

# MBH

Reference Materials  
Liquids



# MBH

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An ISO 9001 Certified Company

# Introduction

This catalogue is complementary to the MBH catalogue of solid reference materials. It provides an extensive listing of solutions for ICP-AES, ICP-MS and AAS spectroscopy, as well as glassware and accessories for many makes of ICP instrument. A range of viscometer tubes, viscosity and reference oils are also presented.

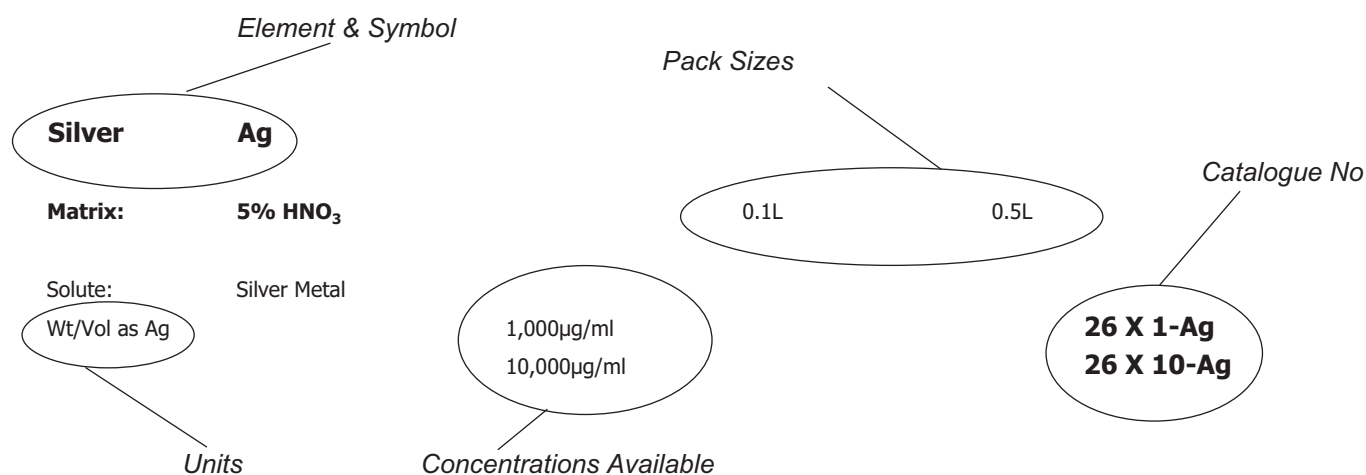
The catalogue lists both organometallic and aqueous solutions supplied under MBH's own label. These solutions are manufactured by an ISO9000 certified manufacturer.

In addition to MBH's own-labelled products the catalogue includes products manufactured or supplied by other parties e.g., Conostan and Meinhard Glass products. The suppliers are listed below.

The catalogue is divided into sections, as described on the Index page, intended to make finding your desired product easy. The number listed includes the manufacturer's own identification in the alpha numeric string, e.g., Conostan S21 organometallic multi-element solution has the catalogue number 252 C-S21. This together with the quantity/volume makes up the full MBH product reference.

Entries list as much information as is known about the material in order to assist with decisions as to the most appropriate product for an application. Where possible entries include data on solute material and matrix. Where the matrix is unchanging, as in single element organometallic solutions, the information on the matrix is given at the beginning of the catalogue section. The solutes for organometallic solutions are not listed as this is proprietary information and is not available to MBH.

Entries for solution products take the general form illustrated below.



In cases where more than one pack size is available the catalogue number includes a #, where this descriptor requires substitution of the pack size to create the full product description e.g., 26 X 10-Ag-.1L is the product description for a 100ml bottle of 10,000ppm silver reference solution for ICP purposes.

