901	MMS905
AA Matrix Modifier Solution for Graphite Furnace Palladium Nitrate	MMS1001	MMS1005

# Flame Photometry Standards



## Summary of Features & Benefits:

- Single and multielement solutions available
- Wide range of values and elements
- A very high accuracy supported by a certificate of analysis which can be downloaded online
- Products are non hazardous, non toxic and SDS (Safety Data Sheets) can also be downloaded
- All products manufactured and tested in a GLP (Good Laboratory Practice) environment

## The Principle of Flame Photometry

The benefits of measuring electromagnetic radiation emitted by atoms subjected to flame excitation has been recognised for over 150 years in analytical chemistry. In the intervening period instrumentation capable of exploiting this principle has been developed, refined and commercialised by several companies using a number of technologies. Flame photometry is particularly suitable for measuring the concentration of Alkali and Alkaline Earth metals in several matrices by exploiting a characteristic of such metals whereby, their atoms reach an excited state at a lower temperature than most other metals. The instrument operates on the principle that the metals are thermally dissociated into atoms and the electrons in some of these atoms are excited by the flame. When the excited atoms return to their normal state, they emit electromagnetic radiation which lies mainly in the visible region. The wavelengths of this radiation are easily isolated by an optical filter from those of most other elements and then converted to an electric signal. This signal is a direct function of the concentration of the particular metal in the sample, control or standard. The spectra produced are simple, free of interference and well suited to quantifiable measurement.

## Calibration & Control

Flame Photometry Standards may be used to:

- 1) Calibrate the instrument in preparation for testing
- 2) Control the entire testing process to include:
  - The flame photometer
  - Sample
  - Operator
  - Measuring environmentAny of these four factors can influence the accuracy and precision of the analysis and give erroneous results.
- 3) Perform instrument qualification
- 4) Assist in method validation of a particular flame photometry technique



## Industrial Standards

Product No.	Description	Concentration	Pack Size
FIBA1	Barium	1,000ppm	500ml
FIBA3	Barium	3,000ppm	500ml
FIBA10M	Barium	10,000ppm	500ml
FICA1	Calcium	1,000ppm	500ml
FICA2	Calcium	2,000ppm	500ml
FICA10M	Calcium	10,000ppm	500ml
FICS1	Cesium	1,000ppm	500ml
FILI1	Lithium	1,000ppm	500ml
FILI10M	Lithium	10,000ppm	500ml
FINA1	Sodium	1,000ppm	500ml
FINA10M	Sodium	10,000ppm	500ml
FIK1	Potassium	1,000ppm	500ml
FIK10M	Potassium	10,000ppm	500ml
FISR1	Strontium	1,000ppm	500ml
FIRB1	Rubidium	1,000ppm	500ml

## Clinical Standards

Product No.	Description	Pack Size
FCNK3	Sodium 100mmol/l and Potassium 100 mmol/l	500ml
FCNK4	Sodium 120mmol/l and Potassium 2 mmol/l	500ml
FCNK5	Sodium 140mmol/l and Potassium 5 mmol/l	500ml
FCNK1	Sodium 160mmol/l and Potassium 8 mmol/l	500ml
FCNK2	Sodium 160mmol/l and Potassium 80 mmol/l	500ml
FCLI001	Lithium 1 mmol/l	500ml
FCNK6-M	Sodium 30mmol/l and Potassium 20mmol/l	100ml
FCNK6-S	Sodium 30mmol/l and Potassium 20 mmol/l	2ml
FCNK7-M	Sodium 60mmol/l and Potassium 40mmol/l	100ml
FCNK7-S	Sodium 60mmol/l and Potassium 40mmol/l	2ml
FCNK8-M	Sodium 90mmol/l and Potassium 60mmol/l	100ml
FCNK8-S	Sodium 90mmol/l and Potassium 60mmol/l	2ml
FCNK9-M	Sodium 120mmol/l and Potassium 80mmol/l	100ml
FCNK9-S	Sodium 120mmol/l and Potassium 80mmol/l	2ml
FCNK10-M	Sodium 150mmol/l and Potassium 100mmol/l	100ml
FCNK10-S	Sodium 150mmol/l and Potassium 100mmol/l	2ml
FCNK11-M	Sodium 180mmol/l and Potassium 120mmol/l	100ml
FCNK11-S	Sodium 180mmol/l and Potassium 120mmol/l	2ml
FCNK12-M	Sodium 210mmol/l and Potassium 140mmol/l	100ml
FCNK12-S	Sodium 210mmol/l and Potassium 140mmol/l	2ml

## Multi-Element Linearity Standards

Product No.	Description	Concentration	Pack Size
FPLE5		Low	500ml
	Barium	28.8ppm	
	Calcium	18.2ppm	
	Lithium	1.91ppm	
	Potassium	2.09ppm	
	Sodium	2.15ppm	
FPME5		Medium	500ml
	Barium	105ppm	
	Calcium	52.4ppm	
	Lithium	5.42ppm	
	Potassium	5.37ppm	
	Sodium	5.67ppm	
FPHE5		High	500ml
	Barium	510ppm	
	Calcium	112ppm	
	Lithium	10.0ppm	
	Potassium	11.4ppm	
	Sodium	11.3ppm	
FPHK3	Combination of FPLE5, FPME5 & FPHE5	As above	3 x 500ml

# Analytical Volumetric Solutions & Indicators



## The Principle of Titrimetry

Titrimetry or measurement by titration includes a set of widely used analytical techniques, some of which have been in widespread use for almost 200 years. Volumetric titration dates back at least to the work of French chemist Gay-Lussac, who devised a method in 1835 to determine the purity of Silver, using standardised Sodium Chloride as the titrant.

The principle of all titrimetry involves the determination of the quantity of the reagent of known concentration (titrant), that is required to react completely with an unknown analyte. Volumetric titrimetry involves measuring the volume of the solution of known concentration (titrant) consumed, gravimetric titrimetry measures the mass of the reagent consumed and coulometric titration measures a direct electrical current of known magnitude that consumes the analyte. In coulometry, the time it takes to complete the electrochemical reaction, is the measurand.

An analytical volumetric solution (also called titrant, standard titrant or standard solution) is a reagent of known concentration that is added from a burette or other dispensing apparatus to a sample (analyte) until a reaction between the two liquids is judged to be complete. This completeness (end point) is usually observed in a manual titration by the production of a physical change read visually as the titrant is added to the analyte. Such a change may include an appearance, disappearance or change of colour or appearance/disappearance of turbidity (cloudiness). Nowadays, instruments are widely used to detect the end points by detection of any of several properties or characteristics of the analyte solution including colour, turbidity, temperature, refractive index, potential difference, current or conductivity. In simple terms titrimetry is broadly divided into two main classifications - manual and instrumental - irrespective of how the end point is detected. In the case of manual titrations, indicator, titrant or analyte change of colour is by far the most important method of end point detection. Therefore, the availability of a wide selection of indicators is an integral part of any offering of Analytical Volumetric Solutions. This compendium carries by far the most extensive offering of both indicators and titrants available in the market place. The end point in automatic titration is indicated most commonly by a change in potential of an electrode that responds to the concentration of the reagent or the analyte.

## Analysis by titration brings a large number of benefits to the analyst including the following:

- Relatively easy to perform (although high accuracy manual titration requires practice, dexterity, experience and sound judgement)
- Rapid, cheap and versatile
- Accurate, reproducible, traceable and comparable

Furthermore, titration reactions should exhibit defined stoichiometry, be quantitative, establish equilibrium that is definite and fast, and provide unambiguous results.

# Types of Titration Reactions

## Acid/Base reactions (also called neutralisation titrations)

These are used to determine either the amount of acid/base in an analyte or substances that can be converted to an acid/base. They may also sometimes be used to track the progress of chemical reactions that produce or consume hydrogen ions. The titrants are always strong acids or bases and include hydrochloric acid, perchloric acid, sulphuric acid, sodium hydroxide, potassium hydroxide and sometimes barium hydroxide. Weak acids or bases are not used because they react incompletely with the analyte. The colour indicator used in an acid base titration is a weak acid/base itself which in its undissociated form differs in colour from its conjugate acid or base form. Typical elements suitable to this type of titration method include carbon, nitrogen, chlorine, bromine and fluorine. Pretreatment of these elements converts the element to an inorganic acid or base that is then titrated. An example is nitrogen which occurs in a wide range of forms both organic, inorganic or as a constituent of biological materials. Therefore, a methodology for nitrogen measurement in amine groups such as the Kjeldahl method is extremely important in determining the protein content in grains, meats, and other human or animal foodstuffs. In addition to amines, others like esters and hydroxyl functional groups can also be determined. In addition, inorganic compounds such as carbonates, ammonium salts and several other NO<sub>x</sub> species can be determined.

## Fields of Application

- Acid content in wine, milk, ketchup, fruit juice (etc)
- Content of HCl, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, NaOH, KOH
- Alkalinity determination in water
- TAN and TBN in petroleum products, edible or inedible oils and fats
- Determination of boric acid in cooling fluids of nuclear power stations
- Determination of free or total acidity in plating baths
- Determination of active ingredients in drugs or raw materials for the pharmaceutical industry
- Total nitrogen determination by Kjeldahl
- Wide range of inorganic, organic or biological species that possess inherent acidic or basic properties
- Use of chemical treatment that converts an analyte to an acid or base followed by titration with standardised strong acid or base

## Oxidation/Reduction Titrations

These titrations may be performed manually or potentiometrically. In manual titrations, if indicators are used, they change colour upon being oxidized or reduced, independently of the chemical nature of the titrant or analyte. Instead, they depend on changes in the electropotential of the oxidation reduction system. Examples of such indicators include:

- Iron (III) complexes of orthophenothrolines
- Starch solutions
- Potassium thiocyanate

The principle of this type of titration involves a reaction between an oxidising and reducing pair, e.g. titration of iron (II) with cerium (IV) sulphate

- **Oxidising agents (examples)**
  - Iodine (Iodometry), potassium dichromate, potassium permanganate, potassium bromate, cerium (IV) ammonium nitrate, cerium (IV) ammonium sulphate, cerium (IV) hydrogen sulphate, cerium hydroxide, chlorine
- **Reducing agents (examples)**
  - Sodium thiosulphate, oxalic acid, iron ammonium (II) sulphate (Mohr's salt), hydrogen peroxide, phenylarsine oxide (PAO), iron (II) ethylene diamine sulphate

## Fields of Application

- *Environment*
  - COD of water
  - Oxidation capacity of water by permanganate
- *Food and beverage*
  - Determination of free and total  $\text{SO}_2$  in water, wine, alcohol, dried fruit etc
- *Pharmaceuticals*
  - Vitamin C determination
  - Surface treatment
  - Titration of copper or tin using iodine
  - Titration of chromium (VI)
- *Petrochemicals*
  - Determination of water in hydrocarbons

## Complexometric Titrations

Complexometric reactions have many applications in chemical analysis and in science in general. Their use in titrimetry is a very important one of these applications. The reaction end point is detected either potentiometrically or manually using an indicator, whereby, a metal ion reacts appropriately with a ligand to form a complex. EDTA is the most widely used titrant in complexometric reactions although the use of other chemicals similar to EDTA are described in the literature; e.g. nitrilotriacetic acid. Generally, organic dyes that form complexes with metal ions to form chelates are used as indicators, a commonly used one being Eriochrome Black T. Methods have been developed, validated and published for detection or quantification of almost every metal in the periodic table with the exception of the Alkali metals using EDTA complexation. This includes methods for at least 40 metals developed in our metals laboratory in Reagecon, with more at development or validation stage.

This methodology is regularly used to determine the concentration of divalent cations such as calcium, magnesium, copper, lead, zinc, cadmium, aluminium

## Fields of application

- *Environment*
  - Total hardness of water ( $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$ ).
- *Surface treatment*
  - Determination of  $\text{Cu}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Pb}^{2+}$ ,  $\text{Zn}^{2+}$  in plating baths

## Precipitation Titrations

This analytical methodology is based on reactions that yield compounds of limited solubility. There is not a very wide range of precipitating agents that can be used gainfully in titrimetry and silver nitrate is by far the most important. These titrations, (also called argentometric titration) is where silver nitrate is used as the titrant. Silver nitrate can be used for determination of halides ( $\text{Cl}^-$ ,  $\text{I}^-$ ,  $\text{Br}^-$ ) and anions that behave like halides ( $\text{SCN}^-$ ,  $\text{CN}^-$ ,  $\text{CNO}^-$ ). It can also be used for determination of Mercaptans and organic materials that include Fatty Acids. Indicators typically used for precipitation titrations include sodium chromate, fluorescein and iron (III). A wide range of standardised silver nitrate titrants are available, some of which are standardised to specifically give a one to one equivalence with sodium chloride in various food stuffs.



## Fields of Application

- *Environment*
  - Determination of chloride in water
- *Food and beverage*
  - Determination of chloride in many finished products (cooked meats, dairy products, etc.)
- *Precious metals*
  - Determination of silver
- *Pharmaceuticals*
  - Titration of halides

## Analytical Volumetric Solutions

Description	Product No. 1L	Product No. 2.5L	Product No. 5L
Acetic acid 0.1M (0.1N)	CH20101		CH20105
Acetic acid 0.5M (0.5N)	CH20051		CH20055
Acetic acid 1.0M (1.0N)	CH21001		CH21005
Acetic acid 2.0M (2.0N)	CH22001		CH22005
Acetic acid 5.0M (5.0N)	CH25001		
Ammonia 0.1M (0.1N)	NH20101		NH20105
Ammonia 1.0M (1.0N)	NH21001		
Ammonia 2M in 1-Propanol	NH1P22001		NH1P22005
Ammonium Chloride 0.05M	NH4CL041		
Ammonium Chloride 0.1M	NHCL011		
Ammonium Hydroxide 0.5M	NH2051		
Ammonium Hydroxide 5M	NH32501		
Ammonium Hydroxide 6M	NH32601	NH326W	
Ammonium Iron (II) Sulphate 0.1M	NHS2011		
Ammonium Sulphate 0.5M (1.0N)	AS2051		AS2055
Ammonium Thiocyanate 0.05M (0.05N)		AT20050W	
Ammonium Thiocyanate 0.1M (0.1N)	AT2010F	AT2010W	
Ammonium Thiocyanate 1.0M (1.0N)	AT21F	AT21W	
Barium Chloride 0.05M (0.1N)	BACL20051		BACL20055
Barium Chloride 0.5M (1.0N)	BACL2051		BACL2055
Barium Chloride 1.0M (2.0N)	BACL2101		BACL2105
Barium Perchlorate 0.005M Alcoholic Solution	BACLO200051		
Benzethonium Chloride 0.004M (Hyamine 1622 Solution)	HY0041		HY0045
Benzethonium Chloride 0.04M (Hyamine 1622 Solution)	HY041		HY045
Boron Tribromide 1M in Dichloromethane		BDCMW	
Bromine (Bromate/Bromide) 0.05M (0.1N)	BR20101		BR20105
Bromine (Bromate/Bromide) 0.25M (0.5N)	BR20251		

## Analytical Volumetric Solutions

Description	Product No. 1L	Product No. 2.5L	Product No. 5L
Calcium Acetate 1.0M	CAAC2101		CAAC2105
Calcium Chloride 0.005M (0.01N)	CACL20051		CACL20055
Calcium Chloride 0.0125M (0.025N)	CACL2001251		CACL2001255
Calcium Chloride 0.02M (0.04N)	CACL20021		CACL20025
Calcium Chloride 0.01M (0.02N)	CACL20011		CACL20015
Calcium Chloride 1.0 M (2.0N)	CACL101		
Calcium Chloride 0.5M (1.0N)	CACL2051		CACL2055
Cerium IV sulphate 0.05M (0.05N)	CS20051		CS20055
Cerium IV sulphate 0.1M (0.1N)	CS2011		CS2015
Cerium IV sulphate 0.2M (0.2N)	CS20251		CS20255
Cerium IV sulphate 1.0M (1.0N)	CS2101		CS2105
Citric Acid 1.0M	CA1010		
Copper II Chloride 0.5M (0.5N)	CUCL2051		CUCL2055
Copper II Sulphate 0.1M (0.1N)	CUS02011		CUS02015
Copper II Sulphate 0.5M (0.5N)	CUS02051		CUS02055
Copper Sulphate Hydrate Solution 0.2g/l			CSPHOS15000
Cupric Solution 0.168M (0.168N)	CU201681		CU201685
Di-Potassium Oxalate 0.05M	KO20051		KO20055
EDTA (DiSodium Salt) 0.027M (0.054N)	EDB200271		
EDTA (DiSodium salt) 0.01M (0.02N)	ED20011		ED20015
EDTA (DiSodium salt) 0.1M (0.2N)	ED2011		ED2015
EDTA (DiSodium Salt) 0.002M (0.004N)	ED200021		ED200025
EDTA (DiSodium Salt) 0.01785M (0.0357N)	ED2003571		
EDTA (DiSodium Salt) 0.02M (0.04N)	ED20021		
EDTA (DiSodium Salt) 0.025M (0.05N)	ED200251		
EDTA (DiSodium Salt) 0.05M (0.10N)	ED20051		
Ferric Chloride 0.01M	F0011		
Formic Acid 0.1M			F20105
Hydrochloric Acid 0.01M (0.01N)	H20011		H20015
Hydrochloric Acid 0.02M (0.02N)	H20021		H20025
Hydrochloric Acid 0.027M (0.027N )	H200271		
Hydrochloric Acid 0.0357M (0.0357N)	H2003571		H2003575
Hydrochloric Acid 0.05M (0.05N)	H20051		H20055
Hydrochloric Acid 0.0714M (0.0714N)	H2007141		
Hydrochloric Acid 0.1M (0.1N)	H20101		H20105
Hydrochloric Acid 0.233M (0.233N)			H202335
Hydrochloric Acid 0.25M (0.25N)	H20251		H20255
Hydrochloric Acid 0.2M (0.2N)	H20201		H20205
Hydrochloric Acid 0.357M (0.357N)	H203571		H203575
Hydrochloric Acid 0.5M (0.5N)	H20501		H20505
Hydrochloric Acid 0.714M (0.714N )	H207141		

Description	Product No. 1L	Product No. 2.5L	Product No. 5L
Hydrochloric Acid 1.0M (1.0N)	H21001		H21005
Hydrochloric Acid 1.8M (1.8N)			H21805
Hydrochloric Acid 15%			RH15WW100
Hydrochloric Acid 2.0M (2.0N)	H22001		H22005
Hydrochloric Acid 2.7M (2.7N)	H22701		
Hydrochloric Acid 3.57M (3.57N)	H23571		H23575
Hydrochloric Acid 3.0M (3.0N)	H23001		H23005
Hydrochloric Acid 4.0M (4.0N)	H24001		H24005
Hydrochloric Acid 5.0M (5.0N)	H25001		H25005
Hydrochloric Acid 6.0M (6.0N)	H26001		H26005
Hydrochloric Acid 8.0M (8.0N)			H28005
Hydrochloric Acid 0.5167M (0.5167N)	H2051671		
Hydrochloric Acid 0.773M (0.773N)	H207331		
Hydrofluoric Acid 0.05N 0.05M (0.05N)	HF20051		HF20055
Iodine 0.01M (0.02N)	I2001F		
Iodine 0.005M (0.01N)	I20005F		
Iodine 0.02365M (0.0473N )	I20023F		
Iodine 0.025M (0.05N)	I20025F	I20025W	
Iodine 0.05M (0.1N)	I2005F	I2005W	
Iodine 0.5M (1.0N)	I2050F	I2050W	
Iron (II) Sulphate 0.1M (0.1N)	FES2011		
Iron (II) Sulphate 0.2M (0.2N)	FES2021		FES2025
Iron (III) Chloride 1.0M	FECL211		FECL215
Lactic Acid 0.1M	CH6011		
Lead (II) Acetate 0.05M	PBA20051		PBA20055
Lead (II) Acetate 0.5M	PBA2051		PBA2055
Lead (II) Nitrate 0.5M (1.0N)	PBN02051		PBN02055
Lead Nitrate 0.01M (0.02N)	PB20011		
Lead Nitrate 0.1M (0.2N)	PB2011		
Magnesium Chloride 0.01M (0.02N)	MG20011		MG20015
Magnesium Chloride 0.1M (0.2N)	MG2011		MG2015
Magnesium Sulphate 0.01M (0.01N)	MGS020011		
Magnesium Sulphate 0.09M (0.09N)	MS0091		
Magnesium Sulphate 0.1M (0.1N)	MGS02011		MGS02015
Manganese (II) Chloride 0.05M (0.05N)	MNCL20051		MNCL20055
Manganese (II) Chloride 0.5M (0.5N)	MNCL2051		MNCL2055
Mercury (I) Nitrate 0.1M (0.2N)	HGN2011		HGN2015
Mercuric (II) Nitrate 0.05M (0.1N)	HGN20051		
Mercury (II) Nitrate 0.01M (0.02N)	HGN20011		HGN20015
Mercury (II) Nitrate 0.01N (0.005M)	HGN200051		HGN200055
Methanolic Hydrochloric Acid 0.5N		MH2050	

## Analytical Volumetric Solutions

Description	Product No. 1L	Product No. 2.5L	Product No. 5L
Morpholine 0.5N in Methanol		MD2050	
Nickle (II) Chloride 0.5M (0.5N)	NICL20051		NICL20055
Nitric Acid 0.01M (0.01N)	NO20011		
Nitric Acid 0.02M (0.02N)	NO20021		NO20025
Nitric Acid 0.1M (0.1N)	NO20101		NO20105
Nitric Acid 0.5% w/v Solution			N05WV5
Nitric Acid 1.0M (1.0N)	NO21001		NO21005
Nitric Acid 2.0M (2.0N)	NO22001		NO22005
Nitric Acid 4.0M (4.0N)	NO24001		NO24005
Nitric Acid 5.0M (5.0N)	NO25001		
Nitric Acid 6.0M (6.0N)	NO26001		
Nitric Acid 8.0M (8.0N)	NO28001		NO28005
Oxalic Acid 0.005M (0.01N)	OA200051		
Oxalic Acid 0.025M (0.05N)	OA200251		OA200255
Oxalic Acid 0.10M (0.2N)	OA2011		
Oxalic Acid 0.05M (0.1N)	OA20051		OA20055
Oxalic Acid 0.25M (0.5N)	OA20251		
Oxalic Acid 0.5M (1.0N)	OA2051		OA2055
Perchloric Acid 0.1N in 1.4 Dioxan	PD201F	PD201W	
Perchloric Acid 0.01M (0.01N) in Acetic Acid	P2001F		
Perchloric Acid 0.1M (0.1N) in Acetic Acid	P2010F	P2010W	
Perchloric Acid 0.5M (0.5N) in Acetic Acid	P2050F		
Phenylarsine Oxide 0.00564M	CH500561		
Phosphorous Tribromide 1M	PBR3DCM		
Potassium Biiodate 0.025N	HK2O0025F		
Potassium Biiodate 0.1N	HK2O01F		
Potassium Bromate 0.1M	KB201F		
Potassium Bromate/Bromide 0.0167M (0.1N)	KB20016F	KB20016W	
Potassium Bromide 0.5M	KBR205F		
Potassium Bromide 1M	KBR21F		
Potassium Chloride 0.01M (0.01N)	KCL20011		
Potassium Chloride 0.1M (0.1N)	KCL2011		
Potassium Chloride 0.2M (0.2N)	KCL2021		KCL2025
Potassium Chloride 0.5M (0.5N)	KCL2051		
Potassium Chloride 1.0M (1.0N)	KCL2101		KCL2105
Potassium Dichromate 0.02M (0.120N)	KC20021		
Potassium Dichromate 0.0208M (0.125N )		KC2002W	
Potassium Dichromate 0.0167M (0.1N)	KC20016F	KC20016W	
Potassium Dichromate 0.04M (0.24N)	KCR24F		
Potassium Dichromate 0.25M (1.5N)	KC20251		

Description	Product No. 1L	Product No. 2.5L	Product No. 5L
Potassium Dichromate 0.041M (0.25N)	KC20041F	KC20041W	
Potassium Dichromate 0.167M (1.0N)	KC2016F	KC2016W	
Potassium Dichromate 10mg/l	KC010F		
Potassium Dichromate 1870mg/l	KCR18701		
Potassium Ferricyanide 0.1M (0.1N)	KFE2011		KFE2015
Potassium Fluoride 20%			KF205
Potassium Fluoride 60% w/v			KF60
Potassium Hydrogen Phthalate 0.1M (0.1N)	PHP2011		PHP2015
Potassium Hydroxide 0.1N in Ethanol	ETKOH01F	ETKOH01W	
Potassium Hydroxide 0.1N in Methanol	MKOH01F	MKOH01W	
Potassium Hydroxide 0.05M (0.05N)	KOH20051		KOH20055
Potassium Hydroxide 0.1M (0.1N)	KOH20101		KOH20105
Potassium Hydroxide 0.223M (0.223N)			KOH202235
Potassium Hydroxide 0.23M (0.23N)			KOH20235
Potassium Hydroxide 0.5M (0.5N)	KOH20501		KOH20505
Potassium Hydroxide 0.5N in Ethanol	ETKOH05F	ETKOH05W	
Potassium Hydroxide 0.5N in Methanol	MKOH205F	MKOH205W	
Potassium Hydroxide 1.0M (1.0N)	KOH21001		KOH21005
Potassium Hydroxide 1.0M (1.0N) in Ethanol	ETKOH1F	ETKOH1W	
Potassium Hydroxide 1.0M (1.0N) in Methanol	MKOH1F	MKOH1W	
Potassium Hydroxide 10.0M (10.0N)	KOH2101		KOH2105
Potassium Iodate 0.0147M (0.08833N)		PI2008W	
Potassium Iodate 0.025M (0.15N)		PI20025W	
Potassium Iodate 0.01667M (0.1N)	PI20016F	PI20016W	
Potassium Iodate 0.05M (0.3N)	PI2005F	PI2005W	
Potassium Iodate/Iodide 0.00333M (0.02N)		PII2002W	
Potassium Iodide 0.1M (0.1N)	KI2011		KI2015
Potassium Iodide 1.0M (1.0N)	KI2101		KI2105
Potassium Iodide 1.8M (1.8N)		KI218W	
Potassium Iodide 3.0M (3.0N)	KI2301		KI2305
Potassium Permanganate 0.002M (0.01N)	PP20002F		
Potassium Permanganate 0.01M (0.05N)	PP2001F	PP2001W	
Potassium Permanganate 0.02M (0.1N)	PP2002F	PP2002W	
Potassium Permanganate 0.2M (1.0N)	PP2020F	PP2020W	
Potassium Thiocyanate 0.02M (0.02N)	KT2002F	KT2002W	
Potassium Thiocyanate 0.05M (0.05N)	KT2005F	KT2005W	
Potassium Thiocyanate 0.1M (0.1N)	KT201F	KT201W	
Potassium Thiocyanate 1.0M (1.0N)	KT210F	KT210W	
Silver Nitrate 0.0141M (0.0141N)		N20014W	
Silver Nitrate 0.0192M (0.0192N)	N20019F		

## Analytical Volumetric Solutions

Description	Product No. 1L	Product No. 2.5L	Product No. 5L
Silver Nitrate 0.01M (0.01N) in Isopropyl Alcohol	PN20010F		
Silver Nitrate 0.01M (0.01N)	N20010F		
Silver Nitrate 0.01M (0.01N) in Methanol	MN20010F		
Silver Nitrate 0.025M (0.025N)	N20025F		
Silver Nitrate 0.0282M (0.0282N)		N20028W	
Silver Nitrate 0.02M (0.02N)	N20020F	N20020W	
Silver Nitrate 0.04M (0.04N)	N2004F	N2004W	N20045
Silver Nitrate 0.05M (0.05N)	N20050F	N20050W	
Silver Nitrate 0.085M (0.085N)		N20085W	
Silver Nitrate 0.1N in Methanol	MN2010F		
Silver Nitrate 0.1M (0.1N)	N20100F	N20100W	N201005
Silver Nitrate 0.1709M (0.1709N)	N201709F	N201709W	
Silver Nitrate 0.5M (0.5N)	N2050F		
Silver Nitrate 1.0M (1.0N)	N21000F	N21000W	
Sodium Acetate 0.2M	SA02F		
Sodium Acetate 0.3M	SA03MOLF1		
Sodium Acetate 2M	SA2F		
Sodium Arsenite 0.005M (0.01N)	SA200005F		
Sodium Arsenite 0.05M (0.1N)	SA2005F	SA2005W	
Sodium Arsenite 0.15M (0.3N)	SA2015F		
Sodium Borohydride 0.4 % in 0.05N NaOH	NABH404F		
Sodium Carbonate 0.05M (0.1N)	SC20051		SC20055
Sodium Carbonate 0.5M (1.0N)	SC20501		SC20505
Sodium Chloride 0.05M (0.05N)	NACL20051		NACL20055
Sodium Chloride 0.068M (0.068N)			NACL200685
Sodium Chloride 0.1M (0.1N)	NACL2011		NACL2015
Sodium Chloride Solution at 0.9% w/w	NACL09WW1		
Sodium Hydroxide (Low in Carbonate) 0.115M (0.115N)	S21151LC		
Sodium Hydroxide (Low in Carbonate) 0.5M (0.5N)	S20501LC		S20505LC
Sodium Hydroxide (Low in Carbonate) 1.0M (1.0N)	S21001LC		S21005LC
Sodium Hydroxide 0.01M (0.01N)	S20011		S20015
Sodium Hydroxide 0.02M (0.02N)	S20021		S20025
Sodium Hydroxide 0.05M (0.05N)	S20051		S20055
Sodium Hydroxide 0.111M (0.111N)	S20111		S20115
Sodium Hydroxide 0.1332M (0.1332N)	S2013321		
Sodium Hydroxide 0.156M (0.156N)	S215601		
Sodium Hydroxide 0.1M (0.1N)	S20101		S20105
Sodium Hydroxide 0.1M (0.1N) (Low in Carbonate)	S20101LC		S20105LC
Sodium Hydroxide 0.204M (0.204N)	S202041		
Sodium Hydroxide 0.25M (0.25N) 5L Bag In Box			SB20255

Description	Product No. 1L	Product No. 2.5L	Product No. 5L
Sodium Hydroxide 0.25M (0.25N)	S20251		S20255
Sodium Hydroxide 0.2M (0.2N)	S20201		S20205
Sodium Hydroxide 0.3125M (0.3125N)	S2031251		
Sodium Hydroxide 0.313M (0.313N) 5L Bag in Box			SB203135
Sodium Hydroxide 0.313M (0.313N)	S203131		S203135
Sodium Hydroxide 0.33M (0.33N)	S20331		
Sodium Hydroxide 0.35465M (0.35465N)	S2035461		S2035465
Sodium Hydroxide 0.4M (0.4N)	S20401		
Sodium Hydroxide 0.5M (0.5M)	S20501		S20505
Sodium Hydroxide 0.5M (0.5N) Bag in Box			SB20505
Sodium Hydroxide 0.6M (0.6N)			S2065
Sodium Hydroxide 0.714M (0.714N)	S207141		
Sodium Hydroxide 1.0M (1.0N) 5L Bag in Box			SB21005
Sodium Hydroxide 1.0M (1.0N)	S21001		S21005
Sodium Hydroxide 1.2M (1.2N)	S21201		SB21205
Sodium Hydroxide 1.666M (1.666N)	S216661		
Sodium Hydroxide 10M (10N)	S10001		S10005
Sodium Hydroxide 2.0M (2.0N)	S22001		S22005
Sodium Hydroxide 2.5M (2.5N)	S22501		S22505
Sodium Hydroxide 3.0M (3.0N)	S23001		S23005
Sodium Hydroxide 3.57M (3.57N)	S23571		S23575
Sodium Hydroxide 4M (4N)	S24001		
Sodium Hydroxide 5.0M (5.0N)	S25001		S25005
Sodium Hydroxide 5.0M (5.0N) from USP Grade Raw Material	S25001SP		
Sodium Hydroxide 6M (6N)	S26001		
Sodium Hydroxide Solution 20% w/v	S20WV1		
Sodium Lauryl (Dodecyl) Sulphate 0.02M (0.02N)	SLS0021		
Sodium Lauryl (Dodecyl) Sulphate 0.1M (0.1N)	SLS011		
Sodium Nitrite 0.1M (0.1N)	NANO011		
Sodium Nitrite 0.2M (0.2N)	NANO021		
Sodium Nitrite 0.5M (0.5N)	NANO051		NANO055
Sodium Nitrite 1M (1.0N)	NANO11		
Sodium Nitrite 4M (4.0N)	NANO041		
Sodium Oxalate 0.025M	NAC00251		
Sodium Oxalate 0.05M	NAX0051		
Sodium Oxalate 0.5M	NAC051		
Sodium Sulphite 5% Zero Dissolved Oxygen Solution	NAS51		NAS55
Sodium Thiocyanate 0.1M (0.1N)	NAT20101		NAT20105
Sodium Thiocyanate 1.0M (1.0N)	NAT21001		NAT21005

Description	Product No. 1L	Product No. 2.5L	Product No. 5L
Sodium Thiosulphate 0.0125M (0.0125N)	T2001251		
Sodium Thiosulphate 0.01M (0.01N)	T20011		T20015
Sodium Thiosulphate 0.025M (0.025N)	T200251		
Sodium Thiosulphate 0.02M (0.02N)	T20021		
Sodium Thiosulphate 0.0551M (0.0551N)	T2005511		T2005515
Sodium Thiosulphate 0.05M (0.05N)	T20051		T20055
Sodium Thiosulphate 0.1M (0.1N)	T20101		T20105
Sodium Thiosulphate 0.2M (0.2N)	T20201		T20205
Sodium Thiosulphate 0.5M (0.5N)	T20501		
Sodium Thiosulphate 1.0M (1.0N)	T21001		T21005
Sodium Thiosulphate 2.0M (2.0N)	T22001		
Sulphuric Acid 0.005M (0.01N)	SU200051		
Sulphuric Acid 0.01M (0.02N)	SU20011		SU20015
Sulphuric Acid 0.02M (0.04N)	SU20041		
Sulphuric Acid 0.025M (0.05N)	SU200251		
Sulphuric Acid 0.0416M (0.0832N)	SU2004161		SU2004165
Sulphuric Acid 0.05M (0.1N)	SU20051		SU20055
Sulphuric Acid 0.1M (0.2N)	SU20101		SU20105
Sulphuric Acid 0.1275M (0.255N)	SU2012751		SU2012755
Sulphuric Acid 0.128M (0.256N)			SU201285
Sulphuric Acid 0.13M (0.26N)	SU20131		SU20135
Sulphuric Acid 0.175M (0.350N)			SU20155
Sulphuric Acid 0.25M (0.5N)	SU20251		SU20255
Sulphuric Acid 0.319M (0.638N)	SU203191		SU203195
Sulphuric Acid 0.5M (1.0N)	SU20501		SU20505
Sulphuric Acid 0.9M (1.8N)	SU2091		SU2095
Sulphuric Acid 1.0M (2.0N)	SU21001		SU21005
Sulphuric Acid 2.0M (4.0N)	SU222001	SU2200J	
Sulphuric Acid 2.5M (5.0N)	SU22501		SU22505
Sulphuric Acid 3.0M (6.0N)	SU23001		SU23005
Sulphuric Acid 5.0M (10.0N)	SU25001		SU25005
Sulphuric Acid 5.0M (10.0N) Special Specific Preparation	SU2500-SP1		
Tetra Butylammonium Fluoride 1M in THF CA 5% Water		TBAF125	
Tetra Butylammonium Phosphate 0.5M conc in HPLC Grade water	TBAP1L		
Zinc Chloride 0.1M (0.1N)	ZNCL20101		ZNCL20105
Zinc Chloride 0.5M (0.5N)	ZNCL20501		ZNCL20505
Zinc Sulphate 0.02M (0.02N)	ZS021		
Zinc Sulphate 0.05M (0.05N)	ZNS000501		ZNSO00505
Zinc Sulphate 0.1M (0.1N)	ZS011		ZNSO0105



## Concentrated Volumetric Solutions

Each Ampoule is supplied in its own box, full instructions are printed on the box.

Description	Ampoule to make 1L
Acetic Acid 1.0M (1.0N)	CHC101L
Ammonia 0.1M (0.1N)	NH4C011L
Ammonia 1.0M (1.0N)	NH4C101L
Ammonium Thiocyanate 0.1M (0.1N)	NHTC011L
EDTA (DiSodium salt) 0.01M (0.02N)	EDC0011L
EDTA (DiSodium salt) 0.05M (0.05N)	ETC0051L
EDTA (DiSodium salt) 0.1M (0.2N)	EDC0101L
Hydrochloric Acid 0.1M (0.1N)	HC0101L
Hydrochloric Acid 0.2M (0.2N)	HC0201L
Hydrochloric Acid 0.5M (0.5N)	HC0501L
Hydrochloric Acid 1.0M (1.0N)	HC1001L
Iodine 0.005M (0.01N)	IC00051L
Iodine 0.025M (0.05N)	IC025G1L
Iodine 0.05M (0.1N)	IC0051GL
Nitric Acid 1.0M (1.0N)	NOC101L
Oxalic Acid 0.05M (0.1N)	OA20051L
Potassium Chloride 0.01M (0.01N)	KCL0101L
Potassium Permanganate 0.02M (0.1N)	PCO021GL
Silver Nitrate 0.0282M (0.0282N)	NC00281L
Silver Nitrate 0.1M (0.1N)	NC0101L
Sodium Hydroxide 0.1M (0.1N)	SC0101L
Sodium Hydroxide 0.5M (0.5N)	SC0501L
Sodium Hydroxide 1.0M (1.0N)	SC1001L
Sodium Thiosulphate 0.0125M (0.0125N)	TC00121L
Sodium Thiosulphate 0.1M (0.1N)	TC0101L
Sulphuric Acid 0.01M (0.02N)	SUC0011L
Sulphuric Acid 0.05M (0.1N)	SUC0051L
Sulphuric Acid 0.5M (1.0N)	SUC051L

## Indicator Solutions

Product No.	Description	Pack Size
ALRED01	Alizarine Red Solution 125ml	125ml
ALREDH	Alizarine Red Solution 500ml	500ml
AZVIO01	Azo Violet Indicator, 0.1% (w/v) Alcoholic Solution	125ml
1012602	Bromocresol Green - Methyl Red Mixed Indicator	100ml
BRCGM05	Bromocresol Green Indicator, 0.04% (w/v) in Methanol	500ml
BRCG0105	Bromocresol Green Indicator, 0.1% (w/v) Aqueous Solution	500ml
BRCG010125	Bromocresol Green Indicator, 0.1%	125ml
BRCGIPA0105	Bromocresol Green Indicator, 0.1% (w/v) in IPA	500ml
BRCG105	Bromocresol Green Indicator, 1% (w/v) Aqueous Solution	500ml
BRCG05	Bromocresol Green Indicator, 0.04%	500ml
BRCG1501	Bromocresol Green Indicator, 1%	100ml
BRPBB02M05	Bromocresol Purple - Bromothymol Blue Mixed Indicator 0.2% (w/v) in Methanol	500ml
BRP01M05	Bromocresol Purple Indicator, 0.1 % (w/w) in Methanol	500ml
BRP0105	Bromocresol Purple Indicator, 0.1% (w/v) Aqueous Solution	500ml
BRP0405	Bromocresol Purple Indicator, 0.4% (w/v) Aqueous Solution	500ml
BRP1M05	Bromocresol Purple Indicator, 1 % (w/w) in Methanol	500ml
BRP105	Bromocresol Purple Indicator, 1% (w/v) Aqueous Solution	500ml
1012701	Bromocresol Purple Indicator Solution 0.04%	100ml
BRBPIPA05	Bromophenol Blue Indicator, 0.04% (w/v) in Isopropyl Alcohol	500ml
BRBP00505	Bromophenol Blue Indicator, 0.05% Aqueous Solution	500ml
BRBP0105	Bromophenol Blue Indicator, 0.1% (w/v) Aqueous Solution	500ml
BRBPIPA0105	Bromophenol Blue Indicator, 0.1% (w/v) in Isopropyl Alcohol	500ml
BRPB040125	Bromophenol Blue Indicator 0.4%	125ml
BRBP0405	Bromophenol Blue Indicator, 0.4% Aqueous Solution	500ml
BRBP0125	Bromophenol Blue Indicator, 0.04% Aqueous Solution	125ml
BRBP05	Bromophenol Blue Indicator, 0.04% Aqueous Solution	500ml
BRTH00205	Bromothymol Blue Indicator, 0.02% (w/v) Aqueous Solution	500ml
BRTHIPA00205	Bromothymol Blue Indicator, 0.02% (w/v) in Isopropyl Alcohol	500ml
BRTHIPA00405	Bromothymol Blue Indicator, 0.04% (w/v) in Isopropyl Alcohol	500ml
BRTH040125	Bromothymol Blue Indicator 0.4%	125ml
BRTH040250	Bromothymol Blue Indicator 0.4%	250ml
BRTH0125	Bromothymol Blue Indicator, 0.04%	125ml
BRTH025	Bromothymol Blue Indicator, 0.04%	250ml
BRTH05	Bromothymol Blue Indicator, 0.04%	500ml
CALM00505	Calmagite Indicator, 0.05% (w/v) Aqueous Solution	500ml
CALM0105	Calmagite Indicator, 0.1% (w/v) Aqueous Solution	500ml
CALM0605	Calmagite Indicator, 0.6% (w/v) Aqueous Solution	500ml
CALM105	Calmagite Indicator, 1%	500ml
CAUB0105	Caustic Blue Indicator, 0.1% (w/v) Aqueous Solution	500ml

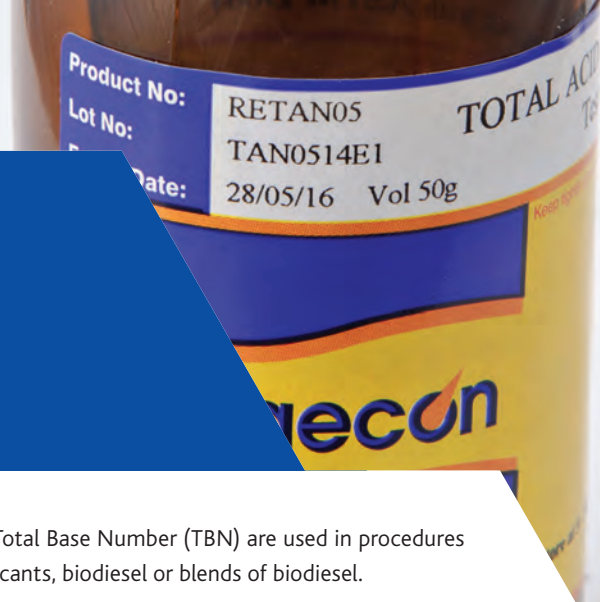
Product No.	Description	Pack Size
CPR05	Chlorophenol Red Indicator, 0.04%	500ml
COR105	Congo Red Indicator 0.1%	500ml
COR01005	Congo Red Indicator 0.1% (w/v) Aqueous Solution	500ml
COR01001	Congo Red Indicator 0.1% (w/v) Aqueous Solution	1L
COR1005	Congo Red Indicator, 1% (w/v) Aqueous Solution	500ml
CRER0405	Cresol Red Indicator, 0.04% (w/v) Aqueous	500ml
CRER205	Cresol Red Indicator, 0.2% (w/v) Aqueous	500ml
CVSOLN011	Crystal Violet Indicator, 0.1% (w/v) in Glacial Acetic Acid, for Non Aqueous Titrations	100ml
CVSOLN021	Crystal Violet Indicator, 0.2% (w/v) in Glacial Acetic Acid, for Non Aqueous Titrations	100ml
CVSOLN1	Crystal Violet Indicator 1% in Glacial Acetic Acid	100ml
1022901	Crystal Violet Solution (Non-aqueous indicator)	100ml
DPC05	Diphenylcarbazone 0.1%	500ml
DPCBRBP05	Diphenylcarbazone-Bromophenol Blue Mixed Indicator	500ml
EOW00051	Eosin Y TS, 0.5% (w/v) Aqueous Solution, Adsorption Indicator for Argentometric Titrations	1L
EOW0011	1% Eosin Y in Purified water	1L
EOW0015	1% Eosin Y in Purified water	5L
EBB05	Indicator Solution Erichrome Blue Black R	500ml
EBB1	Indicator Solution Erichrome Blue Black R	1L
EBB5	Indicator Solution Erichrome Blue Black R	5L
EBB10	Indicator Solution Erichrome Blue Black R	10L
EBTT05	Eriochrome Black T Indicator in Triethanolamine, Water Hardness Indicator	500ml
EBTNACL105	Eriochrome Black T Indicator, 1% (w/w) in Sodium Chloride	500ml
EBTNACL0205	Eriochrome Blue Black R Indicator, 0.2% (w/w) in Sodium Chloride	500ml
ETVIO1M05	Ethyl Violet Indicator, 0.1% w/v in 50% Methanol	500ml
FS010105	Fehlings Solution No. 1	500ml
FS0101	Fehlings Solution No. 1	1L
FS01015	Fehlings Solution No. 1	2.5L
FS010205	Fehlings Solution No. 2	500ml
FS0102	Fehlings Solution No. 2	1L
FS01025	Fehlings Solution No. 2	2.5L
FEAL11	Indicator Solution Ferric Alum	1L
1037702	European Pharmacopoeia Reagent Ferric Ammonium Sulphate R2	1L
PFS1	Indicator Solution Ferroin Indicator	100ml
FEI0011	Ferroin Indicator, 0.01 Molar	1L
FEI00251	Ferroin Indicator, 0.025 Molar	1L
TB04F	Indicator Thymol Blue Alcoholic Solution 0.04%	500ml
TB08F	Indicator Thymol Blue, 0.08% (w/v) in Methanol	1L

## Indicator Solutions

Product No.	Description	Pack Size
INDCA05	Indicator Indigo Carmine	500ml
FEA25	Indicator Solution Iron Alum (Volhard)	250ml
MGI00505	Indicator Malachite Green, 0.05% (w/v) Aqueous Solution	500ml
MBTHI00505	MBTH Indicator, 0.05%	500ml
MBTHI0505	MBTH Indicator, 0.5% (w/v) Aqueous Solution	500ml
MCP00405	Indicator m-Cresol Purple, 0.04% (w/v) Aqueous	500ml
MCP0105	Indicator m-Cresol Purple, 0.1% (w/v) Aqueous	500ml
MCP05	Indicator m-Cresol Purple, 0.4%	500ml
MTPSI01	Indicator Metalphthalein-Screened RS	100ml
MOXCI05	Indicator Methyl Orange - Xylene Cyanol Indicator Solution	500ml
MTR050125	Indicator Methyl Orange 0.1%	125ml
MTR05025	Indicator Methyl Orange Alcoholic Solution 0.1%	250ml
M004F	Indicator Methyl Orange 0.04%	500ml
MPRIPA1505	Indicator Methyl Purple, in dilute IPA (15% v/v)	500ml
MTR060125	Indicator Methyl Red 0.1%	125ml
MTR06025	Indicator Methyl Red Alcoholic Solution 0.1%	250ml
1055102	Methyl Red Indicator Solution 0.02%	100ml
MTBLU0050250	Indicator Methylene Blue, 0.05%	250ml
MTBLU010250	Indicator Methylene Blue, 0.1%	250ml
MTBLU10250	Indicator Methylene Blue 1%	250ml
PR045	Indicator Phenol Red 0.04% Solution	500ml
PR105	Indicator Phenol Red 0.1% (w/v) Aqueous Solution	500ml
PR505	Indicator Phenol Red 0.5% (w/v) Aqueous Solution	500ml
PR1005	Indicator Phenol Red 1% (w/v) Aqueous Solution	500ml
1063601	Phenol Red Indicator Solution	100ml
IPT01J	Indicator Phenolphthalein 0.1%	100ml
IPT01D	Indicator Phenolphthalein 0.1%	250ml
IPT01H	Indicator Phenolphthalein 0.1%	500ml
IPT01F	Indicator Phenolphthalein 0.1%	1L
IPT02H	Indicator Phenolphthalein 0.2%	500ml
IPT05H	Indicator Phenolphthalein 0.5%	500ml
IPT05F	Indicator Phenolphthalein Alcoholic Solution 0.5%	1L
IPT05W	Indicator Phenolphthalein Alcoholic Solution 0.5%	2.5L
IPT10125	Indicator Phenolphthalein 1%	125ml
IPT1025	Indicator Phenolphthalein 1%	250ml
IPT10H	Indicator Phenolphthalein 1%	500ml
IPT10F	Indicator Phenolphthalein 1%	1L
IPT10F-D	Indicator Phenolphthalein 1% (in IMS and HDPE bottle)	1L
IPT10W	Indicator Phenolphthalein Alcoholic Solution 1.0%	2.5L
IPT201	Indicator Solution Phenolphthalein 2% in Ethanol	1L
IPT205	Indicator Solution Phenolphthalein 2% in Ethanol	5L

Product No.	Description	Pack Size
IPT2025	Indicator Solution Phenolphthalein 2% in Ethanol	25L
IPT16W	Indicator Phenolphthalein 1.6%	2.5L
PCS5	Indicator Solution Potassium Chromate 5%	500ml
MOS05	Indicator Screened Methyl Orange Alcoholic Solution 0.1%	500ml
ST105	Starch Solution 1%	500ml
ST1001	Starch Solution 1%	1L
ST205	Starch Indicator 2%	500ml
ST0055	Starch Indicator, 0.05% (w/v)	500ml
ST0101	Starch Indicator 0.1%	1L
ST0205	Starch Indicator, 0.2% (w/v) Aqueous Solution	500ml
ST0255	Starch Indicator, 0.25% (w/v) Aqueous Solution	500ml
ST0305	Starch Indicator, 0.3% (w/v)	500ml
ST0505	Starch Indicator 0.5% (w/v)	500ml
ST0505P	Starch Indicator, with 0.5% Potassium Iodide	500ml
ST505P	Starch Indicator, with 5% Potassium Iodide	500ml
SO0405	Indicator Sulfo Orange, 0.04%	500ml
SO405	Indicator Sulfo Orange, 0.4%	500ml
SO0105	Indicator Sulfo Orange, 0.1% (w/v) (Tropaeolin O) Aqueous Solution	500ml
1090701	Thymolphthalein 0.05% Indicator Solution	100ml
UN1005	Universal Indicator Solution	50 mL
UN101	Universal Indicator Solution	100ml
UN105	Universal Indicator Solution	500ml
UN10025	Universal Indicator Solution	2.5L
UNB1010	Universal Indicator Solution	10L
UN1025	Universal Indicator Solution	25L
VANG5H	Van Gieson Stain 500ml	500ml
TAIND0250	TA Indicator - Phenolphthalein Free	250ml
TAIND0500	TA Indicator - Phenolphthalein Free	500ml
TAIND1000	TA Indicator - Phenolphthalein Free	1L
TASHI010	Indicator Solution for Mixed Sulphur	100ml
TASHI025	Tashiro Indicator (Methyl Red/Methylene Blue in Ethanol)	250ml
TASHI050H	Tashiro Indicator (Methyl Red/Methylene Blue in Ethanol)	500ml
TASHI100F	Tashiro Indicator (Methyl Red/Methylene Blue in Ethanol)	1L
THPH010125	Thymolphthalein Indicator 0.1%	125ml
TECMXI01	Tecator Mixed Indicator	100ml
ADW	Indicator Acid Decolouriser	2.5L
KR01	Indicator Kovac's Indole Reagent	100ml
PAN0125	PAN Indicator 0.1%	125ml

# Total Acid Number/ Total Base Number Standards & Reagents



The products listed in this section for Total Acid Number (TAN) and Total Base Number (TBN) are used in procedures to test and control the acidic or basic constituents in petroleum, lubricants, biodiesel or blends of biodiesel.

## Total Acid Number (TAN)

The procedures for the measurement of this parameter (laid down in various ASTM methods) vary depending on sample solubility in materials such as Toluene or Propan-2-ol, the dissociation constants of the acids in water, or the nature of the test sample. Therefore, the methodology used for lubricants maybe be different from the methodology used for biodiesel. In new and used oils the constituents that maybe considered to have acidic characteristics include organic acids, inorganic acids, esters, phenolic compounds, lactones, resins, salts of heavy metals, acid salts of polybasic acids, and additives such as inhibitors and detergents.

The test method is used to indicate relative changes that occur in oil during use under oxidising conditions regardless of the colour or other properties of the oil. The method is also used as a guide in the quality control of lubricating oil formulations or as a measure of lubricant degradation. It is not intended to measure an absolute acidic property that can be used to predict performance of oil under working conditions. There is no known relationship between corrosion of bearings and acid number. The methodology of performing the test involves dissolving the sample in a titration solvent and titrating potentiometrically as an acid/base titration with alcoholic potassium hydroxide.

## Total Base Number (TBN)

The constituents of oils and lubricants that may be considered to have basic characteristics include organic bases, inorganic bases, amino compounds, salts of weak acids (soaps), basic salts of polyacidic bases and salts of heavy metals. The test methodology involves dissolving the sample in an anhydrous mixture of chlorobenzene/glacial acetic acid and titrating potentiometrically with a solution of perchloric acid in glacial acetic acid. Both new and used petroleum products can contain basic constituents that are present as additives. The test is sometimes used as a measure of lubricant degradation but any condemning limits based on the test must be established on an individual basis.

The following list of products are a selection of Solvents, Titrants, Standards, Buffers and Electrolytes specifically formulated for the testing of TAN and TBN using ASTM methods D664 and D2896 respectively.

## Reagents, Titrants & Standards for ASTM D664: Acid Number of Petroleum Products by Potentiometric Titration

Product No.	Description	Pack Size
EFSLIET	Electrolyte: 1M Lithium Chloride in Ethanol	100ml
104025	Buffer pH 4.00 - 25°C	1L
107025	Buffer pH 7.00 - 25°C	1L
111025	Buffer pH 11.00 - 25°C	1L
PH20101	0.1M Hydrochloric Acid in propan-2-ol	1L
PH201005	0.1M Hydrochloric Acid in propan-2-ol	500ml
KOH01F	0.1M Potassium Hydroxide in propan-2-ol	1L
KOH01H	0.1M Potassium Hydroxide in propan-2-ol	500ml
KOH001F	0.01M Potassium Hydroxide in propan-2-ol	1L
KOH001H	0.01M Potassium Hydroxide in propan-2-ol	500ml
TANSOLVF	TAN Titration Solvent. Per litre: 500mls toluene, 495mls propan-2-ol, 5mls water	1L
TANSOLVW	TAN Titration Solvent. Per litre: 500mls toluene, 495mls propan-2-ol, 5mls water	2.5L
TANSOLVF10	TAN Titration Solvent. Per litre: 500mls toluene, 495mls propan-2-ol, 5mls water	10L
TANSOLVF20	TAN Titration Solvent. Per litre: 500mls toluene, 495mls propan-2-ol, 5mls water	20L

## Reagents, Titrants & Standards for ASTM D2896: Base Number of Petroleum Products by Potentiometric Titration

Product No.	Description	Pack Size
P2010F	0.1M Perchloric Acid in glacial acetic acid	1L
P2010H	0.1M Perchloric Acid in glacial acetic acid	500ml
EFSNACLO4	Electrolyte: saturated sodium perchlorate in glacial acetic acid	100ml
TBNSOLV1F	TBN Titration solvent - 2:1 chlorobenzene and glacial acetic acid	1L
TBNSOLV1W	TBN Titration solvent - 2:1 chlorobenzene and glacial acetic acid	2.5L
TBNSOLV1F10	TBN Titration solvent - 2:1 chlorobenzene and glacial acetic acid	10L
TBNSOLV1F20	TBN Titration solvent - 2:1 chlorobenzene and glacial acetic acid	20L
NAAC010F	0.1N Sodium Acetate in glacial acetic acid	1L
104025	Buffer pH 4.00 - 25°C	1L
107025	Buffer pH 7.00 - 25°C	1L
111025	Buffer pH 11.00 - 25°C	1L
TBNSOLV2F	TBN Titration solvent - 0.4M tetraethylammonium bromide in ethylene glycol	1L
TBNSOLV2W	TBN Titration solvent - 0.4M tetraethylammonium bromide in ethylene glycol	2.5L

## TAN Standards: All in a Synthetic Base Oil Matrix

Product No.	Description	Pack Size
RETAN0.5	TAN standard: 0.5 mg/g KOH	50g
RETAN01	TAN standard: 0.1mg/g KOH	50g
RETAN01R	TAN standard: 0.1mg/g KOH	100g
RETAN01S	TAN standard: 0.1mg/g KOH	3 x 100g
RETAN05	TAN standard: 0.5 mg/g KOH	50g
RETAN05R	TAN standard: 0.5 mg/g KOH	100g
RETAN05S	TAN standard: 0.5 mg/g KOH	3 x 100g
RETAN10	TAN standard: 1.0 mg/g KOH	50g
RETAN10R	TAN standard: 1.0 mg/g KOH	100g
RETAN10S	TAN standard: 1.0 mg/g KOH	3 x 100g
RETAN15	TAN standard, 1.5mg/g KOH	50g
RETAN15R	TAN standard: 1.5 mg/g KOH	100g
RETAN15S	TAN standard: 1.5 mg/g KOH	3 x 100g
RETAN20	TAN standard: 2.0mg/g KOH	50g
RETAN20R	TAN standard: 2.0 mg/g KOH	100g
RETAN20S	TAN standard: 2.0 mg/g KOH	3 x 100g
RETAN25	TAN standard: 2.5mg/g KOH	50g
RETAN25R	TAN standard: 2.5 mg/g KOH	100g
RETAN25S	TAN standard: 2.5 mg/g KOH	3 x 100g
RETAN30	TAN standard: 3.0mg/g KOH	50g
RETAN30R	TAN standard: 3.0 mg/g KOH	100g
RETAN30S	TAN standard: 3.0 mg/g KOH	3 x 100g
RETAN45	TAN standard: 4.5 mg/g KOH	50g
RETAN45R	TAN standard: 4.5 mg/g KOH	100g
RETAN45S	TAN standard: 4.5 mg/g KOH	3 x 100g



## TBN Standards: All in a Synthetic Base Oil Matrix

Product No.	Description	Pack Size
RETBN1	TBN Standard: 1.0 mg/g KOH	50g
RETBN1R	TBN Standard: 1.0 mg/g KOH	100g
RETBN1S	TBN Standard: 1.0 mg/g KOH	3 x 100g
RETBN3	TBN Standard: 3.0 mg/g KOH	50g
RETBN3R	TBN Standard: 3.0 mg/g KOH	100g
RETBN3S	TBN Standard: 3.0 mg/g KOH	3 x 100g
RETBN6	TBN Standard: 6.0 mg/g KOH	50g
RETBN6R	TBN Standard: 6.0 mg/g KOH	100g
RETBN6S	TBN Standard: 6.0 mg/g KOH	3 x 100g
RETBN10	TBN Standard: 10 mg/g KOH	50g
RETBN10R	TBN Standard: 10 mg/g KOH	100g
RETBN10S	TBN Standard: 10 mg/g KOH	3 x 100g
RETBN15	TBN Standard: 15 mg/g KOH	50g
RETBN15R	TBN Standard: 15 mg/g KOH	100g
RETBN15S	TBN Standard: 15 mg/g KOH	3 x 100g
RETBN30	TBN Standard: 30 mg/g KOH	50g
RETBN30R	TBN Standard: 30 mg/g KOH	100g
RETBN30S	TBN Standard: 30 mg/g KOH	3 x 100g
RETBN40	TBN Standard: 40 mg/g KOH	50g
RETBN40R	TBN Standard: 40 mg/g KOH	100g
RETBN40S	TBN Standard: 40 mg/g KOH	3 x 100g
RETBN70	TBN Standard: 70 mg/g KOH	50g
RETBN70R	TBN Standard: 70 mg/g KOH	100g
RETBN70S	TBN Standard: 70 mg/g KOH	3 x 100g

# Colour Standards



## Summary of Features & Benefits:

### Commercial Benefits

- For use as calibration and/or quality control standards
- Presented in high quality tamper evident bottles
- Customised standards available
- Various pack sizes available
- Ready to Use

### Technical Benefits

- Produced in accordance with ASTM (D1500, D6045, D1209) APHA, ACS, EP & USP methods
- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online

Reagecon manufactures the full range of ASTM, Saybolt, Platinum-Cobalt, Gardner, European Pharmacopeia and United States Pharmacopeia Colour Standards for use with ASTM, APHA, ACS, European and United States Pharmacopeia standard methods. The ASTM standard methods include D1500, D6045 and D1209. The products can be used to calibrate, control, qualify and validate colour measurement instruments.

### The products range from:

- ASTM Colour Standard Sample A05- A7
- Saybolt Colour Standards S+30 to S-15
- Platinum-Cobalt Scale No. 0 - No. 1000
- Gardner Colour Standards GARD02-GARD18
- European Pharmacopeia Standards (Opalescence, Primary and Standard Solutions)

These products are prepared gravimetrically on a weight/weight basis. Both solute and solvent are weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO 17025 accreditation for calibration of laboratory balances (INAB Ref:265C). The resulting Balance Certificate of Calibration is issued in accordance with the requirements of ISO/IEC 17025. The concentration of each standard is verified using a high performance top of the range calibrated spectrophotometer. The calibration of the spectrophotometer is controlled using high purity ISO Guide 34 accredited spectrophotometric standards.



## ASTM Colour Standards

Description	Product No. 100ml	Product No. 500ml
ASTM Colour Standard less than 0.5	ASTMA051	ASTMA055
ASTM Colour Standard A1	ASTMA101	ASTMA105
ASTM Colour Standard A3	ASTMA301	ASTMA305
ASTM Colour Standard A5	ASTMA501	ASTMA505
ASTM Colour Standard A7	ASTMA701	ASTMA705

## Saybolt Colour Standards

Description	Product No. 100ml	Product No. 500ml
Colour Standard Saybolt +30	SAYP301	SAYP305
Colour Standard Saybolt +25	SAYP251	SAYP255
Colour Standard Saybolt +19	SAYP191	SAYP195
Colour Standard Saybolt +15	SAYP151	SAYP155
Colour Standard Saybolt +12	SAYP121	SAYP125
Colour Standard Saybolt +0	SAYP01	SAYP05
Colour Standard Saybolt -10	SAYN101	SAYN105
Colour Standard Saybolt -15	SAYN151	SAYN155

## Standard Solutions

Product No.	Description	Pack Size
EP703	European Pharmacopoeia Standard Solution B (Brown)	100ml
EP704	European Pharmacopoeia Standard Solution BY (Brownish Yellow)	100ml
EP705	European Pharmacopoeia Standard Solution GY (Greenish Yellow)	100ml
EP706	European Pharmacopoeia Standard Solution Y (Yellow)	100ml
EP707	European Pharmacopoeia Standard Solution R (Red)	100ml

## Reagents as Outlined in Chapter 2 of European Pharmacopoeia

Product No.	Description	Pack Size
EPPOS01	European Pharmacopoeia Reagent Primary Opalescence Suspension	100ml

## Platinum-Cobalt Colour Standards\* (Hazen)

Product No.	Description	Pack Size
HAZ0	Colour Standard Platinum Cobalt 0 (0 Hazen units)	1L
HAZ5	Colour Standard Platinum Cobalt 5 (5 Hazen units)	1L
HAZ10	Colour Standard Platinum Cobalt 10 (10 Hazen units)	1L
HAZ15	Colour Standard Platinum Cobalt 15 (15 Hazen units)	1L
HAZ20	Colour Standard Platinum Cobalt 20 (20 Hazen units)	1L
HAZ25	Colour Standard Platinum Cobalt 25 (25 Hazen units)	1L
HAZ30	Colour Standard Platinum Cobalt 30 (30 Hazen units)	1L
HAZ40	Colour Standard Platinum 40 (40 Hazen units)	1L
HAZ50	Colour Standard Platinum Cobalt 50 (50 Hazen units)	1L
HAZ505	Colour Standard Platinum Cobalt 50 (50 Hazen units)	5L
HAZ80	Colour Standard Platinum Cobalt 80 (80 Hazen units)	1L
HAZ100	Colour Standard Platinum Cobalt 100 (100 Hazen units)	1L
HAZ1005	Colour Standard Platinum Cobalt 100 (100 Hazen units)	5L
HAZ150	Colour Standard Platinum Cobalt 150 (150 Hazen units)	1L
HAZ1505	Colour Standard Platinum Cobalt 150 (150 Hazen units)	5L
HAZ200	Colour Standard Platinum Cobalt 200 (200 Hazen units)	1L
HAZ2005	Colour Standard Platinum Cobalt 200 (200 Hazen units)	5L
HAZ250	Colour Standard Platinum Cobalt 250 (250 Hazen units)	1L
HAZ400	Colour Standard Platinum Cobalt 400 (400 Hazen units)	1L
HAZ500-500ml	Colour Standard Platinum Cobalt 500 (500 Hazen units)	500ml
HAZ500	Colour Standard Platinum Cobalt 500 (500 Hazen units)	1L
HAZ5005	Colour Standard Platinum Cobalt 500 (500 Hazen units)	5L
HAZ1000	Colour Standard Platinum Cobalt 1000 (1000 Hazen units)	1L

\* Standards with intermediate Platinum-Cobalt values are available on request

## USP (631) Colour Standard

Product No.	Description	Pack Size
USPCS101	Colour Standard USP (631) Cupric Sulfate CS	100ml
USPCS102	Colour Standard USP (631) Ferric Chloride CS	100ml
USPCS103	Colour Standard USP (631) Cobaltous Chloride CS	100ml

## Gardner Colour Standards\*\*

Product No.	Description	Pack Size
GARD011	Colour Standard Gardner 1	100ml
GARD021	Colour Standard Gardner 2	100ml
GARD02	Colour Standard Gardner 2	500ml
GARD031	Colour Standard Gardner 3	100ml
GARD041	Colour Standard Gardner 4	100ml
GARD04	Colour Standard Gardner 4	500ml
GARD051	Colour Standard Gardner 5	100ml
GARD061	Colour Standard Gardner 6	100ml
GARD06	Colour Standard Gardner 6	500ml
GARD071	Colour Standard Gardner 7	100ml
GARD081	Colour Standard Gardner 8	100ml
GARD08	Colour Standard Gardner 8	500ml
GARD091	Colour Standard Gardner 9	100ml
GARD101	Colour Standard Gardner 10	100ml
GARD10	Colour Standard Gardner 10	500ml
GARD111	Colour Standard Gardner 11	100ml
GARD121	Colour Standard Gardner 12	100ml
GARD12	Colour Standard Gardner 12	500ml
GARD131	Colour Standard Gardner 13	100ml
GARD141	Colour Standard Gardner 14	100ml
GARD14	Colour Standard Gardner 14	500ml
GARD151	Colour Standard Gardner 15	100ml
GARD161	Colour Standard Gardner 16	100ml
GARD16	Colour Standard Gardner 16	500ml
GARD171	Colour Standard Gardner 17	100ml
GARD181	Colour Standard Gardner 18	100ml

\*\* Standards with intermediate Gardner values are available on request

## Colouration - Primary Solutions

Product No.	Description	Pack Size
EPBS01	European Pharmacopoeia Reagent Coloration - Primary Solution Blue	100ml
EPRS01	European Pharmacopoeia Reagent Coloration - Primary Solution Red	100ml
EPYS01	European Pharmacopoeia Reagent Coloration - Primary Solution Yellow	100ml

# Spectrophotometry Standards



## Summary of Features & Benefits:

### Commercial Benefits

- Can be used with all UV-VIS Spectrophotometers
- Permanently sealed cuvettes available
- No Waste
- Ready to Use
- Standards also available in 100ml amber bottles - economy of scale

### Technical Benefits

- National Institute of Standards and Technology (NIST) Traceable
- Produced with salts sourced directly from NIST where applicable
- All standards certified at multiple slit widths
- Certified measurement uncertainties
- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online

## The product range includes:

- Linearity Standards
- Wavelength Standards
- Stray Light Standards
- Bandwidth Standards

These products are prepared gravimetrically on a weight/weight basis. Both solute and solvent are weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO 17025 accreditation for calibration of laboratory balances (INAB Ref:265C). The resulting Balance Certificate of Calibration is issued in accordance with the requirements of ISO/IEC 17025. The certified values of each standard are verified using a high performance spectrophotometer calibrated with NIST traceable, ISO Guide 34 Certified Standards.



## Linearity Standards @ 235, 257, 313 & 350nm

Product No.	Description	Concentration	Pack Size
RSPEC1022	Potassium Dichromate Linearity Set With Blank in Sealed Cuvettes	0mg/l, 20mg/l, 40mg/l, 60mg/l, 80mg/l, 100mg/l	6 x Permanently sealed UV Cuvettes
RSPEC0022	Potassium Dichromate Absorbance/ Transmission Standard	20mg/l	2 x Permanently Sealed UV Cuvettes (including blank)
RSPEC0023	Potassium Dichromate Absorbance/ Transmission Standard	40mg/l	2 x Permanently Sealed UV Cuvettes (including blank)
RSPEC0024	Potassium Dichromate Absorbance/ Transmission Standard	60mg/l	2 x Permanently Sealed UV Cuvettes (including blank)
RSPEC0025	Potassium Dichromate Absorbance/ Transmission Standard	80mg/l	2 x Permanently Sealed UV Cuvettes
RSPEC0026	Potassium Dichromate Absorbance/ Transmission Standard	100mg/l	2 x Permanently Sealed UV Cuvettes (including blank)
RSPEC0051	Spectrophotometry Blank 0.001M Perchloric Acid	0mg/l	1 x Permanently Sealed UV Cuvettes
RSPEC00511	Blank - 0.001M Perchloric Acid	0mg/l	100ml Amber Bottle
RSPEC00221	Potassium Dichromate Absorbance/ Transmission Standard	20mg/l	100ml Amber Bottle
RSPEC00231	Potassium Dichromate Absorbance/ Transmission Standard	40mg/l	100ml Amber Bottle
RSPEC00241	Potassium Dichromate Absorbance/ Transmission Standard	60mg/l	100ml Amber Bottle
RSPEC00251	Potassium Dichromate Absorbance/ Transmission Standard	80mg/l	100ml Amber Bottle
RSPEC00261	Potassium Dichromate Absorbance/ Transmission Standard	100mg/l	100ml Amber Bottle
RSPEC0018	Spectrophotometry Potassium Dichromate Absorbance/Transmission Standard - 10mg/l	10mg/l	2 x Permanently sealed UV Cuvettes (including blank)
RSPEC0019	Spectrophotometry Potassium Dichromate Absorbance/ Transmission Standard - 15mg/l	15mg/l	2 x Permanently sealed UV Cuvettes (including blank)
RSPEC0020	Spectrophotometry Potassium Dichromate Absorbance/ Transmission Standard - 50mg/l	50mg/l	2 x Permanently sealed UV Cuvettes (including blank)
RSPEC-EP0060	Spectrophotometry Potassium Dichromate Absorbance/ Transmission Standard 60mg/l (Ph.Eur)	60mg/l	2 x Permanently sealed UV Cuvettes (including blank)
RSPEC-EP00601	Spectrophotometry Potassium Dichromate Absorbance/ Transmission Standard 60mg/l (Ph.Eur)	60mg/l	100ml Amber Bottle
RSPEC-EP0061	Spectrophotometry Potassium Dichromate Absorbance/Transmission Standard 600mg/l (Ph.Eur)	600mg/l	2 x Permanently sealed UV Cuvettes (including blank)

Product No.	Description	Concentration	Pack Size
RSPEC-EPO0611	Spectrophotometry Potassium Dichromate Absorbance/Transmission Standard 600mg/l (Ph.Eur)	600mg/l	100ml Amber Bottle
RSPEC-EPO0751	Spectrophotometry Absorbance/Transmission Standard Blank - 0.005M Sulfuric Acid (Ph.Eur)		100ml Amber Bottle

## Linearity Standards @ 213 & 261nm

Product No.	Description	Concentration	Pack Size
RSPEC1027	Nicotinic Acid Linearity Set With Blank Linearity Set With Blank in Sealed Cuvettes	0mg/l, 6mg/l, 12mg/l, 18mg/l, 24mg/l	5 x Permanently sealed UV Cuvettes (including blank)
RSPEC0027	Nicotinic Acid Absorbance/Transmission Standard	6mg/l	2 x Permanently Sealed UV Cuvettes (including blank)
RSPEC0028	Nicotinic Acid Absorbance/Transmission Standard	12mg/l	2x Permanently Sealed UV Cuvettes (including blank)
RSPEC0029	Nicotinic Acid Absorbance/Transmission Standard	18mg/l	2 x Permanently Sealed UV Cuvettes (including blank)
RSPEC0030	Nicotinic Acid Absorbance/Transmission Standard	24mg/l	2 x Permanently Sealed UV Cuvette (including blank)
RSPEC0052	Spectrophotometry Blank 0.1M Hydrochloric Acid	0mg/l	1 x Permanently Sealed UV Cuvette
RSPEC00521	Blank -- 0.1M Hydrochloric Acid	0mg/l	100ml Amber Bottle
RSPEC00271	Nicotinic Acid Absorbance/Transmission Standard	6mg/l	100ml Amber Bottle
RSPEC00281	Nicotinic Acid Absorbance/Transmission Standard	12mg/l	100ml Amber Bottle
RSPEC00291	Nicotinic Acid Absorbance/Transmission Standard	18mg/l	100ml Amber Bottle
RSPEC00301	Nicotinic Acid Absorbance/Transmission Standard	24mg/l	100ml Amber Bottle

**Reagecon**  
Certificate of Analysis

**PRODUCT:** Hexavalent Chrome Solution UV and Visible Wavelength Standard 240nm to 640nm  
**PRODUCT NO.:** RSPEC00117  
**LOT NO.:** RSPEC111D31  
**DATE OF TEST:** 02<sup>nd</sup> April 2013  
**EXPIRY DATE:** 28<sup>th</sup> April 2015

	240.72	250.88	277.93	343.58	360.98	375.21	415.88	451.83	467.63	484.98	535.53	640.28
<b>0.20</b>	240.81	249.62	278.06	345.66	361.26	385.36	416.02	452.01	467.81	485.21	536.51	640.36
<b>0.40</b>	240.92	249.72	278.17	345.43	361.17	385.52	416.07	451.92	467.72	485.17	536.52	640.25
<b>1.00</b>	241.06	249.81	278.16	345.51	361.26	385.71	416.21	451.86	467.81	485.26	536.66	640.56
<b>2.00</b>	241.11	249.02	278.16	345.56	360.16	385.96	416.71	457.21	467.91	485.71	536.96	640.81

**TEST METHOD:**  
The result reported above was determined by analysis of a sample of this lot since at time of manufacture. The wavelength values of the standard was determined using a high performance calibrated, UV Spectrometer according to TRU/NAVI. This test method provides traceability to High purity ISO Guide 34 Certified Reference Materials and to National Institute of Standards and Technology (NIST).

This certificate relates solely to the lot number given above. The uncertainty of measurement has been calculated and is expressed as  $\pm 0.502\text{nm}$  at 95% confidence level, i.e. coverage factor k=2.

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**TRACEABILITY IN THE PRODUCTION OF THIS STANDARD:**  
This product was prepared gravimetrically on a weight/weight basis. Both solute and solvent were weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO 17025 accreditation for calibration of non-automatic weighing machines (NAC). The resulting Balance Certificate of Calibration was issued in accordance with the requirements of ISO/IEC 17025. The balance was calibrated under monitored environmental conditions and atmospheric pressure. Tests were performed for capacity, readability, repeatability, accuracy and linearity.

**BALANCE ID No.:** RDD06  
**CALIBRATION DATE OF BALANCE:** 28<sup>th</sup> September 2012  
**CALIBRATION AUTHORITY OF BALANCE:** Reagecon Diagnostics Ltd, ISO17025 Accreditation No. 263C

**WEIGHTS No.:** RFS12  
**CALIBRATION DATE OF WEIGHTS:** 19<sup>th</sup> May 2012  
**CALIBRATION AUTHORITY OF WEIGHTS:** Complete Calibrations, ISO17025 Accreditation No. 282C

**WEIGHTS No.:** RFS15  
**CALIBRATION DATE OF WEIGHTS:** 21<sup>st</sup> October 2011  
**CALIBRATION AUTHORITY OF WEIGHTS:** European Instruments (UK) AS No. 08391

**INSTRUCTIONS FOR USE:**  
 • Run against an AS Blank  
 • Shake well before use

**Date:** 02<sup>nd</sup> April 2013

This certificate must not be reproduced except in full.

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## Wavelength Standards (Certified at 0.1nm, 0.2nm, 0.5nm, 1.0nm & 2.0nm slit widths)

Product No.	Description	Nominal Peak Wavelengths (0.2nm Slit Width)	Pack Size
RSPEC0001	Didymium Solution UV and Visible Wavelength Standard 298nm to 865nm	298nm, 328.8nm, 353.8nm, 443.8nm, 468.5nm, 481.3nm, 511.5nm, 521.6nm, 574.8nm, 731.4nm, 739.6nm, 794nm, 801.1nm, 865nm	1 x Permanently Sealed UV Cuvette
RSPEC0008	Samarium Solution UV and Visible Wavelength Standard 235nm to 480nm	235nm, 278.8nm, 290.1nm, 305.2nm, 317.4nm, 331.6nm, 344.4nm, 362.2nm, 374.1nm, 390.4nm, 401.1nm, 415.3nm, 463.4nm, 478.6nm	1 x Permanently Sealed UV Cuvette
RSPEC0015	Holmium Oxide Solution UV and Visible Wavelength Standard 240nm to 640nm	240.8nm, 249.6nm, 278nm, 286.8nm, 333nm, 345.4nm, 361.1nm, 385.2nm, 416nm, 451.8nm, 536.3nm, 640.2nm	1 x Permanently Sealed UV Cuvette
RSPEC00011	Didymium Solution UV and Visible Wavelength Standard 298nm to 865nm	298nm, 328.8nm, 353.8nm, 443.8nm, 468.5nm, 481.3nm, 511.5nm, 521.6nm, 574.8nm, 731.4nm, 739.6nm, 794nm, 801.1nm, 865nm	100ml Amber Bottle
RSPEC00081	Samarium Solution UV and Visible Wavelength Standard 235nm to 480nm	235nm, 278.8nm, 290.1nm, 305.2nm, 317.4nm, 331.6nm, 344.4nm, 362.2nm, 374.1nm, 390.4nm, 401.1nm, 415.3nm, 463.4nm, 478.6nm	100ml Amber Bottle
RSPEC00151	Holmium Oxide Solution UV and Visible Wavelength Standard 240nm to 640nm	240.8nm, 249.6nm, 278nm, 286.8nm, 333nm, 345.4nm, 361.1nm, 385.2nm, 416nm, 451.8nm, 467.6nm, 485nm, 536.3nm, 640.2nm	100ml Amber Bottle
RSPEC-EP0064	Holmium Oxide Solution UV and Visible Wavelength Standard 240nm to 640nm (Ph. Eur)	241.15nm, 287.15nm, 361.5nm, 486nm, 536.3nm	1 x Permanently Sealed UV Cuvette

Product No.	Description	Nominal Peak Wavelengths (0.2nm Slit Width)	Pack Size
RSPEC-EPO0641	Holmium Oxide Solution UV and Visible Wavelength Standard 240nm to 640nm (Ph. Eur)	241.15nm, 287.15nm, 361.5nm, 486nm, 536.3nm	100ml Amber Bottle

## Stray Light Standards

Product No.	Description	Cut Off	Packed In
RSPEC0036	Stray Light Inorganic Cut-off filter - Sodium Nitrite	390nm	2 x Permanently sealed UV Cuvettes (including blank)
RSPEC0037	Stray Light Inorganic Cut-off filter - Potassium Iodide	260nm	2 x Permanently Sealed UV Cuvettes (including blank)
RSPEC0038	Stray Light Inorganic Cut-off filter - Sodium Iodide	260nm	2 x Permanently Sealed UV Cuvettes (including blank)
RSPEC0039	Stray Light Inorganic Cut-off filter - Lithium Carbonate	227nm	2 x Permanently Sealed UV Cuvettes (including blank)
RSPEC0040	Stray Light Inorganic Cut-off filter - Sodium Chloride	205nm	2 x Permanently Sealed UV Cuvettes (including blank)
RSPEC0041	Stray Light Inorganic Cut-off filter - Potassium Chloride	200nm	2 x Permanently Sealed UV Cuvettes (including blank)
RSPEC00361	Stray Light Inorganic Cut-off filter - Sodium Nitrite	390nm	100ml Amber Bottle
RSPEC00371	Stray Light Inorganic Cut-off filter - Potassium Iodide	260nm	100ml Amber Bottle
RSPEC00381	Stray Light Inorganic Cut-off filter - Sodium Iodide	260nm	100ml Amber Bottle
RSPEC00391	Stray Light Inorganic Cut-off filter - Lithium Carbonate	227nm	100ml Amber Bottle
RSPEC00401	Stray Light Inorganic Cut-off filter - Sodium Chloride	205nm	100ml Amber Bottle
RSPEC00411	Stray Light Inorganic Cut-off filter - Potassium chloride	200nm	100ml Amber Bottle
RSPEC00541	Spectrophotometry Stray Light Blank Aqueous		100ml Amber Bottle

Product No.	Description	Cut Off	Packed In
RSPEC-EPO062	Spectrophotometry Stray Light Inorganic Cut-off filter - Potassium Chloride with Blank (Ph. Eur.)	198nm	2 x Permanently Sealed UV Cuvettes (including blank)
RSPEC-EPO0621	Spectrophotometry Stray Light Inorganic Cut-off filter - Potassium Chloride with Blank (Ph. Eur.)	198nm	100ml Amber Bottle
RSPEC-EPO0741	Spectrophotometry Stray Light Blank Aqueous (Ph.Eur)		100ml Amber Bottle

## Bandwidth Standard

Product No.	Description	Certified Value	Packed In
RSPEC1031	Bandwidth Standard - Toluene in Hexane	Ratio of 268.7nm peak to 266.8nm trough	2 x Permanently sealed UV Cuvettes (including blank)
RSPEC00311	Bandwidth Standard - Toluene in Hexane	Ratio of 268.7nm peak to 266.8nm trough	100ml Amber Bottle
RSPEC00531	Bandwidth Standard - Blank	Ratio of 268.7nm peak to 266.8nm trough	100ml Amber Bottle
RSPEC-EPO0631	Bandwidth Standard - Toluene in Hexane (Ph. Eur)	Ratio of 268.7nm peak to 266.8nm trough	100ml Amber Bottle
RSPEC-EPO0731	Bandwidth Standard - Blank (Ph.Eur)	Ratio of 268.7nm peak to 266.8nm trough	100ml Amber Bottle
RSPEC-EPO063	Bandwidth Standard - Toluene in Hexane with Blank (Ph. Eur.)	Ratio of 268.7nm peak to 266.8nm trough	2 x Permanently sealed UV Cuvettes (including blank)

## Resolution Standards

Product No.	Description	Information	Pack Size
RSPEC-EPR001	Resolution Standard - Toluene in Methanol with Blank (Ph. Eur.)	For use in second-order derivative spectroscopy as specified by the Ph. Eur.	2 x Permanently sealed UV Cuvettes (including blank)
RSPEC-EPR002	Resolution Standard - Toluene in Methanol	For use in second-order derivative spectroscopy as specified by the Ph. Eur.	100ml Amber Bottle
RSPEC-EPR003	Resolution Standard - Methanol blank (Ph. Eur.)	For use in second-order derivative spectroscopy as specified by the Ph. Eur.	100ml Amber Bottle

# Melting Point Standards



## Summary of Features & Benefits:

### Commercial Benefits

- Extensive range
- Can be used with any melting point apparatus
- Presented in high quality glass bottles
- Customised Melting Point Standards also available
- Ready to Use

### Technical Benefits

- Uncertainty of measurement up to  $\pm 0.3^{\circ}\text{C}$
- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online

The product range includes Benzophenone, Melting Point  $+47$  to  $+49^{\circ}\text{C}$  To Anthraquinone, Melting Point  $+283$  to  $+286^{\circ}\text{C}$ . These products are prepared using the highest purity raw materials. Melting points are determined using a high accuracy Differential Scanning Calorimeter (DSC) system that is calibrated to the ITS - 90 International Temperature Scale. Verification measurements are completed using a high specification melting point apparatus.

## Melting Point Standards

Product No.	Description	Certified Value	Packed in
RMPSET1	<b>Melting Point Standard Set</b>		3 x 1g
	Sulphanilamide	$+164$ to $+166^{\circ}\text{C}$	
	Caffeine	$+235$ to $+237^{\circ}\text{C}$	
	Vanillin	$+81$ to $+83^{\circ}\text{C}$	
RMP236	Caffeine	$+235$ to $+237^{\circ}\text{C}$	1 x 1g
RMP165	Sulphanilamide	$+164$ to $+166^{\circ}\text{C}$	1 x 1g
MPV82	Vanillin	$+81$ to $+83^{\circ}\text{C}$	1 x 0.3g
RMP082	Vanillin	$+81$ to $+83^{\circ}\text{C}$	1 x 1g
RMPSET3	<b>Melting Point Standard Set</b>		3 x 1g
	Phenacetin	$+133$ to $+135^{\circ}\text{C}$	
	Caffeine	$+235$ to $+237^{\circ}\text{C}$	
	Vanillin	$+81$ to $+83^{\circ}\text{C}$	
RMP132	Phenacetin	$+133$ to $+135^{\circ}\text{C}$	1 x 1g
RMPSET2	<b>Melting Point Standard Set</b>		3 x 1g
	Benzophenone	$+47$ to $+49^{\circ}\text{C}$	
	Benzoic Acid	$+121$ to $+123^{\circ}\text{C}$	
	Anthraquinone	$+283$ to $+286^{\circ}\text{C}$	
RMP048	Benzophenone	$+47$ to $+49^{\circ}\text{C}$	1 x 1g
RMP122	Benzoic Acid	$+121$ to $+123^{\circ}\text{C}$	1 x 1g
RMP284	Anthraquinone	$+283$ to $+286^{\circ}\text{C}$	1 x 1g
RMP053	p-Nitrotoluene	$+52$ to $+54^{\circ}\text{C}$	1 x 1g
RMP246	Carbazole	$+244$ to $+248^{\circ}\text{C}$	1 x 1g
RMP159	Salicylic Acid	$+158$ to $+160^{\circ}\text{C}$	1 x 1g

# Density Standards - Premium Range

## Summary of Features & Benefits:

### Commercial Benefits

- Extensive range (0.6407 - 3.1140)
- No toxic heavy metals used in any formulation
- Can be used with any brand or type of density measuring instrument
- Presented in a high quality tamper proof amber glass bottle
- Customised formulations available

### Technical Benefits

- High accuracy products
- Tested using a fundamental measurement technique (Bingham Pycnometer)
- All products tested in accordance with ASTM D1480 Guidelines
- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online

Reagecon manufactures an extensive range of Density Standards in accordance with ASTM D1480-12 for testing of Density or Relative Density (specific and API gravity) by Bingham Pycnometer. These materials can be used as calibration standards for density measurement by pycnometric techniques, vibrational techniques or hydrometer based techniques.

### The product range includes:

- 0.6960 - 3.1140g/ml @ 15°C
- 0.6619 - 3.1096g/ml @ 20°C
- 0.6878 - 3.1043g/ml @ 25°C
- 0.6752 - 3.0852g/ml @ 40°C
- 0.6668 - 3.0721g/ml @ 50°C
- 0.6582 - 1.0478g/ml @ 60°C
- 0.6407 - 1.0302g/ml @ 80°C

The products are prepared gravimetrically on a weight/weight basis. Both solute and solvent are weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO 17025 accreditation for calibration of laboratory balances (INAB Ref:265C). The resulting Balance Certificate of Calibration is issued in accordance with the requirements of ISO/IEC 17025. The density of each standard is established using a high performance set of fully calibrated reference pycnometers.



## Density Standards @ 15°C

Product No.	Description	Pack Size
DEN15010PY	Density Standard 0.6960g/ml @15°C	100ml
DEN15020PY	Density Standard 0.7073g/ml @15°C	100ml
DEN15030 PY	Density Standard 0.7184g/ml @15°C	100ml
DEN15040PY	Density Standard 0.7298g/ml @15°C	100ml
DEN15050PY	Density Standard 0.7411g/ml @15°C	100ml
DEN15060PY	Density Standard 0.7524g/ml @15°C	100ml
DEN15070PY	Density Standard 0.7721g/ml @15°C	100ml
DEN15080PY	Density Standard 0.7933g/ml @15°C	100ml
DEN15090PY	Density Standard 0.8168g/ml @15°C	100ml
DEN15100PY	Density Standard 0.8428g/ml @15°C	100ml
DEN15110PY	Density Standard 0.8715g/ml @15°C	100ml
DEN15120PY	Density Standard 0.9135g/ml @15°C	100ml
DEN15130PY	Density Standard 0.9514g/ml @15°C	100ml
DEN15140PY	Density Standard 1.0040g/ml @15°C	100ml
DEN15150PY	Density Standard 1.0337g/ml @15°C	100ml
DEN15160PY	Density Standard 1.0828g/ml @15°C	100ml
DEN15170PY	Density Standard 1.1661g/ml @15°C	100ml
DEN15180PY	Density Standard 1.2498g/ml @15°C	100ml
DEN15190PY	Density Standard 1.3318g/ml @15°C	100ml
DEN15200PY	Density Standard 1.4152g/ml @15°C	100ml
DEN15210PY	Density Standard 1.5820g/ml @15°C	100ml
DEN15215PY	Density Standard 1.6459g/ml @15°C	100ml
DEN15220PY	Density Standard 1.7495g/ml @15°C	100ml
DEN15225PY	Density Standard 1.8366g/ml @15°C	100ml
DEN15230PY	Density Standard 1.9171g/ml @15°C	100ml
DEN15240PY	Density Standard 2.0846g/ml @15°C	100ml
DEN15250PY	Density Standard 2.2568g/ml @15°C	100ml
DEN15260PY	Density Standard 2.4261g/ml @15°C	100ml
DEN15270PY	Density Standard 2.6055g/ml @15°C	100ml
DEN15280PY	Density Standard 2.7588g/ml @15°C	100ml
DEN15290PY	Density Standard 2.9418g/ml @15°C	100ml
DEN15300PY	Density Standard 3.1140g/ml @15°C	100ml

## Density Standards @ 20°C

Product No.	Description	Pack Size
DEN20010PY	Density Standard 0.6919g/ml @20°C	100ml
DEN20020PY	Density Standard 0.7033g/ml @20°C	100ml
DEN20030PY	Density Standard 0.7148g/ml @20°C	100ml
DEN20040PY	Density Standard 0.7261g/ml @20°C	100ml
DEN20050PY	Density Standard 0.7374g/ml @20°C	100ml
DEN20060PY	Density Standard 0.7488g/ml @20°C	100ml
DEN20070PY	Density Standard 0.7683g/ml @20°C	100ml
DEN20080PY	Density Standard 0.7893g/ml @20°C	100ml
DEN20090PY	Density Standard 0.8126g/ml @20°C	100ml
DEN20100PY	Density Standard 0.8384g/ml @20°C	100ml
DEN20110PY	Density Standard 0.8668g/ml @20°C	100ml
DEN20120PY	Density Standard 0.9098g/ml @20°C	100ml
DEN20130PY	Density Standard 0.9476g/ml @20°C	100ml
DEN20140PY	Density Standard 1.0005g/ml @20°C	100ml
DEN20150PY	Density Standard 1.0301g/ml @20°C	100ml
DEN20160PY	Density Standard 1.0792g/ml @20°C	100ml
DEN20170PY	Density Standard 1.1651g/ml @20°C	100ml
DEN20180PY	Density Standard 1.2486g/ml @20°C	100ml
DEN20190PY	Density Standard 1.3304g/ml @20°C	100ml
DEN20200PY	Density Standard 1.4136g/ml @20°C	100ml
DEN20210PY	Density Standard 1.5799g/ml @20°C	100ml
DEN20220PY	Density Standard 1.7470g/ml @20°C	100ml
DEN20230PY	Density Standard 1.9141g/ml @20°C	100ml
DEN20240PY	Density Standard 2.0812g/ml @20°C	100ml
DEN20250PY	Density Standard 2.2531g/ml @20°C	100ml
DEN20260PY	Density Standard 2.4219g/ml @20°C	100ml
DEN20270PY	Density Standard 2.6011g/ml @20°C	100ml
DEN20280PY	Density Standard 2.7542g/ml @20°C	100ml
DEN20290PY	Density Standard 2.9370g/ml @20°C	100ml
DEN20300PY	Density Standard 3.1096g/ml @20°C	100ml

## Density Standards @ 25°C

Product No.	Description	Pack Size
DEN25010PY	Density Standard 0.6878g/ml @25°C	100ml
DEN25020PY	Density Standard 0.6993g/ml @25°C	100ml
DEN25030PY	Density Standard 0.7111g/ml @25°C	100ml
DEN25040PY	Density Standard 0.7223g/ml @25°C	100ml
DEN25050PY	Density Standard 0.7337g/ml @25°C	100ml
DEN25060PY	Density Standard 0.7452g/ml @25°C	100ml
DEN25070PY	Density Standard 0.7645g/ml @25°C	100ml
DEN25080PY	Density Standard 0.7853g/ml @25°C	100ml
DEN25090PY	Density Standard 0.8084g/ml @25°C	100ml
DEN25100PY	Density Standard 0.8340g/ml @25°C	100ml
DEN25110PY	Density Standard 0.8622g/ml @25°C	100ml
DEN25120PY	Density Standard 0.9060g/ml @25°C	100ml
DEN25130PY	Density Standard 0.9438g/ml @25°C	100ml
DEN25140PY	Density Standard 0.9969g/ml @25°C	100ml
DEN25150PY	Density Standard 1.0265g/ml @25°C	100ml
DEN25160PY	Density Standard 1.0755g/ml @25°C	100ml
DEN25170PY	Density Standard 1.1639g/ml @25°C	100ml
DEN2512PY	Density Standard 1.2000g/ml @25°C	100ml
DEN25180PY	Density Standard 1.2471g/ml @25°C	100ml
DEN25190PY	Density Standard 1.3287g/ml @25°C	100ml
DEN25200PY	Density Standard 1.4117g/ml @25°C	100ml
DEN2515PY	Density Standard 1.5000g/ml @25°C	100ml
DEN25210PY	Density Standard 1.5775g/ml @25°C	100ml
DEN2516PY	Density Standard 1.6000g/ml @25°C	100ml
DEN25220PY	Density Standard 1.7441g/ml @25°C	100ml
DEN25230PY	Density Standard 1.9108g/ml @25°C	100ml
DEN25240PY	Density Standard 2.0775g/ml @25°C	100ml
DEN25250PY	Density Standard 2.2490g/ml @25°C	100ml
DEN25260PY	Density Standard 2.4175g/ml @25°C	100ml
DEN25270PY	Density Standard 2.5964g/ml @25°C	100ml
DEN25280PY	Density Standard 2.7493g/ml @25°C	100ml
DEN25290PY	Density Standard 2.9319g/ml @25°C	100ml
DEN25300PY	Density Standard 3.1043g/ml @25°C	100ml



## Density Standards @ 40°C

Product No.	Description	Pack Size
DEN40010PY	Density Standard 0.6752g/ml @40°C	100ml
DEN40020PY	Density Standard 0.6872g/ml @40°C	100ml
DEN40030PY	Density Standard 0.6997g/ml @40°C	100ml
DEN40040PY	Density Standard 0.7109g/ml @40°C	100ml
DEN40050PY	Density Standard 0.7226g/ml @40°C	100ml
DEN40060PY	Density Standard 0.7343g/ml @40°C	100ml
DEN40070PY	Density Standard 0.7531g/ml @40°C	100ml
DEN40080PY	Density Standard 0.7733g/ml @40°C	100ml
DEN40090PY	Density Standard 0.7958g/ml @40°C	100ml
DEN40100PY	Density Standard 0.8207g/ml @40°C	100ml
DEN40110PY	Density Standard 0.8482g/ml @40°C	100ml
DEN40120PY	Density Standard 0.8945g/ml @40°C	100ml
DEN40130PY	Density Standard 0.9323g/ml @40°C	100ml
DEN40140PY	Density Standard 0.9857g/ml @40°C	100ml
DEN40150PY	Density Standard 1.0152g/ml @40°C	100ml
DEN40160PY	Density Standard 1.0642g/ml @40°C	100ml
DEN40170PY	Density Standard 1.1581g/ml @40°C	100ml
DEN40180PY	Density Standard 1.2408g/ml @40°C	100ml
DEN40190PY	Density Standard 1.3217g/ml @40°C	100ml
DEN40200PY	Density Standard 1.4039g/ml @40°C	100ml
DEN40210PY	Density Standard 1.5685g/ml @40°C	100ml
DEN40220PY	Density Standard 1.7339g/ml @40°C	100ml
DEN40230PY	Density Standard 1.8994g/ml @40°C	100ml
DEN40240PY	Density Standard 2.0649g/ml @40°C	100ml
DEN40250PY	Density Standard 2.2352g/ml @40°C	100ml
DEN40260PY	Density Standard 2.4028g/ml @40°C	100ml
DEN40270PY	Density Standard 2.5807g/ml @40°C	100ml
DEN40280PY	Density Standard 2.7329g/ml @40°C	100ml
DEN40290PY	Density Standard 2.9132g/ml @40°C	100ml
DEN40300PY	Density Standard 3.0852g/ml @40°C	100ml

## Density Standards @ 50°C

Product No.	Description	Pack Size
DEN50010PY	Density Standard 0.6668g/ml @50°C	100ml
DEN50020PY	Density Standard 0.6791g/ml @50°C	100ml
DEN50030PY	Density Standard 0.6917g/ml @50°C	100ml
DEN50040PY	Density Standard 0.7033g/ml @50°C	100ml
DEN50050PY	Density Standard 0.7151g/ml @50°C	100ml
DEN50060PY	Density Standard 0.7269g/ml @50°C	100ml
DEN50070PY	Density Standard 0.7454g/ml @50°C	100ml
DEN50080PY	Density Standard 0.7653g/ml @50°C	100ml
DEN50090PY	Density Standard 0.7873g/ml @50°C	100ml
DEN50100PY	Density Standard 0.8118g/ml @50°C	100ml
DEN50110PY	Density Standard 0.8387g/ml @50°C	100ml
DEN50120PY	Density Standard 0.8868g/ml @50°C	100ml
DEN50130PY	Density Standard 0.9245g/ml @50°C	100ml
DEN50140PY	Density Standard 0.9777g/ml @50°C	100ml
DEN50150PY	Density Standard 1.0073g/ml @50°C	100ml
DEN50160PY	Density Standard 1.0562g/ml @50°C	100ml
DEN50170PY	Density Standard 1.1512g/ml @50°C	100ml
DEN50180PY	Density Standard 1.2346g/ml @50°C	100ml
DEN50190PY	Density Standard 1.3138g/ml @50°C	100ml
DEN50200PY	Density Standard 1.3973g/ml @50°C	100ml
DEN50210PY	Density Standard 1.5609g/ml @50°C	100ml
DEN50220PY	Density Standard 1.7257g/ml @50°C	100ml
DEN50230PY	Density Standard 1.8904g/ml @50°C	100ml
DEN50240PY	Density Standard 2.0551g/ml @50°C	100ml
DEN50250PY	Density Standard 2.2247g/ml @50°C	100ml
DEN50260PY	Density Standard 2.3916g/ml @50°C	100ml
DEN50270PY	Density Standard 2.5689g/ml @50°C	100ml
DEN50280PY	Density Standard 2.7207g/ml @50°C	100ml
DEN50290PY	Density Standard 2.9005g/ml @50°C	100ml
DEN50300PY	Density Standard 3.0721g/ml @50°C	100ml

## Density Standards @ 60°C

Product No.	Description	Pack Size
DEN60010PY	Density Standard 0.6582g/ml @60°C	100ml
DEN60020PY	Density Standard 0.6708g/ml @60°C	100ml
DEN60030PY	Density Standard 0.6835g/ml @60°C	100ml
DEN60040PY	Density Standard 0.6955g/ml @60°C	100ml
DEN60050PY	Density Standard 0.7076g/ml @60°C	100ml
DEN60060PY	Density Standard 0.7196g/ml @60°C	100ml
DEN60070PY	Density Standard 0.7376g/ml @60°C	100ml
DEN60080PY	Density Standard 0.7572g/ml @60°C	100ml
DEN60090PY	Density Standard 0.7788g/ml @60°C	100ml
DEN60100PY	Density Standard 0.8027g/ml @60°C	100ml
DEN60110PY	Density Standard 0.8292g/ml @60°C	100ml
DEN60120PY	Density Standard 0.8790g/ml @60°C	100ml
DEN60130PY	Density Standard 0.9166g/ml @60°C	100ml
DEN60140PY	Density Standard 0.9695g/ml @60°C	100ml
DEN60150PY	Density Standard 0.9990g/ml @60°C	100ml
DEN60160PY	Density Standard 1.0478g/ml @60°C	100ml

## Density Standards @ 80°C

Product No.	Description	Pack Size
DEN80010PY	Density Standard 0.6407g/ml @80°C	100ml
DEN80020PY	Density Standard 0.6538g/ml @80°C	100ml
DEN80030PY	Density Standard 0.6661g/ml @80°C	100ml
DEN80040PY	Density Standard 0.6798g/ml @80°C	100ml
DEN80050PY	Density Standard 0.6923g/ml @80°C	100ml
DEN80060PY	Density Standard 0.7047g/ml @80°C	100ml
DEN80070PY	Density Standard 0.7220g/ml @80°C	100ml
DEN80080PY	Density Standard 0.7407g/ml @80°C	100ml
DEN80090PY	Density Standard 0.7614g/ml @80°C	100ml
DEN80100PY	Density Standard 0.7844g/ml @80°C	100ml
DEN80110PY	Density Standard 0.8098g/ml @80°C	100ml
DEN80120PY	Density Standard 0.8629g/ml @80°C	100ml
DEN80130PY	Density Standard 0.9006g/ml @80°C	100ml
DEN80140PY	Density Standard 0.9520g/ml @80°C	100ml
DEN80150PY	Density Standard 0.9815g/ml @80°C	100ml
DEN80160PY	Density Standard 1.0302g/ml @80°C	100ml

# Density Standards - Quality Range



## Summary of Features & Benefits:

### Commercial Benefits

- Extensive range (0.6538 - 1.0337 g/ml)
- No toxic heavy metals used in any formulation
- Can be used with any brand or type of vibrational density measuring instrument
- Presented in a high quality tamper proof amber glass bottle
- Customised formulations available

### Technical Benefits

- Test results accredited to ISO17025. Uncertainty of measurement (assay procedure)  $\pm 0.16\%$
- Produced in accordance with ASTM D4052 Guidelines
- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online
- ISO/IEC 17025 (INAB Ref:264T) Density Range 0.65-1.034g/ml

Reagecon manufactures an extensive range of Density Standards in accordance with ASTM D4052 for testing of Density, Relative Density and API Gravity of Liquids by Digital Density Meter. These materials can be used as calibration standards for density measurement by vibrational techniques or hydrometer based techniques.

### The product range includes:

- 0.6960 - 1.0337g/ml @ 15°C
- 0.6619 - 1.0301g/ml @ 20°C
- 0.6878 - 1.0265g/ml @ 25°C
- 0.6752 - 1.0152g/ml @ 40°C
- 0.6668 - 1.0073g/ml @ 50°C
- 0.6582 - 0.9990g/ml @ 60°C
- 0.6538 - 1.0302g/ml @ 80°C



These products are prepared gravimetrically on a weight/weight basis. Both solute and solvent are weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO 17025 accreditation for calibration of laboratory balances (INAB Ref:265C). The resulting Balance Certificate of Calibration is issued in accordance with the requirements of ISO/IEC 17025. The density of each standard is verified using a high performance calibrated density meter. The control of the density meter (identification no. - RRD015) is completed using high purity ISO Guide 34 accredited density standards similar in density value to these products.

## Density Standards @ 15°C

Product No.	Description	Pack Size
DEN15010	Density Standard 0.6960g/ml @15°C	100ml
DEN15020	Density Standard 0.7073g/ml @15°C	100ml
DEN15030	Density Standard 0.7184g/ml @15°C	100ml
DEN15040	Density Standard 0.7298g/ml @15°C	100ml
DEN15050	Density Standard 0.7411g/ml @15°C	100ml
DEN15060	Density Standard 0.7524g/ml @15°C	100ml
DEN15070	Density Standard 0.7721g/ml @15°C	100ml
DEN15080	Density Standard 0.7933g/ml @15°C	100ml
DEN15090	Density Standard 0.8168g/ml @15°C	100ml
DEN15100	Density Standard 0.8428g/ml @15°C	100ml
DEN15110	Density Standard 0.8715g/ml @15°C	100ml
DEN15120	Density Standard 0.9135g/ml @15°C	100ml
DEN15130	Density Standard 0.9514g/ml @15°C	100ml
DEN15140	Density Standard 1.0040g/ml @15°C	100ml
DEN15150	Density Standard 1.0337g/ml @15°C	100ml

## Density Standards @ 20°C

Product No.	Description	Pack Size
DEN20010	Density Standard 0.6919g/ml @20°C	100ml
DEN20020	Density Standard 0.7033g/ml @20°C	100ml
DEN20030	Density Standard 0.7148g/ml @20°C	100ml
DEN20040	Density Standard 0.7261g/ml @20°C	100ml
DEN20050	Density Standard 0.7374g/ml @20°C	100ml
DEN20060	Density Standard 0.7488g/ml @20°C	100ml
DEN20070	Density Standard 0.7683g/ml @20°C	100ml
DEN20080	Density Standard 0.7893g/ml @20°C	100ml
DEN20090	Density Standard 0.8126g/ml @20°C	100ml
DEN20100	Density Standard 0.8384g/ml @20°C	100ml
DEN20110	Density Standard 0.8668g/ml @20°C	100ml
DEN20120	Density Standard 0.9098g/ml @20°C	100ml
DEN20130	Density Standard 0.9476g/ml @20°C	100ml
DEN20140	Density Standard 1.0005g/ml @20°C	100ml
DEN20150	Density Standard 1.0301g/ml @20°C	100ml

## Density Standards @ 25°C

Product No.	Description	Pack Size
DEN25010	Density Standard 0.6878g/ml @25°C	100ml
DEN25020	Density Standard 0.6993g/ml @25°C	100ml
DEN25030	Density Standard 0.7111g/ml @25°C	100ml
DEN25040	Density Standard 0.7223g/ml @25°C	100ml
DEN25050	Density Standard 0.7337g/ml @25°C	100ml
DEN25060	Density Standard 0.7452g/ml @25°C	100ml
DEN25070	Density Standard 0.7645g/ml @25°C	100ml
DEN25080	Density Standard 0.7853g/ml @25°C	100ml
DEN25090	Density Standard 0.8084g/ml @25°C	100ml
DEN25100	Density Standard 0.8340g/ml @25°C	100ml
DEN25110	Density Standard 0.8622g/ml @25°C	100ml
DEN25120	Density Standard 0.9060g/ml @25°C	100ml
DEN25130	Density Standard 0.9438g/ml @25°C	100ml
DEN25140	Density Standard 0.9969g/ml @25°C	100ml
DEN25150	Density Standard 1.0265g/ml @25°C	100ml

## Density Standards @ 40°C

Product No.	Description	Pack Size
DEN40010	Density Standard 0.6752g/ml @40°C	100ml
DEN40020	Density Standard 0.6872g/ml @40°C	100ml
DEN40030	Density Standard 0.6997g/ml @40°C	100ml
DEN40040	Density Standard 0.7109g/ml @40°C	100ml
DEN40050	Density Standard 0.7226g/ml @40°C	100ml
DEN40060	Density Standard 0.7343g/ml @40°C	100ml
DEN40070	Density Standard 0.7531g/ml @40°C	100ml
DEN40080	Density Standard 0.7733g/ml @40°C	100ml
DEN40090	Density Standard 0.7958g/ml @40°C	100ml
DEN40100	Density Standard 0.8207g/ml @40°C	100ml
DEN40110	Density Standard 0.8482g/ml @40°C	100ml
DEN40120	Density Standard 0.8945g/ml @40°C	100ml
DEN40130	Density Standard 0.9323g/ml @40°C	100ml
DEN40140	Density Standard 0.9857g/ml @40°C	100ml
DEN40150	Density Standard 1.0152g/ml @40°C	100ml

## Density Standards @ 50°C

Product No.	Description	Pack Size
DEN50010	Density Standard 0.6668g/ml @50°C	100ml
DEN50020	Density Standard 0.6791g/ml @50°C	100ml
DEN50030	Density Standard 0.6917g/ml @50°C	100ml
DEN50040	Density Standard 0.7033g/ml @50°C	100ml
DEN50050	Density Standard 0.7151g/ml @50°C	100ml
DEN50060	Density Standard 0.7269g/ml @50°C	100ml
DEN50070	Density Standard 0.7454g/ml @50°C	100ml
DEN50080	Density Standard 0.7653g/ml @50°C	100ml
DEN50090	Density Standard 0.7873g/ml @50°C	100ml
DEN50100	Density Standard 0.8118g/ml @50°C	100ml
DEN50110	Density Standard 0.8387g/ml @50°C	100ml
DEN50120	Density Standard 0.8868g/ml @50°C	100ml
DEN50130	Density Standard 0.9245g/ml @50°C	100ml
DEN50140	Density Standard 0.9777g/ml @50°C	100ml
DEN50150	Density Standard 1.0073g/ml @50°C	100ml

## Density Standards @ 60°C

Product No.	Description	Pack Size
DEN60010	Density Standard 0.6582g/ml @60°C	100ml
DEN60020	Density Standard 0.6708g/ml @60°C	100ml
DEN60030	Density Standard 0.6835g/ml @60°C	100ml
DEN60040	Density Standard 0.6955g/ml @60°C	100ml
DEN60050	Density Standard 0.7076g/ml @60°C	100ml
DEN60060	Density Standard 0.7196g/ml @60°C	100ml
DEN60070	Density Standard 0.7376g/ml @60°C	100ml
DEN60080	Density Standard 0.7572g/ml @60°C	100ml
DEN60090	Density Standard 0.7788g/ml @60°C	100ml
DEN60100	Density Standard 0.8027g/ml @60°C	100ml
DEN60110	Density Standard 0.8292g/ml @60°C	100ml
DEN60120	Density Standard 0.8790g/ml @60°C	100ml
DEN60130	Density Standard 0.9166g/ml @60°C	100ml
DEN60140	Density Standard 0.9695g/ml @60°C	100ml
DEN60150	Density Standard 0.9990g/ml @60°C	100ml

## Density Standards @ 80°C

Product No.	Description	Pack Size
DEN80020	Density Standard 0.6538g/ml @80°C	100ml
DEN80030	Density Standard 0.6661g/ml @80°C	100ml
DEN80040	Density Standard 0.6798g/ml @80°C	100ml
DEN80050	Density Standard 0.6923g/ml @80°C	100ml
DEN80060	Density Standard 0.7047g/ml @80°C	100ml
DEN80070	Density Standard 0.7220g/ml @80°C	100ml
DEN80080	Density Standard 0.7407g/ml @80°C	100ml
DEN80090	Density Standard 0.7614g/ml @80°C	100ml
DEN80100	Density Standard 0.7844g/ml @80°C	100ml
DEN80110	Density Standard 0.8098g/ml @80°C	100ml
DEN80120	Density Standard 0.8629g/ml @80°C	100ml
DEN80130	Density Standard 0.9006g/ml @80°C	100ml
DEN80140	Density Standard 0.9520g/ml @80°C	100ml
DEN80150	Density Standard 0.9815g/ml @80°C	100ml
DEN80160	Density Standard 1.0302g/ml @80°C	100ml





# Viscosity Standards

Reagecon now offers an exciting range of certified, accurate and traceable Viscosity Standards. These products can be used for calibration, control, verification, qualification or method validation of kinematic and dynamic viscosity measurement instruments (both manual and automatic). All of the products are traceable to the ITS-90 Temperature scale and the universally accepted Primary Standard value of the viscosity of water at 20°C, defined as 1.0034mm<sup>2</sup>/s (cSt) by ISO3666.

## The products offer the following additional benefits;

- Manufactured and certified according to ASTM D2162 using Ubbelohde Master Viscometers.
- This is the internationally recognised primary method for Viscosity Standard certification.
- Each standard is certified for Kinematic Viscosity (mm<sup>2</sup>/s,cSt), Dynamic Viscosity (cP) and Density (g/ml) at a range of temperatures.
- Reagecon holds ISO17025 (INAB Ref:265C) accreditation for temperature calibration, balance calibration and the testing of Density Standards for use on digital Density Meters.
- Extended shelf life.
- Attractive secure packaging.
- Certificates of Analysis and safety data sheets available on-line for every batch manufactured.
- Manufactured from high quality, stable base oils and additives.
- All standards observe Newtonian Fluid behaviour.

Reagecon has an extensive Research and Development facility based in Shannon, Ireland. Several speciality and additional ranges of viscosity standards are currently under development. These include Silicone Standards for the calibration of Rotational Viscometers.



## Reagecon Viscosity Standards: Nominal Kinematic Viscosity, Dynamic Viscosity & Density

Individual batches' certified viscosity values will vary from the data given below an absolute maximum of 10%, but typically less than 5%. Individual batches' certified values will be shown to 4 significant figures for all parameters on their Certificate of Analysis.

Prod Code	KINEMATIC VISCOSITY mm <sup>2</sup> /s (cSt)					DYNAMIC VISCOSITY mPa.s (cP)					DENSITY (g/ml)				
	20°C	25°C	37.78°C	40°C	50°C	20°C	25°C	37.78°C	40°C	50°C	20°C	25°C	37.78°C	40°C	50°C
REVIS-N.4	0.47	0.45	0.41	0.40	-	0.31	0.29	0.26	0.25	-	0.66	0.66	0.64	0.64	-
REVIS-N.8	0.74	0.70	0.61	0.60	-	0.50	0.47	0.41	0.40	-	0.69	0.69	0.68	0.68	-
REVIS-N1.0	1.3	1.2	1.0	0.97	0.87	0.91	0.84	0.71	0.69	0.61	0.73	0.72	0.71	0.71	0.70
REVIS-N2	2.9	2.6	2.1	2.0	1.7	2.1	1.9	1.5	1.4	1.2	0.72	0.72	0.71	0.71	0.70
REVIS-S3	4.4	3.9	3.0	2.9	2.4	3.6	3.2	2.4	2.3	1.9	0.82	0.82	0.81	0.81	0.80
REVIS-N4	6.7	5.8	4.2	4.0	3.2	5.5	4.8	3.4	3.2	2.6	0.84	0.83	0.83	0.82	0.82
REVIS-S6	10	8.7	6.0	5.7	4.4	8.7	7.4	5.0	4.7	3.7	0.84	0.84	0.83	0.83	0.82
REVIS-N7.5	14	12	8.0	7.5	5.8	12	10	6.7	6.3	4.8	0.85	0.85	0.84	0.84	0.83
REVIS-N10	20	16	11	10	7.5	18	15	9.3	8.7	6.4	0.84	0.83	0.82	0.82	0.82
REVIS-N14	30	24	15	14	10	25	20	12	11	8.2	0.84	0.83	0.83	0.82	0.82
REVIS-S20	43	34	20	18	13	36	29	17	15	11	0.85	0.85	0.84	0.84	0.83
REVIS-N26	59	47	27	25	18	46	37	22	20	14	0.84	0.84	0.83	0.83	0.82
REVIS-N35	88	66	35	32	21	76	58	30	28	18	0.87	0.87	0.86	0.86	0.85
REVIS-N44	110	87	48	44	30	85	66	37	35	23	0.84	0.84	0.83	0.83	0.82
REVIS-S60	160	120	60	54	35	140	110	54	49	31	0.88	0.87	0.87	0.86	0.86
REVIS-N75	210	160	83	75	50	170	130	69	63	42	0.84	0.84	0.83	0.83	0.82
REVIS-N100	320	220	110	95	59	270	190	91	81	50	0.88	0.88	0.87	0.87	0.86
REVIS-N140	400	300	160	140	90	360	270	140	120	78	0.84	0.83	0.83	0.83	0.82
REVIS-S200	550	400	200	180	110	460	340	170	150	95	0.84	0.84	0.83	0.83	0.82
REVIS-N250	790	580	280	250	160	690	500	250	220	140	0.84	0.84	0.83	0.83	0.82
REVIS-N350	980	710	340	310	190	834	609	294	262	161	0.84	0.84	0.83	0.83	0.82
REVIS-N415	1400	1000	470	410	250	1200	840	390	350	210	0.85	0.84	0.84	0.83	0.83
REVIS-S600	1800	1300	590	520	310	1700	1200	540	480	280	0.85	0.85	0.84	0.84	0.83
REVIS-N750	2700	1800	850	760	440	2300	1600	710	640	370	0.85	0.85	0.84	0.84	0.83
REVIS-N1000	3300	2300	1100	940	560	2800	2000	940	790	460	0.86	0.85	0.85	0.84	0.83
REVIS-N1400	4900	3500	1600	1400	830	4100	3000	1300	1200	690	0.84	0.84	0.83	0.83	0.82
REVIS-S2000	8400	5300	1900	1600	810	7300	4700	1700	1400	710	0.88	0.87	0.87	0.87	0.86
REVIS-N2500	8300	5900	2700	2400	1400	7000	5000	2200	2000	1200	0.84	0.84	0.83	0.83	0.82
REVIS-N4000	19000	12000	4100	3400	1700	16000	10000	3600	3000	1500	0.88	0.88	0.88	0.87	0.87
REVIS-N5100	28000	17000	6000	5100	2500	24000	15000	5200	4400	2100	0.89	0.89	0.88	0.88	0.87
REVIS-S8000	41000	25000	8000	6700	3200	32000	20000	7000	5900	2800	0.90	0.89	0.89	0.89	0.88
REVIS-N10200	58000	36000	12000	10000	4900	51000	32000	11000	8100	4400	0.89	0.89	0.88	0.88	0.88
REVIS-N15000	77000	47000	16000	13000	6100	64000	41000	14000	12000	5000	0.89	0.89	0.88	0.88	0.88
REVIS-N18000	100000	64000	21000	18000	8500	89000	56000	19000	16000	7500	0.90	0.89	0.89	0.89	0.88
REVIS-S30000	-	79000	28000	23000	11000	-	69000	23000	20000	9000	-	0.89	0.89	0.89	0.88

# ISO Guide 34 Certified Reference Materials: Sucrose in Water Standards



## Summary of Features & Benefits:

### Commercial Benefits

- Customised pack options available
- Extended shelf life - 12 weeks - (Manufactured in accordance with ICUMSA guidelines)
- Ready to Use
- Can be used with any brand of refractometer
- Extensive range (1-60% w/w Sucrose in Water solutions)
- Presented in a convenient high quality dropper bottle

### Technical Benefits

- ISO Guide 34 Compliant (INAB Ref:001RM)
- Measurement uncertainty computed on a batch by batch basis under these guidelines
- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available
- This Certified Reference Material is intended primarily as either a calibrant or analytical control solution for use in Refractive Index based methods of Brix value determination

Reagecon now manufacture a range of Sucrose in Water solutions in compliance with ISO Guide 34 (INAB Ref:001RM). This is an internationally recognised accreditation for the production of certified reference materials. It delivers the highest level of quality assurance possible, and provides the customer with full confidence that the manufacturer's standards are produced correctly and competently in a sound metrological fashion. ISO Guide 34 accreditation requirements includes production planning, material selection, assignment of certified values, uncertainty, traceability, homogeneity and stability, as well as packaging and documentation. These standards are certified by gravimetric preparation, with an uncertainty of measurement of < 0.15% w/w, and include an equivalent % Brix and refractive index value.

## ISO Guide 34 Sucrose in Water Standards (INAB Ref:001RM) -12 Week Shelf Life

Product No.	% Sucrose in Water (w/w) @ 20°C	Nominal Brix %*	Nominal Refractive Index @ 20°C	Pack size
BS05	5% Sucrose	5% Brix	1.340264	15ml
BS07	7% Sucrose	7% Brix	1.343253	15ml
BS10	10% Sucrose	10% Brix	1.347824	15ml
BS112	11.2% Sucrose	11.2% Brix	1.349682	15ml
BS115	11.5% Sucrose	11.5% Brix	1.350149	15ml
BS12	12% Sucrose	12% Brix	1.350930	15ml
BS125	12.5% Sucrose	12.5% Brix	1.351714	15ml
BS15	15% Sucrose	15% Brix	1.355679	15ml
BS20	20% Sucrose	20% Brix	1.363842	15ml
BS25	25% Sucrose	25% Brix	1.372328	15ml
BS30	30% Sucrose	30% Brix	1.381149	15ml
BS35	35% Sucrose	35% Brix	1.390322	15ml
BS40	40% Sucrose	40% Brix	1.399860	15ml
BS45	45% Sucrose	45% Brix	1.409777	15ml
BS50	50% Sucrose	50% Brix	1.420087	15ml
BS55	55% Sucrose	55% Brix	1.430800	15ml
BS60	60% Sucrose	60% Brix	1.441928	15ml

\*The nominal Brix and Refractive Index values are taken from the ICUMSA published tables

# Brix Standards (Stabilised)



## Summary of Features & Benefits:

### Commercial Benefits

- Most extensive range available in the market place
- Customised pack options available
- Extended 1 Year shelf life (For users not required to follow ICUMSA Guidelines)
- Can be used with any brand of refractometer
- Extensive range (0 - 67.5% Brix)
- Presented in a convenient high quality dropper bottle
- Available as single bottles or a handy set of 6 bottles
- Ready to Use

### Technical Benefits

- Test results accredited to ISO/IEC 17025 for values 5-60% Brix (INAB Ref:264T)
- Uncertainty of measurement  $\pm 0.11\%$  for all Brix values @ 20°C
- Consistency of product-Independent, Traceable Certified
- Certificates of Analysis and Safety Data Sheets available online

Reagecon manufactures several ranges of Brix/Refractive Index Standards for ease of use when controlling all types of refractometers. All of these standards are manufactured using high purity raw materials. These Product ranges - Product No.'s BS00S to BS67S for single bottles and BS00S6 to BS67S6 for packs of six bottles, contain the same raw materials as the ICUMSA range, but are stabilised to have an extended shelf - life of 1 year. These products represent excellent value for users that are not required to follow ICUMSA Guidelines.

All products are prepared gravimetrically on a weight/weight basis. Both solute (sucrose) and solvent (water) are weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO/IEC 17025 accreditation for calibration of laboratory balances (INAB Ref:265C). The resulting Balance Certificate of Calibration is issued in accordance with the requirements of ISO/IEC 17025. The Brix value of the standard is verified using a high performance calibrated, temperature controlled refractometer.

The control of this instrument is completed using high purity ISO Guide 34 accredited Brix standards similar in Brix value to the products listed.



## Brix Standards - Stabilised - 1 Year Shelf Life

Description	Nominal Refractive Index @ 20°C*	Product No. 15ml	Product No. 6x15ml
Sucrose (Brix) Standard Stabilised 0%	1.332986	BS00S	BS00S6
Sucrose (Brix) Standard Stabilised 5%	1.340264	BS05S	BS05S6
Sucrose (Brix) Standard Stabilised 7%	1.343253	BS07S	BS07S6
Sucrose (Brix) Standard Stabilised 10%	1.347824	BS10S	BS10S6
Sucrose (Brix) Standard Stabilised 11.2%	1.349682	BS112S	BS112S6
Sucrose (Brix) Standard Stabilised 11.5%	1.350149	BS115S	BS115S6
Sucrose (Brix) Standard Stabilised 12%	1.350930	BS12S	BS12S6
Sucrose (Brix) Standard Stabilised 12.5%	1.351714	BS125S	BS125S6
Sucrose (Brix) Standard Stabilised 14.9%	1.355519	BS149S	BS149S6
Sucrose (Brix) Standard Stabilised 15%	1.355679	BS15S	BS15S6
Sucrose (Brix) Standard Stabilised 19.4%	1.362846	BS194S	BS194S6
Sucrose (Brix) Standard Stabilised 20%	1.363842	BS20S	BS20S6
Sucrose (Brix) Standard Stabilised 23.8%	1.370261	BS238S	BS238S6
Sucrose (Brix) Standard Stabilised 25%	1.372328	BS25S	BS25S6
Sucrose (Brix) Standard Stabilised 30%	1.381149	BS30S	BS30S6
Sucrose (Brix) Standard Stabilised 35%	1.390322	BS35S	BS35S6
Sucrose (Brix) Standard Stabilised 40%	1.399860	BS40S	BS40S6
Sucrose (Brix) Standard Stabilised 45%	1.409777	BS45S	BS45S6
Sucrose (Brix) Standard Stabilised 50%	1.420087	BS50S	BS50S6
Sucrose (Brix) Standard Stabilised 55%	1.430800	BS55S	BS55S6
Sucrose (Brix) Standard Stabilised 60%	1.441928	BS60S	BS60S6
Sucrose (Brix) Standard Stabilised 67.5%	1.459290	BS67S	BS67S6

\*The nominal Refractive Index value is taken from the ICUMSA published tables for all product numbers except BS67S and BS67S6 (Brix Value 67.5%) which is a measured value.

# Refractive Index Standards



## Summary of Features & Benefits:

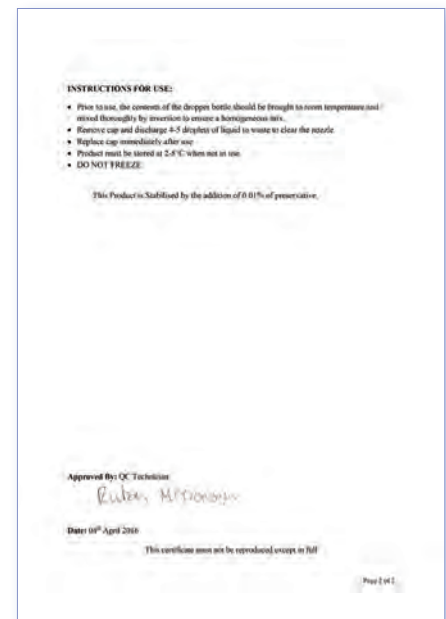
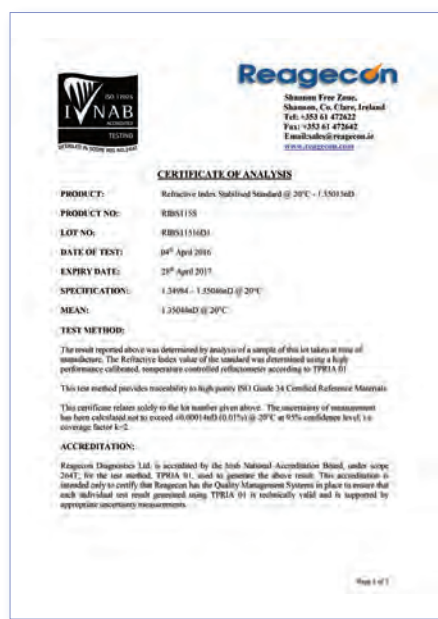
### Commercial Benefits

- Both sucrose and solvent based standards available
- Most extensive range in the marketplace
- Customised pack options available
- Shelf life of 1 - 2 years
- Can be used with any brand of refractometer
- Extensive range (1.33299-1.65808  $n_D$ )
- Presented in a convenient high quality dropper bottle
- Available as single bottles or a handy set of 6 bottles
- Ready to Use

### Technical Benefits

- Test results accredited to ISO/IEC 17025 for values in the range of 1.33310 to 1.65812 (INAB Ref:264T)
- Uncertainty of measurement up to 0.00014  $n_D$  units
- Consistency of product-Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online

Product No.'s RIBS07S to RIBS60S have identical components and shelf life (1 Year) to the stabilised Brix Standards already described in the previous section. However, the certified values are expressed in Refractive Index (R.I) units  $n_D$ . All these products are prepared gravimetrically on a weight/weight basis. Both solute (sucrose) and solvent (water) are weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO 17025 accreditation for calibration of laboratory balances (INAB Ref:265C). The resulting Balance Certificate of Calibration is issued in accordance with the requirements of ISO/IEC 17025. The R.I. of the standard is verified using a high performance calibrated, temperature controlled refractometer. The control of this instrument is completed using high purity ISO Guide 34 accredited Brix standards similar in Brix value to the products listed.



## Refractive Index Standards - Stabilised Sucrose - 1 Year Shelf Life

Description (20°C)	Nominal Refractive Index @ 20°C*	Product No. 15ml	Product No. 6x15ml
Refractive Index @ 20°C	1.33299	RIBS00S	RIBS00S6
Refractive Index @ 20°C	1.34026	RIBS05S	RIBS05S6
Refractive Index @ 20°C	1.34325	RIBS07S	RIBS07S6
Refractive Index @ 20°C	1.34782	RIBS10S	RIBS10S6
Refractive Index @ 20°C	1.34968	RIBS112S	RIBS112S6
Refractive Index @ 20°C	1.35015	RIBS115S	RIBS115S6
Refractive Index @ 20°C	1.35093	RIBS12S	RIBS12S6
Refractive Index @ 20°C	1.35171	RIBS125S	RIBS125S6
Refractive Index @ 20°C	1.35568	RIBS15S	RIBS15S6
Refractive Index @ 20°C	1.36384	RIBS20S	RIBS20S6
Refractive Index @ 20°C	1.37233	RIBS25S	RIBS25S6
Refractive Index @ 20°C	1.38115	RIBS30S	RIBS30S6
Refractive Index @ 20°C	1.39032	RIBS35S	RIBS35S6
Refractive Index @ 20°C	1.39986	RIBS40S	RIBS40S6
Refractive Index @ 20°C	1.40978	RIBS45S	RIBS45S6
Refractive Index @ 20°C	1.42009	RIBS50S	RIBS50S6
Refractive Index @ 20°C	1.4308	RIBS55S	RIBS55S6
Refractive Index @ 20°C	1.44193	RIBS60S	RIBS60S6
Refractive Index @ 20°C	1.46546	RIBS70S	RIBS70S6

\* The nominal Refractive Index value is taken from the ICUMSA published tables

## Solvent Based Refractive Index Standards - 2 Year Shelf Life

Description (20°C)	Nominal Refractive Index @ 20°C*	Product No. 15ml	Product No. 6x15ml
Refractive Index @ 20°C	1.38779	RI0138	RI01386
Refractive Index @ 20°C	1.40485	RI0140	RI01406
Refractive Index @ 20°C	1.42345	RI0142	RI01426
Refractive Index @ 20°C	1.44468	RI0144	RI01446
Refractive Index @ 20°C	1.46768	RI0146	RI01466
Refractive Index @ 20°C	1.49672	RI0149	RI01496
Refractive Index @ 20°C	1.50044	RI0150	RI01506
Refractive Index @ 20°C	1.51726	RI0151	RI01516
Refractive Index @ 20°C	1.5366	RI0154	RI01546
Refractive Index @ 20°C	1.65808	RI0165	RI01656

\* The nominal Refractive Index value is taken from the ICUMSA published tables

# Osmolality Standards



## Summary of Features & Benefits:

### Commercial Benefits

- Extended shelf life
- Can be used with any brand of Osmometer
- Extensive range 50 - 3000mOsm/kg H<sub>2</sub>O (including protein based and urine based standards)
- Presented in convenient ampoules
- Ready to Use

### Technical Benefits


- ISO/IEC 17025 accredited for range 50 - 3000mOsm/kg H<sub>2</sub>O (INAB Ref:264T)
- Low Uncertainty of Measurement
- Manufactured in accordance with European and United States Pharmacopoeia guidelines where appropriate
- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online

Reagecon manufactures a range of Osmolality Standards for ease of use when calibrating all types of Osmometers, irrespective of brand. All Osmolality standards are manufactured using high purity raw materials in accordance with European and United States Pharmacopoeia guidelines where appropriate. These products are prepared gravimetrically and are on a weight/weight basis. Both solute (salts) and solvent (water) are weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO 17025 accreditation for calibration of laboratory balances (INAB Ref:265C). The resulting Balance Certificate of Calibration is issued in accordance with the requirements of ISO/IEC 17025. The Osmolality of the standard is verified using a high performance calibrated, temperature controlled Osmometer. The calibration of this instrument is completed using high purity certified Osmolality standards similar in value to the products listed below.


Product No.	Description	European Pharmacopoeia 2.2.35 United States Pharmacopoeia <785>	Pack Size
RE-OSM-50	50mOsm/Kg H <sub>2</sub> O	conforms	12 x 5ml
RE-OSM-100	100mOsm/Kg H <sub>2</sub> O	conforms	12 x 5ml
RE-OSM-200	200mOsm/Kg H <sub>2</sub> O	conforms	12 x 5ml
RE-OSM-290	290mOsm/Kg H <sub>2</sub> O	conforms	12 x 5ml
RE-OSM-300	300mOsm/Kg H <sub>2</sub> O	conforms	12 x 5ml
RE-OSM-400	400mOsm/Kg H <sub>2</sub> O	conforms	12 x 5ml
RE-OSM-500	500mOsm/Kg H <sub>2</sub> O	conforms	12 x 5ml
RE-OSM-600	600mOsm/Kg H <sub>2</sub> O	conforms	12 x 5ml
RE-OSM-700	700mOsm/Kg H <sub>2</sub> O	conforms	12 x 5ml
RE-OSM-850	850mOsm/Kg H <sub>2</sub> O	Not Applicable	12 x 5ml
RE-OSM-900	900mOsm/Kg H <sub>2</sub> O	Not Applicable	12 x 5ml
RE-OSM-1000	1000mOsm/Kg H <sub>2</sub> O	Not Applicable	12 x 5ml



Product No.	Description	European Pharmacopoeia 2.2.35 United States Pharmacopoeia <785>	Pack Size
RE-OSM-1500	1500mOsm/Kg H <sub>2</sub> O	Not Applicable	12 x 5ml
RE-OSM-2000	2000mOsm/Kg H <sub>2</sub> O	Not Applicable	12 x 5ml
RE-OSM-2500	2500mOsm/Kg H <sub>2</sub> O	Not Applicable	12 x 5ml
RE-OSM-3000	3000mOsm/Kg H <sub>2</sub> O	Not Applicable	12 x 5ml
RE-POSM-240	Protein Based 240mOsm/Kg H <sub>2</sub> O	Not Applicable	12 x 5ml
RE-POSM-280	Protein Based 280mOsm/Kg H <sub>2</sub> O	Not Applicable	12 x 5ml
RE-POSM-320	Protein Based 320mOsm/Kg H <sub>2</sub> O	Not Applicable	12 x 5ml
RE-ROSM-300	Urine Based 300mOsm/Kg H <sub>2</sub> O	Not Applicable	12 x 5ml
RE-ROSM-800	Urine Based 800mOsm/Kg H <sub>2</sub> O	Not Applicable	12 x 5ml



ISO 17025  
IVNAB  
ACCREDITED  
TESTING  
DETACHED IN SCOPE REG.NR.264T



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[www.reagecon.com](http://www.reagecon.com)

**CERTIFICATE OF ANALYSIS**

**PRODUCT:** 900mOsm/Kg H<sub>2</sub>O Osmolality Standard

**PRODUCT NO:** RE-OSM-900

**LOT NO:** OSM90015B1

**DATE OF TEST:** 6<sup>th</sup> February 2015

**EXPIRY DATE:** 28<sup>th</sup> February 2018

**SPECIFICATION:** 891 – 909mOsm/Kg H<sub>2</sub>O

**MEAN:** 897 mOsm/Kg H<sub>2</sub>O

**TEST METHOD:**

The result reported above was determined by analysis of a sample of this lot taken at time of manufacture. The value of the standard was determined using a high performance calibrated, Osmometer according to TPOSM-1500.

This certificate relates solely to the lot number given above.

The uncertainty of measurement as been calculated not to exceed ± 1.2% Osmolality value at 95% confidence level, i.e. coverage factor k=2.

**ACCREDITATION:**

Reagecon Diagnostics Ltd. is accredited by the Irish National Accreditation Board, under scope 264T, for the test method, TPOSM-1500, used to generate the above result. This accreditation is intended only to certify that Reagecon has the Quality Management Systems in place to ensure that each individual test result generated using TPOSM-1500 is technically valid and is supported by appropriate uncertainty measurements.

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**TRACEABILITY IN THE PRODUCTION OF THIS STANDARD:**

This product was prepared gravimetrically on a weight/weight basis. Both solute and solvent were weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO 17025 accreditation for calibration of non-automatic weighing machines (265C). The resulting Balance Certificate of Calibration was issued in accordance with the requirements of ISO/IEC 17025. The balance was calibrated under monitored environmental conditions and atmospheric pressure. Tests were performed for capacity, readability, repeatability, eccentricity and linearity.

**BALANCE ID No.:** RDP-190

**CALIBRATION DATE OF BALANCE:** 20<sup>th</sup> December 2014

**CALIBRATION AUTHORITY OF BALANCE:** Reagecon Diagnostics Ltd, ISO17025 Accreditation No. 265C

**WEIGHTS No.:** RDP-191

**CALIBRATION DATE OF WEIGHTS:** 20<sup>th</sup> December 2014

**CALIBRATION AUTHORITY OF BALANCE:** Reagecon Diagnostics Ltd, ISO17025 Accreditation No. 265C

**Approved By:** Quality Manager

*Darren Mc Jannet*

**Date:** 6<sup>th</sup> February 2015

This certificate must not be reproduced except in full.

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# Cryoscope Standards



The concentration of solute in a liquid solvent, effects several colligative properties of the combined solution, one of which is its Freezing Point. The Freezing Point of milk depends on this phenomenon and milk in its unadulterated state has a freezing point below 0°C. As milk is diluted with water, the freezing point moves closer to that of pure water (0°C). This elevation of freezing temperature is due mainly to reduction in concentration of lactose and inorganic salts, due to the addition of water. The reduced concentration of biological materials such as fats, proteins or other solids are not thought to contribute to the freezing point elevation.

Historically, from a regulatory and practical perspective freezing point value is considered the optimum method for determining the presence of added water in either raw or treated milk. Economically, the addition of water to milk either accidentally or deliberately by producers, or at any other point in the process chain has a profound adverse effect on the milk or milk derivatives industry. The measurement has formed the basis of an official method that dates back to at least 1923 and has become established as a scientific discipline called Cryoscopy. Dating back to the 1950's several manufacturers of Cryoscopes have offered their products in the market place. Such instruments are usually very accurate and precise. Like all scientific instruments, Cryoscopes require calibration and control and in some situations method validation and instrument qualification. Due to our extensive knowledge of metrology and our unequalled number of accreditations, Reagecon offers a range of high quality Standards to facilitate these objectives. The range on offer is completed by the availability of Heat Transfer Fluid.

## Product benefits include:

- NIST traceability
- Extremely high accuracy
- Extended shelf life
- High quality, easy to use, secure packaging
- Products manufactured and certified for use on all Cryoscopes compliant to International Reference Standard ISO5764/IDF108 for the determination of Freezing Point in milk

Product No.	Description	Pack Size
MTR01025	Cryoscope Standard 000 (0.000°C)	250 ml
MTR020X	Cryoscope Standard 422 (-0.408°C) (422m°H)	100 ml
MTR02025	Cryoscope Standard 422 (-0.408°C) (422m°H)	250 ml
MTR030X	Cryoscope Standard 530 (-0.512°C) (530m°H)	100 ml
MTR03025	Cryoscope Standard 530 (-0.512°C) (530m°H)	250 ml
MTR03525	Cryoscope Standard 577 (-0.557°C) (577m°H)	250 ml
MTR040X	Cryoscope Standard 621 (-0.600°C) (621m°H)	100 ml
MTR04025	Cryoscope Standard 621 (-0.600°C) (621m°H)	250 ml
CRYBL	Cryoscope Bath Liquid	500 ml
HTF250	Cryoscope Heat Transfer Fluid	250 ml

# United States Pharmacopoeia Solutions



## Summary of Features & Benefits:

### Commercial Benefits

- Reduce preparation time
- Free up resources for core activities
- Save valuable bench space

### Technical Benefits

- Produced in accordance with USP methods
- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online

Reagecon is pleased to announce a new range of USP ready to use solutions. These solutions have been developed as part of our on-going Research and Development program. These USP solutions, which are only available from a small number of manufacturers, bring you multiple benefits that include:

- Significant reduction in the amount of time and expense required to prepare Test Solutions
- Ensure consistency of products (independent, traceable Certificates of Analysis)
- Produced according to relevant Pharmacopoeia requirements - no deviation in materials or methodology
- Manufactured with controlled processes and batch certified to ensure lot-to-lot consistency and reproducibility of results. Such benefits give you the assurance and peace of mind that in-house preparations cannot provide



For USP products not listed below, please contact us at [sales@reagecon.ie](mailto:sales@reagecon.ie)

Description	Product No. 100ml	Product No. 500ml
USP Solution Acetate Buffer TS Conforms to USP	USP0101	USP0105
USP Solution Acetic Acid 2.00 Normal Conforms to USP	USP0201	USP0205
USP Solution Acetic Acid-Ammonium Acetate Buffer TS Conforms to USP	USP0301	USP0305
USP Solution Ammonia-Ammonium Chloride Buffer TS Conforms to USP	USP0401	USP0405
USP Solution Ammoniacal Potassium Ferricyanide TS Conforms to USP	USP0501	USP0505
USP Solution Ammonium Carbonate TS Conforms to USP	USP0601	USP0605
USP Solution Ammonium Chloride TS Conforms to USP	USP0701	USP0705
USP Solution Ammonium Chloride-Ammonium Hydroxide TS Conforms to USP	USP0801	USP0805
USP Solution Ammonium Thiocyanate TS Conforms to USP	USP0901	USP0905
USP Solution Barium Chloride TS/RS Conforms to USP	USP1001	USP1005
USP Solution Barium Nitrate TS Conforms to USP	USP1101	USP1105
USP Solution Bromate-Bromide Solution 0.100 Normal Conforms to USP	USP1201	USP1205
USP Solution Bromocresol Green TS Conforms to USP	USP1301	USP1305
USP Solution Bromocresol Purple TS Conforms to USP	USP1401	USP1405
USP Solution Bromophenol Blue TS Conforms to USP	USP1501	USP1505
USP Solution Bromothymol Blue TS Conforms to USP	USP1601	USP1605

Description	Product No. 100ml	Product No. 500ml
USP Solution Calcium Sulfate TS Conforms to USP	USP1701	USP1705
USP Solution Congo Red TS Conforms to USP	USP1901	USP1905
USP Solution Cupric Acetate TS Conforms to USP	USP2001	USP2005
USP Solution Cupric Sulfate TS Conforms to USP	USP2201	USP2205
USP Solution Dichlorofluorescein TS Conforms to USP	USP2301	USP2305
USP Solution Edetate DiSodium TS Conforms to USP	USP2401	USP2405
USP Solution Ferric Ammonium Sulfate TS Conforms to USP	USP2601	USP2605
USP Solution Ferric Chloride TS Conforms to USP	USP2701	USP2705
USP Solution Glycerin Base TS Conforms to USP	USP2801	USP2805
USP Solution Hydrochloric Acid 1.00 Normal Conforms to USP	USP2901	USP2905
USP Solution Iodine (Iodine-Iodide) 0.100 Normal Conforms to USP	USP3001	USP3005
USP Solution Lead Acetate TS Conforms to USP	USP3101	USP3105
USP Solution Mercuric Chloride TS Conforms to USP	USP3301	USP3305
USP Solution Methyl Orange Indicator Conforms to USP	USP3401	USP3405
USP Solution Methyl Red TS 2 Conforms to USP	USP3501	USP3505
USP Solution Methyl Red-Methylene Blue Solution Conforms to USP	USP3601	USP3605
USP Solution Methylene Blue TS Conforms to USP	USP3701	USP3705
USP Solution Neutral Red TS Conforms to USP	USP3801	USP3805
USP Solution Oxalic Acid TS Conforms to USP	USP3901	USP3905
USP Solution Perchloric Acid 0.1 Normal Conforms to USP	USP4001	USP4005
USP Solution Phenol Red TS Conforms to USP	USP4101	USP4105
USP Solution Phenolphthalein TS/RS Conforms to USP	USP4201	USP4205
USP Solution Phloroglucinol TS Conforms to USP	USP4301	USP4305
USP Solution Phosphotungstic Acid TS Conforms to USP	USP4401	USP4405
USP Solution Potassium Acetate TS Conforms to USP	USP4501	USP4505
USP Solution Potassium Carbonate TS Conforms to USP	USP4601	USP4605
USP Solution Potassium Iodide TS Conforms to USP	USP5101	USP5105
USP Solution Potassium Permanganate 0.100 Normal Conforms to USP	USP5201	USP5205
USP Solution Potassium Sulfate TS Conforms to USP	USP5301	USP5305
USP Solution Resorcinol TS Conforms to USP	USP5401	USP5405
USP Solution Silver Nitrate 0.100 Normal Conforms to USP	USP5501	USP5505
USP Solution Sodium Acetate TS Conforms to USP	USP5601	USP5605
USP Solution Sodium Chloride Conforms to USP	USP5701	USP5705
USP Solution Sodium Hydroxide 1.00 Normal Conforms to USP	USP5801	USP5805
USP Solution Sodium Thiosulfate 0.100 Normal (N/10) Conforms to USP	USP5901	USP5905
USP Solution Sulfanilic Acid TS Conforms to USP	USP6001	USP6005
USP Solution Sulfuric Acid 1.00 Normal Conforms to USP	USP6101	USP6105
USP Solution Thymol Blue TS/RS Conforms to USP	USP6201	USP6205
USP Solution Zinc Sulfate 0.0500 Molar Conforms to USP	USP6301	USP6305
USP Solution Diluted Alcohol (50/50 Alcohol Water) Conforms to USP	USP6401	USP6405
USP Solution Ammonia (Ammonium Hydroxide) TS Conforms to USP	USP6501	USP6505
USP Solution Methyl Red TS Conforms to USP	USP6601	USP6605

Colouration Reagents as outlined in the United States Pharmacopeia can be seen in the Colour Standards Chapter of this compendium.

# European Pharmacopoeia Solutions



Reagecon, as a specialist manufacturer of laboratory reagents has now introduced the range of Reagents and Standard solutions in Chapters 2 and 4 of the current Ph. Eur. All are manufactured and tested in compliance with the Ph. Eur. and are supplied with a Certificates of Analysis, Lot No, and expiry date are stated on all product labels.

## Reagents as outlined in Chapter 4 (4.1.1) of Ph. Eur.

Product No.	Description	Pack Size
1000401	Acetic acid (30%)	1L
1000402	Acetic acid, Dilute (12%)	1L
1000501	Acetic anhydride Solution R1	1L
1002501	Alcohol, aldehyde-free	1L
1004702	Ammonia, dilute R1	1L
1004703	Ammonia, dilute R2	1L
1005201	Ammonium Carbonate Solution	1L
1005703	Ammonium Molybdate Solution R2	1L
1007301	Anisaldehyde Solution	100ml
1007302	Anisaldehyde Solution R1	100ml
1009301	Barium Chloride Solution R1	1L
1009401	Barium Hydroxide Solution	1L
1011601	Biuret reagent	100ml
1012601	Bromocresol Green Solution	100ml
1012602	Bromocresol Green - Methyl Red Mixed Indicator	100ml
10126021	Bromocresol Green - Methyl Red Mixed Indicator	1L
10126025	Bromocresol Green - Methyl Red Mixed Indicator	5L
1012701	Bromocresol Purple Indicator Solution 0.04%	100ml
1012801	Bromophenol Blue Solution	100ml
1012803	Bromophenol Blue Solution R2	100ml
1012901	Bromothymol Blue Solution R1	100ml
1012903	Bromothymol Blue Solution R3	2 x 500ml
1015201	Calcium Sulphate Solution	1L
1022001	Congo Red Solution	1L
1022002	Congo Red Paper	100pk
1022901	Crystal Violet Solution (Non-aqueous indicator)	100ml
1023100	Cupri-Citric Solution	1L
1023300A	Cupri-Tartaric Solution 1	500ml
1023300B	Cupri-Tartaric Solution 2	500ml

Product No.	Description	Pack Size
1032101	Diphenylamine Solution	1L
10321011	Diphenylamine Solution	100ml
1032102	Diphenylamine Solution R1	1L
103110101	Dimidium Bromide Disulphine Blue Mixed Indicator	100ml
1031101	Dimidium Bromide Disulphine Blue Mixed Indicator	1L
1031101-500	Dimidium Bromide - Sulphan Blue Mixed Indicator	500ml
1037702	Ferric Ammonium Sulphate R2	1L
1038100	Ferroun Solution	100ml
1039101	Formaldehyde Solution	100ml
1039401	Fuchsin Solution, Decolorised	100ml
1039402	Fuchsin Solution, Decolorised R1	100ml
1043101	Holmium Perchlorate Solution	1L
1043501	Hydrochloric Acid R1	1L
1043503	Hydrochloric Acid, Dilute	1L
1043504	Hydrochloric Acid, Dilute R1	1L
1045901	Iodine Bromide Solution	1L
1046300	Iodoplatinate	200 mL
1048001	Lanthanum Nitrate Solution	1L
1048101	Lead Acetate Cotton	10g
1048102	Lead Acetate Paper	50pk
1048103	Lead Acetate Solution	1L
1052101	Mercuric Bromide Paper	50pk
1053601	Methoxyphenylacetic	100ml
1054801	Methyl Orange Mixed Solution	100ml
1054802	Methyl Orange Solution	100ml
1055101	Methyl Red Mixed Solution	100ml
1055102	Methyl Red Indicator Solution 0.02%	100ml
1056801	Mordant Black 11 Triturate	100g
1056700	Molybdovanadic	100ml
1057601	Naphtolbenzein Solution	100ml
1058201	Nile Blue A Solution	100ml
1058303	Ninhydrin Solution	100ml
1058304	Ninhydrin Solution R1	100ml
1058305	Ninhydrin Solution R2	100ml
1058402	Nitric acid, Dilute	100ml
1062901	Perchloric Acid Solution	100ml
1063601	Phenol Red Indicator Solution	100ml
1063603	Phenol Red Solution R2	500ml
1063702	Phenolphthalein Solution	100ml
1063703	Phenolphthalein Solution R1	100ml
1064501	Phenylhydrazine Hydro Chloride Solution	2 x 500ml
1065000	Phosphomolybdotungstic Solution	100ml
1065200	Phosphotungstic Acid Solution	100ml

Product No.	Description	Pack Size
1065801	Picric Acid Solution	100ml
1065802	Picric Acid Solution R1	100ml
1069101	Potassium Chloride, 0.1M	1L
1069201	Potassium Chromate Solution	1L
1069501	Potassium Dichromate Solution	1L
106950105	Potassium Dichromate Solution	500ml
10695015	Potassium Dichromate Solution	5L
1069801	Potassium Ferrocyanide Solution	100ml
1070001	Potassium Hydrogen Phthalate, 0.2M	1L
1070302	Potassium Hydroxide in Alcohol (10% v/v) 0.5M	1L
1070303	Potassium Hydroxide in Alcohol	100ml
1070501	Potassium Iodide & Starch Solution	125ml
1070502	Potassium Iodide Solution	1L
1070504	Potassium Iodide Solution Saturated	500ml
1070600	Potassium Iodobismuthate Solution	100ml
1070602	Potassium Iodobismuthate Solution R2	100ml
1070902	Potassium Permanganate Solution	1L
1071301	Potassium Pyroantimonate Solution	125ml
1071600-A	Potassium Tetraiodomercurate Solution Alkaline Part A	100ml
1071600-B	Potassium Tetraiodomercurate Solution Alkaline Part B	100ml
1075201	Ruthenium Red Solution	100ml
1078301	Silver Nitrate Solution R1	1L
1078302	Silver Nitrate Solution R2	1L
1079301	Sodium Carbonate Solution	1L
1081401	Sodium Hydroxide Solution	1L
1081402	Sodium Hydroxide Solution Dilute	1L
1081404	Sodium Hydroxide Solution Strong	1L
10816005	Sodium Hypochlorite Solution Strong	500ml
1083901	Sodium Sulphide Solution	100ml
1085001	Stannous Chloride Solution	100ml
1085103	Starch Solution	100ml
1086500	Sulfomolybdic Reagent R3	1L
1095502TO	Carbon Dioxide Free Water	1L
1086804	Sulphuric Acid Dilute Solution	1L
1088600	Tetramethylammonium Hydroxide Solution	1L
1089602	Thioacetamide Solution	1L
1090701	Thymolphthalein 0.05% Indicator Solution	1L
1094201	Tris(hydroxymethyl) Aminomethane Solution	100ml
1095502	Carbon Dioxide Free Water	1L
1096601	Zinc Chloride Formic Acid Solution	1L
1096602	Zinc Chloride Solution Iodinated	1L
1102301	Zinc Acetate Solution	1L

## Volumetric Solutions as outlined in Chapter 4 (4.2.2) of Ph. Eur.

Product No.	Description	Pack Size
3000100	0.1M Ammonium and Cerium Nitrate	1L
3000200	0.01M Ammonium and Cerium Nitrate	1L
3000300	0.1M Ammonium and Cerium Sulphate	1L
3000500	0.1M Ammonium Thiocyanate	1L
3000600	0.1M Barium Chloride	1L
3000900	0.004M Benzethonium Chloride	1L
3001100	0.1M Cerium Sulphate	1L
3001300	0.1M Ferric Ammonium Sulphate	1L
3001500	6M Hydrochloric Acid	1L
3001500-10L	6M Hydrochloric Acid	10L
3001500-25L	6M Hydrochloric Acid	25L
3001500-5L	6M Hydrochloric Acid	5L
3001600	3M Hydrochloric Acid	1L
3001700	2M Hydrochloric Acid	1L
3001800	1M Hydrochloric Acid	1L
3002100	0.1M Hydrochloric Acid	1L
3002700	0.05M Iodine	1L
3002900	0.01M Iodine	1L
3003100	0.1M Lead Nitrate	1L
3003300	0.1M Lithium Methoxide	1L
3003500	0.02M Mercuric Nitrate	1L
3003900	0.1M Perchloric Acid	1L
3004200	0.033M Potassium Bromate	1L
3004800	0.1M Potassium Hydroxide	1L
3004900	0.5M Potassium Hydroxide in Alcohol (60% v/v)	1L
3005000	0.5M Potassium Hydroxide, Alcoholic	1L
30050005	0.5M Potassium Hydroxide, Alcoholic	50ml
3005100	0.1M Potassium Hydroxide, Alcoholic	1L
3005300	0.02M Potassium Permanganate	1L
3005600	0.1M Silver Nitrate	1L
3005800	0.1M Sodium Arsenite	1L
3005900	0.1M Sodium Edetate	1L
3006300	1M Sodium Hydroxide	1L
3006600	0.1M Sodium Hydroxide	1L
3007000	0.1M Sodium Hydroxide, Ethanolic	1L
3007100	0.1M Sodium Methoxide	1L
3007200	0.1M Sodium Nitrite	1L
3007300	0.1M Sodium Thiosulphate	1L
30073005	0.1M Sodium Thiosulphate	50ml
3007800	0.5M Sulphuric Acid	1L
3008000	0.05M Sulphuric Acid	1L



Product No.	Description	Pack Size
3008300	0.1M Tetrabutylammonium Hydroxide	1L
3008400	0.1M Tetrabutylammonium Hydroxide in 2-propanol	1L
3008500	0.05M Zinc Chloride	1L
3008600	0.1M Zinc Sulphate	1L
3008700	1M Cupriethylenediamine Hydroxide Solution	1L
3008800	0.1M Hydrochloric Acid, Alcoholic	1L
3009100	1.0M Potassium Hydroxide	1L
3009300	0.001M Silver Nitrate	1L

### Buffer Solutions as outlined in Chapter 4 (4.1.3) of Ph. Eur.

Product No.	Description	Pack Size
4000100	Buffered Acetone Solution	1L
4000600	Buffer Solution pH 3.5	1L
4000600-500ml	Buffer Solution pH 3.5	500ml
4000700	Phosphate Buffer Solution pH 3.5	10L
4000700-5L	Phosphate Buffer Solution pH 3.5	5L
4001400	Acetate Buffer Solution pH 4.6	1L
4002000-10L	Buffer Solution pH 5.5	10L
4002400	Phosphate Buffer Solution pH 6.0	1L
4002400-10L	Phosphate Buffer Solution pH 6.0	10L
4004800	Phosphate Buffer Solution pH 7.4	1L
4004800-5L	Phosphate Buffer Solution pH 7.4	5L
4005000-5L	Phosphate Buffered Saline pH 7.4	5L
4007200	Ammonium Chloride Buffer pH 9.5	1L
4007300	Ammonium Chloride Buffer pH 10.0	1L
4008300	Buffer Phosphate Solution pH 9.0	1L
4013300	Phosphate Buffer Solution pH 8.5 acc to EP	5L

## Standard Solutions for Limit Tests as outlined in Chapter 4 (4.1.2) of Ph. Eur.

Product No.	Description	Pack Size
5000200	Aluminium Standard Solution (200ppm Al)	100ml
5000203C	Concentrate To Make Aluminium Standard Solution (100ppm Al)	100ml
5000300C	Concentrate To Make Ammonium Standard Solution (100ppm NH <sub>4</sub> )	100ml
5000301	Ammonium Standard Solution (2.5 ppm NH <sub>4</sub> )	100ml
5000302C	Concentrate To Make Ammonium Standard Solution (1ppm NH <sub>4</sub> )	100ml
5000400C	Concentrate To Make Antimony Standard Solution (1000ppm Sb)	100ml
5000500C	Concentrate To Make Arsenic Standard Solution (10ppm As)	100ml
5000700	Concentrated To Make Cadmium Standard Solution (0.1% Cd)	100ml
5000800C	Concentrate To Make Calcium Standard Solution (400ppmCa)	100ml
5000802C	Concentrate To Make Calcium Standard Solution (100ppm Ca) Alcoholic	100ml
5000900C	Concentrate To Make Chloride Standard Solution (8ppm Cl)	100ml
5001000	Chromium Standard Solution (100ppm Cr)	1L
5001100	Copper Standard Solution (0.1% Cu)	100ml
5001200C	Concentrate To Make Ferrocyanide Standard Solution (100ppm Fe)	100ml
5001400C	Concentrate To Make Fluoride Standard Solution (10ppm F)	100ml
5001600C	Concentrate To Make Iron Standard Solution (20ppm Fe)	100ml
5001602C	Concentrate To Make Iron Standard Solution (8ppm Fe)	100ml
5001700	Lead Standard Solution (0.1% Pb)	100ml
5001701C	Concentrate To Make Lead Standard Solution (100ppm Pb)	100ml
5001800C	Concentrate To Make Magnesium Standard Solution (100ppm Mg)	100ml
5002000C	Concentrate To Make Nickel Standard Solution (10ppm Ni)	100ml
5002100C	Concentrate To Make Nitrate Standard Solution (100ppm NO <sub>3</sub> )	100ml
5002102C	Concentrate To Make Nitrate Standard Solution (2ppm NO <sub>3</sub> )	100ml
5002200C	Concentrate To Make Phosphate Standard Solution (5ppm PO <sub>4</sub> )	100ml
5002400C	Concentrate To Make Potassium Standard Solution (100ppm K)	100ml
5002500	Selenium Standard Solution (100ppm Se)	1L
5002700C	Concentrate To Make Sodium Standard Solution (200ppm Na)	100ml
5002800C	Concentrate To Make Sulphate Standard Solution (10ppm SO <sub>4</sub> )	100ml
5003401C	Concentrate To Make Zinc Standard Solution (100ppm Zn)	100ml

## European Pharmacopoeia pH Buffer Solutions

Product No.	Description	Pack Size
EP1001-100	pH Buffer Solution pH $10.01 \pm 0.01$ @ 25°C	100ml
EP1245-100	pH Buffer Solution pH $12.45 \pm 0.05$ @25°C	100ml
EP1263-100	pH Buffer Solution pH $12.63 \pm 0.01$ @ 25°C	100ml
EP168	pH Buffer Solution pH $1.68 \pm 0.01$ @25°C	500ml
EP168-100	pH Buffer Solution pH $1.68 \pm 0.01$ @ 25°C	100ml
EP378-100	pH Buffer Solution pH $3.78 \pm 0.01$ @ 25°C	100ml
EP401	pH Buffer Solution pH $4.01 \pm 0.01$ @25°C	500ml
EP401-100	pH Buffer Solution pH $4.01 \pm 0.01$ @ 25°C	100ml
EP687	pH Buffer Solution pH $6.87 \pm 0.01$ @25°C	500ml
EP687-100	pH Buffer Solution pH $6.87 \pm 0.01$ @ 25°C	100ml
EP741	pH Buffer Solution pH $7.41 \pm 0.01$ @25°C	500ml
EP741-100	pH Buffer Solution pH $7.41 \pm 0.01$ @25°C	100ml
EP918	pH Buffer Solution $9.18 \pm 0.01$ @25°C	500ml
EP918-100	pH Buffer Solution pH $9.18 \pm 0.01$ @ 25°C	100ml

## European Pharmacopoeia Conductivity & Resistivity

Product No.	Description	Pack Size
EP133	Conductivity & Resistivity $133 \mu\text{s/cm}$ @20°C	500ml
EP1330	Conductivity & Resistivity $1330 \mu\text{s/cm}$ @20°C	500ml
EP266	Conductivity & Resistivity $26.6 \mu\text{s/cm}$ @20°C	500ml

## European Pharmacopoeia Reagent Reference Solutions

Product No.	Description	Pack Size
EPY101	Reference Solution Y1	100ml
EPY201	Reference Solution Y2	100ml
EPY301	Reference Solution Y3	100ml
EPY401	Reference Solution Y4	100ml
EPY501	Reference Solution Y5	100ml
EPY601	Reference Solution Y6	100ml
EPY701	Reference Solution Y7	100ml

Colouration Reagents as outlined in the European Pharmacopoeia can be seen in the Colour Standards Chapter of this compendium.

# Buffered Eluents

## Summary of Features & Benefits:

### Commercial Benefits

- Reduce sample preparation time
- Focus on core activities
- Ensure Consistency of product
- Free up valuable Laboratory Space
- Achieve peace of mind

### Technical Benefits

- Produced in accordance with USP
- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online

Reagecon is pleased to announce a new range of Ready to Use Buffered Eluents for Liquid Chromatography. The control of Mobile Phase pH, when analysing ionisable compounds using HPLC is well recognised. There is also a substantial body of literature supporting the use of pH control when working with field samples of non-ionisable compounds due to the presence of ionisable impurities or contaminants. The use of Reagecon's high quality buffer systems will minimise variations of mobile phase pH, leading to dramatically improved selectivity, retention factor, peak shape, resolution and reproducibility. These Buffered Eluents, which are not available from any other manufacturer, bring you multiple benefits that include:

- Significant reduction in the amount of time and expense required to prepare them in house - "lean labs"
- Produced according to relevant Pharmacopoeia requirements - no deviation in materials or methodology
- Manufactured under controlled processes and batch certified to ensure lot-to-lot consistency and reproducibility of results

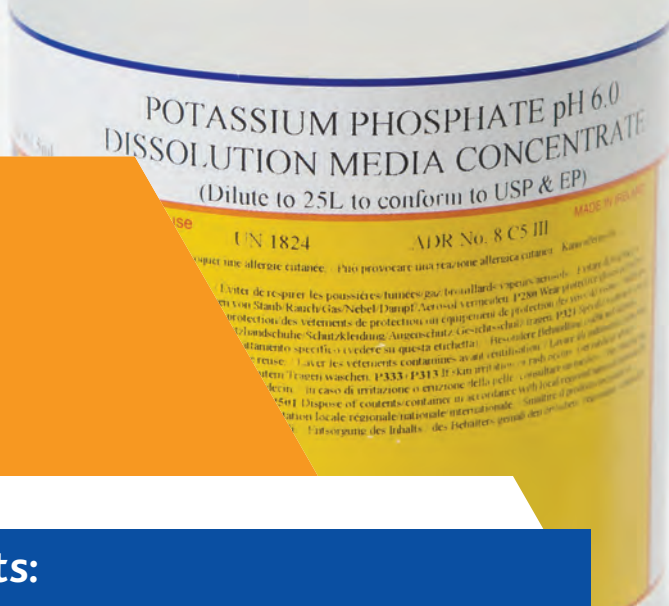
Reagecon has selected 19 of the most commonly recommended buffering systems from scientific literature and from the currently published 2,400 monographs of the USP, these are listed below. However, there are several hundred other buffering systems contained in the monographs and we are happy to quote for these also. The products presented are suitable for use as buffering systems in either solvent or aqueous mobile phases.

## Buffered Eluents

Description	Product No. 500ml	Product No. 1L
pH 2 - 6.8g/L Monobasic Potassium Phosphate	USP8005	USP801
pH 2.5 - 0.01M Phosphoric Acid and 0.01M Monobasic Sodium Phosphate	USP8105	USP811
pH 2.5 - Monobasic Potassium Phosphate	USP8205	USP821
pH 3 - Monobasic Potassium Phosphate	USP8305	USP831
pH 3.5 - Monobasic Sodium Phosphate	USP8405	USP841
pH 4 - Monobasic Potassium Phosphate	USP8505	USP8501
pH 4.5 - Sodium Acetate Trihydrate	USP8605	USP861
pH 4.5 - Monobasic Potassium Phosphate	USP8705	USP871
pH 5 - Monobasic Potassium Phosphate	USP8805	USP881
pH 5.5 - Monobasic / Dibasic Potassium Phosphate	USP8905	USP891
pH 6 - Monobasic Potassium Phosphate	USP9005	USP901
pH 6.5 - Monobasic Potassium Phosphate	USP9105	USP911
pH 6.8 - Monobasic Potassium Phosphate / Dibasic Sodium Phosphate	USP9205	USP921
pH 6.8 - Monobasic Potassium Phosphate	USP9305	USP931
pH 7 - Monobasic Potassium Phosphate / Dibasic Sodium Phosphate	USP9405	USP941
pH 7 - Monobasic Potassium Phosphate / Sodium Hydroxide	USP9505	USP951
pH 7.5 - Monobasic Potassium Phosphate	USP9605	USP961
pH 7.5 - Dibasic Potassium / Monobasic Sodium Phosphate	USP9705	USP971
pH 8 - Monobasic Sodium Phosphate/ DiSodium Hydrogen Phosphate	USP9805	USP981



# Dissolution Media - Concentrates



## Summary of Features & Benefits:

### Commercial Benefits

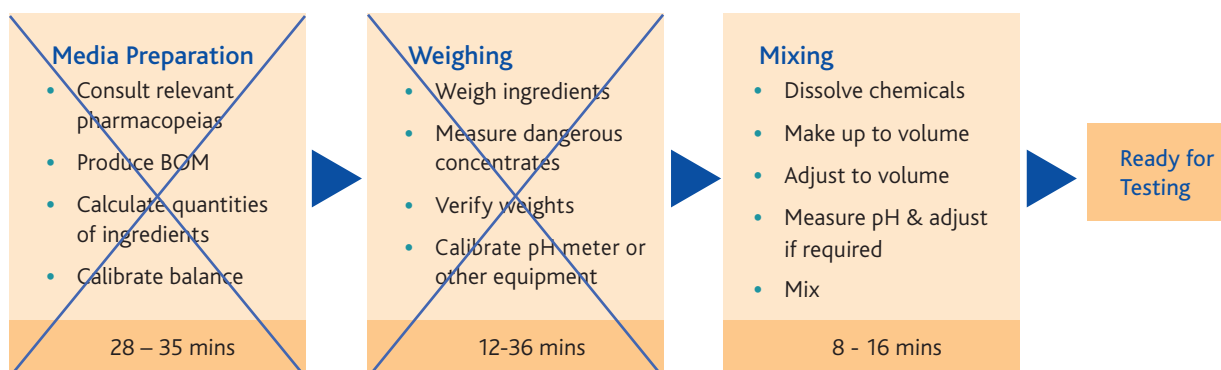
- Reduce preparation time
- Free up resources for core activities
- Save valuable bench space

### Technical Benefits

- Consistency of product
- Full regulatory & labelling compliance
- Certificates of Analysis & Safety Data Sheets available online

Reagecon has added a new range of Dissolution Media Concentrates to its manufactured product portfolio.

With Reagecon's dissolution media concentrates you take out all preparation steps up to the final mixing, simply add purified water and mix, allowing you to run your dissolution test without delay and at a reduced cost.



### Save valuable time per batch!

Allow Reagecon to offer you major savings and improved efficiencies in your dissolution testing by having products which are:-

- Prepared according to relevant pharmacopoeia requirements
- Without deviations on materials and methodology from pharmacopoeia
- Guaranteed Accuracy and Stability
- 2 year Shelf Life
- Certificates of Analysis and Safety Data Sheets available online
- Consistency of Product, Independent, Traceable, Certified

## Dissolution Media - Concentrates

Product No.	Compliant Pharm	Concentration	Pack Size
<b>Potassium Phosphate pH 5.8</b>			
DBC01-230	USP & Ph. Eur.	230.8ml of conc. dilutes to 6L	Pack of 12
DBC01-250	USP & Ph. Eur.	250ml of conc. dilutes to 10L	Pack of 12
DBC01-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
<b>Potassium Phosphate pH 6.0</b>			
DBC02-230	USP & Ph. Eur.	230.8ml of conc. dilutes to 6L	Pack of 12
DBC02-250	USP & Ph. Eur.	250ml of conc. dilutes to 10L	Pack of 12
DBC02-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
DBC02-1L	USP & Ph. Eur.	1L of conc. dilutes to 40L	Pack of 6
<b>Potassium Phosphate pH 6.8</b>			
DBC03-230	USP & Ph. Eur.	230.8ml of conc. dilutes to 6L	Pack of 12
DBC03-250	USP & Ph. Eur.	250ml of conc. dilutes to 10L	Pack of 12
DBC03-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
<b>Potassium Phosphate pH 7.2</b>			
DBC04-230	USP & Ph. Eur.	230.8ml of conc. dilutes to 6L	Pack of 12
DBC04-250	USP & Ph. Eur.	250ml of conc. dilutes to 10L	Pack of 12
DBC04-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
DBC04-1L	USP & Ph. Eur.	1L of conc. dilutes to 40L	Pack of 6
<b>Potassium Phosphate pH 7.5</b>			
DBC05-230	USP & Ph. Eur.	230.8ml of conc. dilutes to 6L	Pack of 12
DBC05-250	USP & Ph. Eur.	250ml of conc. dilutes to 10L	Pack of 12
DBC05-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
DBC05-1L	USP & Ph. Eur.	1L of conc. dilutes to 40L	Pack of 6
<b>Acetate Buffer pH 4.5</b>			
DBC06-230	USP & Ph. Eur.	230.8ml of conc. dilutes to 6L	Pack of 12
DBC06-250	USP & Ph. Eur.	250ml of conc. dilutes to 10L	Pack of 12
DBC06-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
<b>Sodium Lauryl Sulphate 0.50%</b>			
DBC07-400	USP	400ml of conc. dilutes to 6L	Pack of 12
DBC07-500	USP	500ml of conc. dilutes to 10L	Pack of 12
<b>Potassium Phosphate pH 7.4</b>			
DBC08-230	USP & Ph. Eur.	230.8ml of conc. dilutes to 6L	Pack of 12
DBC08-250	USP & Ph. Eur.	250ml of conc. dilutes to 10L	Pack of 12
DBC08-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6

## Dissolution Media - Concentrates

Product No.	Compliant Pharm	Concentration	Pack Size
<b>Sodium Phosphate pH 6.8</b>			
DBC09-230	USP	230.8ml of conc. dilutes to 6L	Pack of 12
DBC09-250	USP	250ml of conc. dilutes to 10L	Pack of 12
DBC09-960	USP	961.5ml of conc. dilutes to 25L	Pack of 6
<b>Hydrochloric Acid 0.01N</b>			
DBC10-230	USP & Ph. Eur.	230.8ml of conc. dilutes to 6L	Pack of 12
DBC10-250	USP & Ph. Eur.	250ml of conc. dilutes to 10L	Pack of 12
DBC10-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
DBC10-1L	USP & Ph. Eur.	1L of conc. dilutes to 40L	Pack of 6
<b>Hydrochloric Acid 0.1N</b>			
DBC11-230	USP & Ph. Eur.	230.8ml of conc. dilutes to 6L	Pack of 12
DBC11-250	USP & Ph. Eur.	250ml of conc. dilutes to 10L	Pack of 12
DBC11-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
DBC11-1L	USP & Ph. Eur.	1L of conc. dilutes to 40L	Pack of 6
<b>Simulated Gastric Fluid without enzyme</b>			
DBC12-230	USP & Ph. Eur.	230.8ml of conc. dilutes to 6L	Pack of 12
DBC12-250	USP & Ph. Eur.	250ml of conc. dilutes to 10L	Pack of 12
DBC12-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
<b>Simulated Intestinal Fluid without enzyme</b>			
DBC13-230	USP & Ph. Eur.	230.8ml of conc. dilutes to 6L	Pack of 12
DBC13-250	USP & Ph. Eur.	250ml of conc. dilutes to 10L	Pack of 12
DBC13-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
<b>Phosphate Buffer pH 6.8</b>			
DBC14-500	JP	500ml of conc. dilutes to 10L	Pack of 12
DBC14-960	JP	961.5ml of conc. dilutes to 25L	Pack of 6
<b>2nd Dissolution Fluid</b>			
DBC15-250	JP	250ml of conc. dilutes to 10L	Pack of 12
DBC15-960	JP	961.5ml of conc. dilutes to 25L	Pack of 6
<b>Potassium Phosphate pH 4.5</b>			
DBC20-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
<b>Potassium Chloride 0.05M</b>			
DBC25-400	USP & Ph. Eur.	400ml of conc. dilutes to 10L	Pack of 12
DBC25-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6



Product No.	Compliant Pharm	Concentration	Pack Size
<b>Potassium Phosphate pH 4.5</b>			
DBC40-1L	USP & Ph. Eur.	1L of conc. dilutes to 40L	Pack of 6
<b>Potassium Phosphate pH 7.1</b>			
DBC41-1L	USP & Ph. Eur.	1L of conc. dilutes to 40L	Pack of 6
DBC41-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
<b>Potassium Phosphate pH 8.0</b>			
DBC42-1L	USP & Ph. Eur.	1L of conc. dilutes to 40L	Pack of 6
DBC42-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
<b>Buffered Sodium Dodecyl Sulphate, pH 7</b>			
DBC43-500	USP & Ph. Eur.	500ml of conc. dilutes to 10L	Pack of 12
<b>Potassium Phosphate pH 6.8 + 1.0% SDS(Sodium Dodecyl Sulphate)</b>			
DBC44-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 12
<b>Potassium Phosphate pH 6.8 + 0.5% SDS(Sodium Dodecyl Sulphate)</b>			
DBC45-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
<b>Acetate Buffer pH 4.5 + 1.0% SDS(Sodium Dodecyl Sulphate)</b>			
DBC46-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
<b>Acetate Buffer pH 4.5 + 0.5% SDS(Sodium Dodecyl Sulphate)</b>			
DBC47-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
<b>0.1N HCl+1.0% SDS (Sodium Dodecyl Sulphate)</b>			
DBC48-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6
<b>0.1N HCl+0.5% SDS (Sodium Dodecyl Sulphate)</b>			
DBC49-960	USP & Ph. Eur.	961.5ml of conc. dilutes to 25L	Pack of 6

# Dissolution Media - Ready To Use



## Summary of Features & Benefits:

### Commercial Benefits

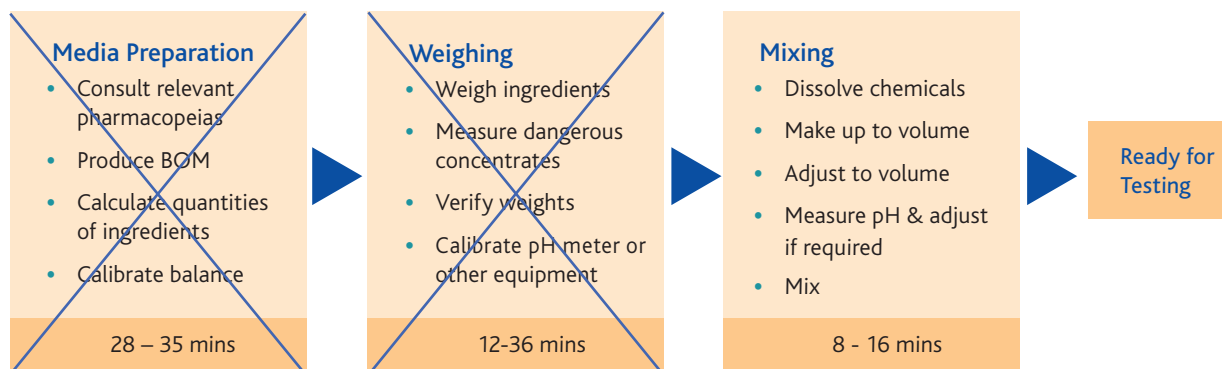
- Reduce preparation time
- Free up resources for core activities
- Save valuable bench space

### Technical Benefits

- Consistency of product
- Full regulatory & labelling compliance
- Certificates of Analysis & Safety Data Sheets available online

Reagecon has added a new range of Ready to Use Dissolution Media to its manufactured product portfolio.

Reagecon's dissolution media eliminates all preparation steps allowing you to run your dissolution test without delay and at a reduced cost.



### Save valuable time per batch!

Allow Reagecon to offer you major savings and improved efficiencies in your dissolution testing by having products which are:-

- Prepared according to relevant pharmacopoeia requirements
- Without deviations on materials and methodology from pharmacopoeia
- Guaranteed Accuracy and Stability
- 2 year Shelf Life
- Certificates of Analysis and Safety Data Sheets available online
- Consistency of Product, Independent, Traceable, Certified

## Dissolution Media - Ready to Use

Product No.	Description	Compliant Pharmacopoeia	Pack Size
DB10-121	Hydrochloric Acid 0.01N	USP & Ph. Eur.	12 x 1L
DB10-25L	Hydrochloric Acid 0.01N	USP & Ph. Eur.	25L
DB11-121	Hydrochloric Acid 0.1N	USP & Ph. Eur.	12 x 1L
DB11-10	Hydrochloric Acid 0.1N	USP & Ph. Eur.	10L (Bag in Box)
DB11-10L	Hydrochloric Acid 0.1N	USP & Ph. Eur.	10L
DB11-20	Hydrochloric Acid 0.1N	USP & Ph. Eur.	20 L
DB11-25L	Hydrochloric Acid 0.1N	USP & Ph. Eur.	25L
DB06-121	Acetate Buffer pH 4.5	USP & Ph. Eur.	12 x 1L
DB06-10	Acetate Buffer pH 4.5	USP & Ph. Eur.	10L
DB06-20	Acetate Buffer pH 4.5	USP & Ph. Eur.	20 L
DB01-121	Potassium Phosphate pH 5.8	USP & Ph. Eur.	12 x 1L
DB02-121	Potassium Phosphate pH 6.0	USP & Ph. Eur.	12 x 1L
DB03-121	Potassium Phosphate pH 6.8, R	USP & Ph. Eur.	12 x 1L
DB03-10	Potassium Phosphate pH 6.8, R	USP & Ph. Eur.	10L
DB09-121	Sodium Phosphate pH 6.8	USP	12 x 1L
DB04-121	Potassium Phosphate pH 7.2	USP & Ph. Eur.	12 x 1L
DB04-10L	Potassium Phosphate pH 7.2	USP & Ph. Eur.	10L
DB08-121	Potassium Phosphate pH 7.4	USP & Ph. Eur.	12 x 1L
DB08-10L	Potassium Phosphate pH 7.4	USP & Ph. Eur.	10L
DB08-25L	Potassium Phosphate pH 7.4	USP & Ph. Eur.	25L
DB05-121	Potassium Phosphate pH 7.5	USP & Ph. Eur.	12 x 1L
DB05-10L	Potassium Phosphate pH 7.5	USP & Ph. Eur.	10L
DB07-121	Sodium Lauryl Sulphate 0.50%	USP	12 x 1L
DB07-121-25L	Sodium Lauryl Sulphate 0.50%	USP	25L
DB12-121	Simulated Gastric Fluid, without enzyme	USP & Ph. Eur.	12 x 1L
DB12-07	Simulated Gastric Fluid, without enzyme	USP & Ph. Eur.	7 L
DB12-10	Simulated Gastric Fluid, without enzyme	USP & Ph. Eur.	10L
DB13-121	Simulated Intestinal Fluid, without enzyme	USP & Ph. Eur.	12 x 1L
DB14-121	Potassium Phosphate pH 6.80	JP	12 x 1L
DB14-10L	Potassium Phosphate pH 6.80	JP	10L
DB18-121	1st Dissolution Fluid	JP	12 x 1L
DB18-10	1st Dissolution Fluid	JP	10L
DB15-121	2nd Dissolution Fluid	JP	12 x 1L
DB15-10L	2nd Dissolution Fluid	JP	10L
DB16-121	Acetate Buffer pH 5.5	Ph. Eur.	12 x 1L
DB17-121	Acetate Buffer pH 5.8	Ph. Eur.	12 x 1L
DB19-10	HCl/NaCl, pH 1.2	Ph. Eur.	10L
DB20-10	Phosphate Buffer pH 4.5	Ph. Eur.	10L
DB21-10	Citrate Buffer 0.05M	USP & Ph. Eur.	10L

## Dissolution Media - Ready to Use

Product No.	Description	Compliant Pharmacopoeia	Pack Size
DB22-10	Phosphate Buffer pH 7.5	USP & Ph. Eur.	10L
DB27-121	Buffered Sodium Dodecyl Sulphate, pH 7	USP & Ph. Eur.	12 x 1L
DB27-10	Buffered Sodium Dodecyl Sulphate, pH 7	USP & Ph. Eur.	10L
DB28-10L	Di Sodium Phosphate 55.3g + Citric Acid 4.8g, adjust to pH 6.8	USP & Ph. Eur.	10L
DB24-10	Phosphate Buffer pH 7.00	USP & Ph. Eur.	10L

## Dissolution FaSSIF

Biorelevant intestinal media, first proposed by Galia et al in 1998, are media that simulate intestinal fluids secreted under both fasting or feed state conditions <sup>(1)</sup>. These laboratory prepared solutions share physiochemical properties with corresponding fluids found in-vivo and are used to mimic the properties of the in-vivo fluids for drug solubility and dissolution characteristics.

Such media contain the bile salt Sodium Taurocholate and Lecithin dissolved in a slightly acid phosphate buffer which is tested for pH, osmolality and buffer capacity, which simulates the in-vivo solution in the upper small intestinal region, which is where the majority of drugs are absorbed <sup>(2)</sup>.

Reagecon offers the buffering system in a number of formulations and pack sizes, which are dependent on whether the medium under test is simulating fasting or feed state conditions.

<sup>(1)</sup> Galia, E.; Nicolaidis, E.; Hörter, D.; Löbenberg, R.; Reppas, C.; Dressman, J. B. Evaluation of Various Dissolution Media for Predicting In Vivo Performance of Class I and II Drugs. *Pharm. Res.* 1998, 15 (5), 698-705.

<sup>(2)</sup> Leigh, M.; Klofer, B., and Schaich, M. Comparison of the Solubility and Dissolution of Drugs in Fasted-State Biorelevant Media (FaSSIF and FaSSIF-V2), *Dissolution Technologies*, August 2013, 44-50.

Product No.	Description	Pack Size
FASSIF5	Dissolution Media FaSSIF pH 6.5 (without enzyme)	5L
FASSIFV21	Dissolution Media FaSSIF V2 - pH 6.5 - (without enzyme)	12 x 1L
FASSIFV210	Dissolution Media FaSSIF V2 - pH 6.5 (without enzyme)	10L
FESSIFV21	Dissolution Media FeSSIF V2 - pH 5.8 - (without enzyme)	12 x 1L
FESSIFV210	Dissolution Media FeSSIF V2 - pH 5.8 (without enzyme)	10L

# Dairy Standards & Reagents

Analytical tests to evaluate dairy products cover a wide variety of materials of different chemical and physical composition. These include products that contain milk in either dilute or concentrated format, various consistencies ranging from liquid to solid and in some instances products that have several non dairy products added.

Because of this variety the fitness for purpose aspect in selecting the most appropriate methodology is critical. Method selection will also depend on whether the test is being carried out for regulatory or compliance reasons, for quality control, quality assurance, food safety, or product stability purposes.



Reagecon manufactures a wide range of Physical and Chemical Standards that are appropriate to the testing of dairy products. Several of these products, which are specific or unique to the dairy industry, are listed in this section. Several others relating to the measurement of pH, Conductivity, Refractive Index, Density, Metals and Anions are listed under the appropriate headings elsewhere in this catalogue.

Standards and reagents relevant to the measurement of vitamins, food additives, preservatives, colours, flavours, fragrances, sugars and sanitisation residues/by-products are currently under development. Updates on this development pipeline can be tracked and viewed at [www.reagecon.com](http://www.reagecon.com).

## Reagents & Standards for the Dairy Industry

Product No.	Description	Pack Size
SUFMT1	Gerber Test Sulphuric Acid FMT d. 1.815-1.825	1L
SUFMT5	Gerber Test Sulphuric Acid FMT d. 1.815-1.825	5L
SUFMT25	Gerber Test Sulphuric Acid FMT d. 1.815-1.825	25L
SUFMTJ	Gerber Test Sulphuric Acid FMT d. 1.815-1.825	2.5L
BOA21	Kjeldahl Reagent 2% w/v Boric Acid Solution without indicator	1L
BOA25	Kjeldahl Reagent 2% w/v Boric Acid Solution without indicator	5L
BOA10	Kjeldahl Reagent 2% w/v Boric Acid Solution without indicator	10 L
BOA225	Kjeldahl Reagent 2% w/v Boric Acid Solution without indicator	25L
S30WW5	Kjeldahl Reagent 30% w/w (40% w/v) Sodium Hydroxide	5L
S30WWLN	Kjeldahl Reagent 30% w/w (40% w/v) Sodium Hydroxide	5L

Product No.	Description	Pack Size
KJR015	Kjeldahl Reagent 4% w/v Boric Acid Solution with indicator	5L
BOA41	Kjeldahl Reagent 4% w/v Boric Acid Solution without indicator	1L
BOA4	Kjeldahl Reagent 4% w/v Boric Acid Solution without indicator	5L
BOA425	Kjeldahl Reagent 4% w/v Boric Acid Solution without indicator	25L
ST840	Kjeldahl Reagent 40% w/v Sodium Hydroxide/8% Sodium Thiosulphate	25L
ST841	Kjeldahl Reagent 40% w/v Sodium Hydroxide/8% Sodium Thiosulphate	5L
WTR045	Barium Chloride Solution 10% w/v	5L
BOAI205	Kjeldahl Reagent 2% w/v Boric Acid with indicator (methylene blue and red methyl)	5L
BOAI225	Kjeldahl Reagent 2% Boric Acid Solution with indicator	25L
BOA3310	Kjeldahl Reagent 3.3% w/v Boric Acid Solution	10 L
PFS1	Indicator Solution Ferriin Indicator	100ml
FEA25	Indicator Solution Iron Alum (Volhard)	250ml
MTR05025	Indicator Methyl Orange Alcoholic Solution 0.1%	250ml
IPT01H	Indicator Phenolphthalein 0.1%	500ml
IPT05F	Indicator Phenolphthalein Alcoholic Solution 0.5%	1L
IPT05W	Indicator Phenolphthalein Alcoholic Solution 0.5%	2.5L
IPT10H	Indicator Phenolphthalein 1%	500ml
IPT10W	Indicator Phenolphthalein Alcoholic Solution 1.0%	2.5L
IPT1025	Indicator Phenolphthalein 1%	250ml
IPT16W	Indicator Phenolphthalein 1.6%	2.5L
PCS5	Indicator Solution Potassium Chromate 5%	500ml
TB04F	Indicator Thymol Blue Alcoholic Solution 0.04%	500ml
NPD03	Phosphatase Test 4-Nitrophenyl Di-Sodium Phosphate	12 x 0.15g
NPD04	Phosphatase Test Carbonate Bi-Carbonate Buffer (Aschafenburg and Mullen Phosphatase Test Buffer)	12 x 2.5g
CH3CN501	Acetonitrile, 50% v/v	1L
BAB2041	Barium Borate-Hydroxide Buffer	1L
BAOH011	Barium Hydroxide, 0.1N	1L
BOR0091	Borax Buffer, 0.00996M	1L
BUT7051	n-Butanol, 7.5% v/v	1L
CUS051	Copper Sulfate, CuSO <sub>4</sub> , 0.05%	1L
CUS11	Copper Sulfate Solution 1%	1L
CUSSOLA	Copper Sulfate Solution A 440.9mg Cu/25ml	1L
CUSSOLB	Copper Sulfate Solution B 72.5g/L	1L
FESO41	Ferrous Sulfate Solution	1L
PBA101	Lead Acetate Solution (CH COO) Pb, 10%	1L
PB00574	Phosphate Buffer 0.05M pH 7.4	1L
EFSKNO	Electrode Filling Solution Double Junction Bridge Solution 10% w/v Potassium Nitrate	100ml
PP500F	Potassium Permanganate 5% w/v	1L
PP500W	Potassium Permanganate 5% w/v	2.5L
S2WW1	Sodium Hydroxide 2% w/v	1L
ZS601	Zinc Sulphate, ZnSO <sub>4</sub> , 6% w/v	1L

# Standards & Reagents for APHA, AWWA & WEF Test Methods

Test procedures specifically for the examination of a wide spectrum of parameters in water and waste water are published in a volume called Standard Methods. Sample types may include potable/domestic water, surface water, ground water or cooling, circulating, boiler, municipal and waste waters. First published in 1905, Standard Methods is now in its 22nd Edition. It is published jointly by the American Public Health Association (APHA), American Water Works Association (AWWA), and the Water Environment Federation (WEF).

Standard Methods covers a vast array of analytes and properties. Products developed specifically for Standard Methods are listed below, but other stipulated Standards and Reagents can be found in almost every chapter of this catalogue.

## Standards & Reagents for APHA, AWWA and WEF Test Methods

Product No.	Description	Pack Size
ALKS042101	Alum Solution 10% w/v	1L
NH4CL041	Ammonium Chloride Standard 0.05M	1L
NH32501	Ammonium Hydroxide 5M	1L
NHMO41	Ammonium Molybdate 4% w/v	1L
NH4C2O41	Ammonium Oxalate 4% w/v	1L
NH4C2O51	Ammonium Oxalate 5% w/v	1L
NH4P301	Ammonium Phosphate 30% w/v	1L
NH4P401	Ammonium Phosphate 40% w/v	1L
NH4P501	Ammonium Phosphate 50% w/v	1L
NHS101	Ammonium Sulfate 10% w/v	1L
NAB11	Borax 1% w/v	1L
CUS0221	Copper Sulfate, $\text{CuSO}_4$ , 2% w/v	1L
PFS1	Ferroun Indicator	100ml
GLYC71	Glycine 7% w/v Aqueous Solution for Ozone	1L
HGN200071	Mercuric Nitrate 0.00705M	1L
PP20002F	Potassium Permanganate 0.01N	1L
SA02F	Sodium Acetate 0.2M	1L
SA2F	Sodium Acetate 2M	1L
SA2005W	Sodium Arsenite 0.05M (0.1N)	2.5L
N20014W	Silver Nitrate 0.0141M (0.0141N)	2.5L
TBO8F	Thymol Blue, 0.08% (w/v) in Methanol	1L
CH3CZN101	Zinc Acetate 10% w/v	1L

# Wine Standards & Reagents

## Wine & Must Analysis

The Compendium of International Methods of Wine and Must Analysis (edition 2013) includes all test methods, approved by the General Assembly of Representatives of the Member Governments of the OIV (International Organisation of Vine and Wine) up to June 2012. First published in 1962, the European Union now recognises all of the test methods in the Compendium for the testing and control of Viticultural Products. Through its role in harmonising methods of analysis, the Compendium facilitates globalisation within the wine industry and in conjunction with the International Code of Oenological Practices and the International Oenological Codex contains content of enormous scientific value.

Each method of analysis contained within the Compendium, contains considerable detail on the Reagents, Standards, Reference Materials and Analytical Volumetric Solutions required to perform that particular method. We are proud to present throughout this catalogue, the most comprehensive range of products available on the market for Wine and Must Analysis, irrespective of whether the methodology is instrumental or manual. Products developed specifically for Wine and Must analysis are contained in this chapter but products of relevance can be found in almost every part of this catalogue. All products contained herein either match or exceed the specifications laid down in the Compendium. Reagecon has a large department dedicated to the development of Industry Specific Customised products and several additional products are under development for Wine and Must Analysis. We believe the products presented will meet or exceed your expectations, bring scientific rigour to your analytical techniques and offer you real value for money.

## Standards & Reagents for the Wine Industry

Product No.	Description	Pack Size
KNAT08861	Alkaline Solution (Potassium Sodium Tartrate) 0,886M	1L
CAOH2M105	Calcium Hydroxide 2M Suspension	500ml
CAOH2M1	Calcium Hydroxide 2M Suspension	1L
CUS11	Copper Sulfate Solution 1%	1L
CUS101	Copper Sulfate Solution 10%	1L
DEXT0055	Dextrose Solution 0.5%	500ml
NATB46	di-Sodium tetra-Borate 10-hydrate Solution 4.6%	100ml
FS0101	Fehlings Solution No. 1	1L
FS010105	Fehlings Solution No. 1	500ml
FS0102	Fehlings Solution No. 2	1L
FS010205	Fehlings Solution No. 2	500ml
FOCIRE01	Folin-Ciocalteu's Reagent	100ml
K2SO41	Gypsumetric Liquor - 1ml corresponds to 0.01g	100ml
H20011	Hydrochloric Acid 0.01N 0.01M	1L
H20101	Hydrochloric Acid 0.1N 0.1M	1L
H210G1	Hydrochloric Acid 10 g/l	1L



Product No.	Description	Pack Size
H21001	Hydrochloric Acid 1.0N 1.0M	1L
HCLS115	Hydrochloric Acid 50% v/v	5L
HP0905	Hydrogen Peroxide 0.9% w/v	500ml
HP1005	Hydrogen Peroxide 10% w/v stabilised	500ml
HP1505	Hydrogen Peroxide 15%	500ml
HP25VV05	Phosphoric Acid 25%	500ml
HP301	Hydrogen Peroxide 3% w/v	1L
HP305	Hydrogen Peroxide 3% w/v	5L
I2001F	Iodine 0.01M 0.02N	1L
I2001H	Iodine 0.01M 0.02N	500ml
I2005F	Iodine 0.1N 0.05M	1L
I2005H	Iodine 0.1N 0.05M	500ml
I20031H	Iodine N/64	500ml
KFECN10WV1	Potassium Hexacyanoferrate (II) Solution 10% w/v	1L
KOH21001	Potassium Hydroxide 1.0N 1.0M	1L
KOH20101	Potassium Hydroxide 0.1N 0.1M	1L
KI20WV1	Potassium Iodide 20% Solution	1L
KI30WV1	Potassium Iodide Solution 30% w/v	1L
KT20WV1	Potassium Thiocyanate Solution 20% w/v	1L
KT5WV1	Potassium Thiocyanate Solution 5% w/v	1L
SCS20WV1	Sodium Carbonate 20%	1L
S20011	Sodium Hydroxide 0.01N 0.01M	1L
S20021	Sodium Hydroxide 0.02N 0.02M	1L
S20101	Sodium Hydroxide 0.1N 0.1M	1L
S2013321	Sodium Hydroxide 0.1332N 0.1332M	1L
S20401	Sodium Hydroxide 0.4N 0.4M	1L
S216661	Sodium Hydroxide 1.666N 1.666M	1L
S10WV1	Sodium Hydroxide 10%	1L
S10001	Sodium Hydroxide 10N 10M	1L
S201005	Sodium Hydroxide 0.1N 0.1M	500ml
S20501	Sodium Hydroxide 0.5N 0.5M	1L
S2035461	Sodium Hydroxide 0.35465N 0.35465M	1L
SU33VV1	Sulphuric Acid 33% (v/v)	1L
SU2501	Sulphuric Acid 1:4 (v/v)	1L
SU20VV1	Sulphuric Acid 1:5 v/v	1L
T20021	Sodium Thiosulphate 0.02N 0.02M	1L
T20101	Sodium Thiosulphate 0.1N 0.1M	1L
T2005511	Sodium Thiosulphate 0.0551N 0.0551M	1L
T20501	Sodium Thiosulphate 0.5N 0.5M	1L
ST105	Starch Solution 1%	500ml
ST1001	Starch Solution 1%	1L
TISAB-WINE	TISAB for wine analysis (Dir. 2676/90) for the fluoride determination by selective electrodes	250ml

## Coloured Indicators for the Wine Industry.

Further indicators can be found in the section Analytical Volumetric Solutions.

Product No.	Description	Pack Size
TASHI010	Indicator Solution for Mixed Sulphur	100ml
BRCG1501	Bromocresol Green Indicator, 1%	100ml
BRTH040250	Bromothymol Blue Indicator 0.4%	250ml
BRTH05	Bromothymol Blue Indicator, 0.04%	500ml
IPT1025	Indicator Phenolphthalein 1%	250ml
MTBLU10250	Indicator Methylene Blue 1%	250ml
BRBP05	Bromophenol Blue Indicator, 0.04% Aqueous Solution	500ml
1063601	Phenol Red Indicator Solution	100ml
1055102	Methyl Red Indicator Solution 0.02%	100ml

## Ethanol Density Standards for calibration of alcoholometers and densimeters in Oenology.

For more Density Standards please see chapters dedicated to Density.

Product No.	Description	Pack Size
ET08VV025	8.5% v/v Ethanol/Water - nominal density 0.98654g/ml	250ml
ET10VV025	10% v/v Ethanol/Water - nominal density 0.9865g/ml	250ml
ET11VV025	11% v/v Ethanol/Water - nominal density 0.98352g/ml	250ml
ET12VV025	12% v/v Ethanol/Water - nominal density 0.98235g/ml	250ml
ET13VV025	13.5% v/v Ethanol/Water - nominal density 0.98065g/ml	250ml
ET14VV025	14% v/v Ethanol/Water - nominal density 0.98008g/ml	250ml
ET16VV025	16% v/v Ethanol/Water - nominal density 0.97787g/ml	250ml
ET20VV025	20% v/v Ethanol/Water - nominal density 0.97356g/ml	250ml

## Brix Standards for the Wine Industry.

For further Refractive Index & Brix standards please see chapters dedicated to this subject area.

Product No.	Description	Nominal Refractive Index @ 20°C	Pack Size
BS149	Sucrose (Brix) Standard 14.9% Sucrose in Water	1.36	15ml
BS194	Sucrose (Brix) Standard 19.4% Sucrose in Water	1.36	15ml
BS238	Sucrose (Brix) Standard 23.8% Sucrose in Water	1.37	15ml

# Soil Testing Standards & Reagents

The testing of soil is a large and rapidly growing area within Analytical Science worldwide. A survey published in the USA in 1998 found that about 5 million samples were analysed annually in that country and even then this number was considered an underestimation. When the rapid growth in this area is factored in and the numbers extrapolated on a worldwide basis, soil testing is now a significant component of the work of public, commercial and fertilizer company laboratories in all crop growing areas of the world.

This growth is driven by the need to provide growers with accurate information as an enabler to applying correct and economical quantities of fertilizer, and monitor soil fertility. Secondly it is driven by a requirement that farmers/growers and environmental protectors operate in an environmentally friendly way, thus reducing pollution of food, air, waterways and other amenities.

For soil analysis to be effective and efficient it is vital that testing methodologies are standardized, traceable, comparable and of known measurement uncertainty. A significant recent development has been the acceleration of quality assurance, quality control and the use of proficiency testing in soil testing laboratories. Added to these advances, has been a worldwide proliferation in the numbers of soil laboratories being awarded various certificates and accreditations, e.g. ISO 17025



A pivotal constituent to all of these advances is the availability of high quality Standards (physical and chemical) and Reagents. This catalogue contains the largest selection of products relevant to soil testing available worldwide. The products are presented in three ways. Firstly, they can be accessed in the various catalogue sections, which are categorized on the basis of application. These include standards for metals, anions, conductivity and pH. They also include organic standards for pollutants including Pesticides, Phenols, Volatile Organic Carbons and Polycyclic Aromatic Hydrocarbons as examples.

Secondly, this section covers several Analytical Volumetric Solutions, Indicators, Extraction Solutions and Reagents for various specific soil testing methods. This list is indicative only. Finally Reagecon has the capability, competence, track record and experience to offer an outstanding range of bespoke products for a wide variety of methods relating to soil analysis.

We hope you find the products in this section and the remainder of the catalogue helpful. For quotes or information on additional products contact us at [sales@reagecon.ie](mailto:sales@reagecon.ie)

## Reagents & Standards for the Soil Testing Industry

Product No.	Description	Pack Size
NHFED01	Ammonium Fluoride-EDTA Stock Reagent	1L
APDC01	APDC Butyl Acetate-Ethanol Reagent	1L
BSE01	Boron Standard in Extraction Reagent	1L
BRAY01	Bray P1 Extracting Reagent Concentrate	1L
BMASK01	Buffer Masking Reagent	1L
CACLSS01	Calcium Chloride Stock Solution	1L
CACL20011	Calcium Chloride 0.02N 0.01M	1L
CTA01	Chromotopic Acid Solution (CTA)	1L
CUES01	Copper Standard in Extracting Reagent	1L
CUZN01	Copper-Zinc Standard	1L
DTPAE01	DTPA Extraction Reagent Concentrate	1L
DTPA00051	DTPA Solution, 0.005M	1L
H26001	Hydrochloric Acid 6.0N 6.0M	1L
FEE01	Iron Standard in Extraction Reagent	1L
LACS01	Lanthanum Compensating Solution	1L
LIWS01	Lithium Working Solution, 130.14ppm	1L
MGCLS01	Magnesium Chloride Stock Solution	1L
MGERS01	Magnesium Standard in Extracting Reagent	1L
ICCB07	Magnesium 1000ppm in H <sub>2</sub> O	500ml
MNES01	Manganese Standard in Extracting Reagent	1L
MEHL101	Mehlich #1 Extracting Reagent	1L
MEHL301	Mehlich #3 Final Extraction Reagent	1L
MEHLBS01	Mehlich Buffer Solution	1L
MEHLBE01	Mehlich-Bowling Extracting Reagent	1L
MOREXT	Morgans Extracting Solution	25L
SOILSP01	MS Soil Spike Standard	1L
SOILSPS01	MS Soil Spike Standard #2	1L
NIES01	Nickel Standard in Extraction Reagent	1L
NNER01	Nitrate-Nitrogen Extracting Reagent	1L
NNS01	Nitrate-Nitrogen Standard	1L
NER01	Nitrogen Standard in Extracting Reagent	1L
OLSER01	Olsen's Extraction Reagent Concentrate	1L
OLSMR01	Olsen's Mixed Reagent	1L
KCR267F	Potassium Dichromate Reagent, 0.267N	1L
SMPB01	SMP Buffer Solution	1L
NACLSS01	Sodium Chloride Stock Solution	1L
NASER01	Sodium Standard in Extraction Reagent	1L
SPISL01	Spiking Solution for Water and Soil	1L
SRCL201	Strontium Chloride Diluting Solution	1L
MEHLS01	Mehlich #1 Sulfuric-Molybdate Solution	1L

# Pulp & Paper Standards & Reagents

## Pulp & Paper Process Testing

Reagecon offers the largest range of Reagents, Standards and Analytical Volumetric Solutions available in the market place for this important and heavily regulated industry. These products facilitate savings in time and money and offer traceability, comparability and convenience. A large part of the pulp and paper process industry uses Standard Test Methods developed through an organisation called TAPPI (Technical Association of the Pulp and Paper Industry).

TAPPI Standards may be in the form of Test Methods or other documents that include specifications, guidelines and practices. These are available from the organisation as a compendium for a wide range of physical, organic and inorganic analyses using manual and instrumental techniques. Tolerances and guidelines are provided for all Reagents and Standards specified and Reagecon matches or exceeds these tolerances in all cases. Products listed in most sections of this catalogue are relevant to pulp and paper process testing. This section contains a range of products developed specifically for TAPPI methods.

A list of Reagecon part numbers that are cross referenced to each TAPPI method is available upon request.

## Standards & Reagents for use in the Pulp & Paper industry.

Product No.	Description	Pack Size
CH3C00H201	Acetic Acid, CH <sub>3</sub> COOH, 20% v/v	1L
WTR040125	Barium Chloride Solution 10% w/v	125ml
WTR0405	Barium Chloride Solution 10% w/v	500ml
WTR041	Barium Chloride Solution 10% w/v	1L
WTR045	Barium Chloride Solution 10% w/v	5L
WTR061	Barium Chloride Solution 12% w/v	1L
WTR081	Barium Chloride Solution 20% w/v	1L
H25VVJ	Hydrochloric Acid 25% v/v pure	2.5L
H2051671	Hydrochloric Acid, HCl, 0.5167M	1L
H207331	Hydrochloric Acid, HCl, 0.773M	1L
KI10WV1	Potassium Iodide, KI, 10% w/v	1L
PP2002F	Potassium Permanganate 0.02M (0.1N)	1L
N201709F	Silver Nitrate 0.1709M (0.1709N)	1L
N20250F	Silver Nitrate 0.25M (0.25N)	1L
S20011	Sodium Hydroxide 0.01M (0.01N)	1L
S203131	Sodium Hydroxide 0.313M (0.313N)	1L
T20101	Sodium Thiosulphate 0.1M (0.1N)	1L
T20201	Sodium Thiosulphate 0.2M (0.2N)	1L
T20201	Sodium Thiosulphate 0.2M (0.2N)	1L
T21001	Sodium Thiosulphate 1.0M (1.0N)	1L
SU2012751	Sulphuric Acid 0.1275M (0.255N)	1L
SU222001	Sulphuric Acid 2.0M (4.0N)	1L

# Laboratory Water

## Laboratory Water

Description	Product No. 5L	Product No. 10L	Product No. 25L
Purified Water	H2O5	H2O10	H2O25
Deionised Water	Y00185	Y001810	Y0018
Analytical Grade Water	H2O5AG	H2OB10AG	H2O25AG
Artificial Seawater	DSW5	DSW10	DSW25

## Synthetic Fresh Water Standards - Water Hardness as $\text{CaCO}_3$

Description	Product No. 5L	Product No. 25L
Synthetic Fresh Water Standard 10-13ppm	HSVS1	HSVS5
Synthetic Fresh Water Standard 40-48ppm	HSS1	HSS5
Synthetic Fresh Water Standard 80-100ppm	HSMH1	HSMH5
Synthetic Fresh Water Standard 160-180ppm	HSH1	HSH5

# Cleaning Solutions

Reagecon offer ready-to-use cleaning solutions, which eliminate the need for diluting solutions in-house, together with the associated risks of handling strong oxidizers. These products save you time and money.

## Summary of Features & Benefits:

- Pre-prepared and ready to use
- Certificates of Analysis available online
- Safety Data Sheets available online

## Sodium Hypochlorite Solutions

Recommended for general disinfection of laboratory equipment and apparatus, including benches, sinks, floors and contact surfaces (not stainless steel)

- Sanitization of production areas and processing equipment
- As effective as Chlorine Gas
- Easily Stored and transported

Product No.	Description	Pack Size
SH03WW1	Sodium Hypochlorite 0.3% w/v available Chlorine	1L
SH05WV05	Sodium Hypochlorite 0.5% w/v	500ml
SH05WV5	Sodium Hypochlorite 0.5% w/v	5L
SH2WW025	Sodium Hypochlorite 2% w/v available Chlorine	250ml
SH3WW1	Sodium Hypochlorite 3% available Chlorine	1L
SH3WW25	Sodium hypochlorite 3% available Chlorine	25L
SH5WV05	Sodium Hypochlorite 5% w/v Spray	500ml
SH5WV1	Sodium Hypochlorite 5% w/v	1L
SH5WV5	Sodium Hypochlorite 5% w/v	5L
SH5WV25	Sodium Hypochlorite 5% w/v	25L
SH57WW1	Sodium Hypochlorite 5-7% available Chlorine	1L
SH155	Sodium Hypochlorite 15%	5L
SH25002	Sodium Hypochlorite 250ppm	200ml

# Isopropanol Cleaning Solutions

Ideal for cleaning and decontaminating lab surfaces, production areas and processing equipment

Product No.	Description	Pack Size
IP375	IPA 37% / 63% H <sub>2</sub> O Solution	5L
IP70WV005	IPA 70% IPA/30% H <sub>2</sub> O Solution	5ml
IP70WV05	IPA 70% w/v/ 30% H <sub>2</sub> O -Trigger Spray 500ml bottle	500ml
IP70WV1	IPA 70% IPA/30% H <sub>2</sub> O Solution - Trigger Spray 1L bottle	1L
IP70WV5	IPA 70% IPA/30% H <sub>2</sub> O Solution	5L
IP70WV10	IPA 70% IPA/30% H <sub>2</sub> O Solution	10L
IP70WV25	IPA 70% IPA/30% H <sub>2</sub> O Solution	25L





# Analyst Qualification Sets

## Summary of Features & Benefits:

### Commercial Benefits

- Proof of competence for individual analysts
- Extensive range of test materials available
- More cost effective than Laboratory based Proficiency Schemes
- Enhanced audit compliance
- Ready to Use

### Technical Benefits

- Uncertainty of measurement clearly defined
- NIST Traceable where applicable
- Consistency of product - Independent, Traceable, Certified
- Certificates of Analysis and Safety Data Sheets available online

Traditionally laboratories have used Proficiency Schemes to provide evidence of their competence. Now with tightening audit requirements auditors from compliance and accreditation bodies are increasingly asking for evidence that each analyst in a laboratory is competent to carry out individual analytical tests. Proficiency Schemes are not a cost effective way of meeting this requirement and method witnessing or working with known samples are of limited value.

Reagecon now provides a new approach to proving analyst competency for a range of common laboratory tests. We will provide a set of unknown samples (detailed below) with password protected, online access to our ISO 17025 accredited test results of the samples. This allows Laboratory Managers to provide their analysts with "blind" samples and to cost effectively assess the competency of each individual analyst on a specific test. The assurance provided by the use of blind samples and independent ISO 17025 accredited testing in turn allows the Laboratory Manager to meet all external auditors' "proof of competency" requirements.

The unknown samples in the Reagecon range are prepared gravimetrically on a weight/weight basis from high purity raw materials. Both solute and solvent are weighed on a balance calibrated by Reagecon engineers using OIML traceable weights. Reagecon holds ISO 17025 accreditation for calibration of laboratory balances (INAB Ref:265C). The resulting Balance Certificate of Calibration is issued in accordance with the requirements of ISO/IEC 17025.



## Test Materials (choose any six to make a set)

Product No.	Description	Concentration	Pack Size
AQSPH001	Low Range pH @ 20°C	pH range 1 to 5	250ml
AQSPH002	Medium Range pH @ 20°C	pH range 5.1 to 8	250ml
AQSPH003	High Range pH @ 20°C	pH range 8.1 to 11	250ml
AQSPH004	Low Range pH @ 25°C	pH range 1 to 5	250ml
AQSPH005	Medium Range pH @ 25°C	pH range 5.1 to 8	250ml
AQSPH006	High Range pH @ 25°C	pH range 8.1 to 11	250ml
AQSCL001	Chloride Content Low	Chloride Range 0.01M to 0.49M	250ml
AQSCL002	Chloride Content Medium	Chloride Range 0.5M to 1.9M	250ml
AQSCL003	Chloride Content High	Chloride Range 2.0M to 4.0M	250ml
AQSA001	Acid Content Low	Acid Range 0.025M to 0.5M	250ml
AQSA002	Acid Content Medium	Acid Range 1.0M to 2.9M	250ml
AQSA003	Acid Content High	Acid Range 3.0M to 10M	250ml
AQSB001	Base Content Low	Base Range 0.05M to 0.99M	250ml
AQSB002	Base Content Medium	Base Range 1.0M to 3.0M	250ml
AQSB003	Base Content High	Base Range 3.0M to 10M	250ml
AQSCON001	Conductivity Ultra Low	Conductivity Range 1.3µS/cm to 50µS/cm	250ml
AQSCON002	Conductivity Low	Conductivity Range 80µS/cm to 1,000µS/cm	250ml
AQSCON003	Conductivity Medium	Conductivity Range 1,100µS/cm to 10,000µS/cm	250ml
AQSCON004	Conductivity High	Conductivity Range 100,000µS/cm to 500,000µS/cm	250ml
AQSDEN001	Density @ 20°C Low	Density Range 0.7g/ml to 0.95g/ml	250ml
AQSDEN002	Density @ 20°C High	Density Range 1.1g/ml to 2.8g/ml	250ml
AQSBRIX001	Brix Low	Sucrose (Brix) Range 5% to 19%	15ml
AQSBRIX002	Brix Medium	Sucrose (Brix) Range 20% to 34%	15ml
AQSBRIX003	Brix High	Sucrose (Brix) Range 35% to 60%	15ml
AQSOSM001	Osmolality Low	Osmolality Range 50mOsm/kg to 350mOsm/kg	5ml
AQSOSM002	Osmolality Medium	Osmolality Range 351mOsm/kg to 999mOsm/kg	5ml
AQSOSM003	Osmolality High	Osmolality Range 1,000mOsm/kg to 3,000mOsm/kg	5ml
AQSTOC001	TOC Ultra Low	TOC Range 0.5ppm to 10ppm	35ml
AQSTOC002	TOC Low	TOC Range 11ppm to 100ppm	35ml
AQSTOC003	TOC Medium	TOC Range 101ppm to 500ppm	35ml
AQSMP001	Melting Point	Melting point Range 40°C to 240°C	1g
AQSICP001	ICP - Multi-Element (7 Elements)	Concentration Range 1ppm to 1000ppm	100ml
AQSICP002	ICP - Multi-Element (19 Elements)	Concentration Range 1ppm to 1000ppm	100ml





# Reagecon

Physical & Chemical Standards Compendium



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