## Suppliers

Alpha Resources	U.S.A.
Analytical Reference Materials International (ARMI)	U.S.A.
Conostan - a division of SCP Science	Canada
Meinhard Glass Products	U.S.A.
NIST	U.S.A.
Normalab Analis	France
Poulten Selfe & Lee Ltd	U.K.
VHG Labs	U.S.A.

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# Product Information

## General

### Product Certification

Original Certificates of Analysis are provided for all solutions. Certificates of Analysis for all MBH products provide information defining the identity of the material, matrix and solution concentration. All solutions are analysed, after formulation, to determine the final concentration values written into the certificate. All MBH certifications are traceable to NIST standards.

### Product Lifetime

MBH labelled aqueous solutions are warranted until the date indicated on the bottle and certificate, or 12 months from the date that the bottle is first opened, whichever is the sooner. The product label provides space for you, the customer, to enter the date of acquisition as well as the date of first use. This assists with the requirements that many laboratories have in respect of their ISO / EN17025 laboratory accreditation systems. MBH strongly recommends that laboratories make use of this facility.

Products supplied from other producers will generally be warranted for 12 months from the date of supply.

### Custom Solutions

MBH Analytical can provide Aqueous, Ion Chromatography and Organometallic Reference Solutions customised to your individual specification, both in terms of element selection and elemental concentration. Please note that some combinations may not be possible due to elemental interaction or matrix incompatibility.

Specification forms for these solutions are to be found in the relevant section. Please photocopy the appropriate appendix, complete it (one for each solution requested) and fax it back to us. Or call to discuss your requirements on 020 8441 2024 / [info@mbh.co.uk](mailto:info@mbh.co.uk)

## Conditions of Sale

All materials are sold subject to our conditions of sale which are printed on the reverse of each quotation and order acknowledgement. The text is repeated here for your convenience.

1. All items listed in our catalogue or otherwise offered for sale are subject to availability and any delivery dates that may be quoted are conditional on supplies from manufacturers. We are unable to accept any liability for delay and if any item becomes unavailable during the life of a catalogue we will advise you on suitable alternatives where appropriate
2. Unless credit facilities have been agreed with us (in which case payment is due on a net monthly basis), payment for items supplied is due either against a Pro Forma invoice or by Confirmed Irrevocable Letter of Credit.
3. We draw the attention of all customers to the notes in our catalogue relating to definitions, Analyses and Calibration procedures.
4. To the extent that the law may permit, the following condition stands in substitution for all conditions and warranties as to merchantability and fitness for purpose as implied by statute, common law or otherwise.
  - a. It is the responsibility of the customer to decide on the suitability and fitness for purpose of all items purchased.
  - b. Any items claimed to be defective must be returned to us (within 3 months of delivery) for examination and analysis and no claims can be entertained if this is not done.
5. We may, at our option, replace any item shown to be defective or refund the price paid. Our liability in respect of any such item will not in any circumstances exceed the amount paid for the item in question and no liability is accepted for consequential loss however arising.
6. These conditions shall apply to all contracts entered into by us to the exclusion of all other conditions and notwithstanding any terms that may appear on any printed stationery of any customer. No variation of these conditions shall be effective unless confirmed by us in writing on or prior to formal acceptance by us of any order.
7. Until such time as we have received full payment, items supplied to customers shall remain our property notwithstanding delivery to the customer and we shall be entitled to enter upon the customer's premises to recover the property if the customer shall go into liquidation, or if a receiver is appointed on the undertaking of the customer or any of his or its property.
7. The contract shall be governed by English law and any disputes shall be referred to the exclusive jurisdiction of the English Courts.

# Orders

## Procedure

Orders are accepted by mail, fax, e-mail or phone. Please ensure any subsequent confirmation of an order is appropriately marked so as to avoid duplication

Orders placed shall include the following information:

Catalogue Number, Quantity Required, Brief description, Price (if known) and confirmation of Invoicing and Delivery addresses. Unless specifically instructed otherwise all orders are despatched by our chosen, most appropriate, carrier with due regard to destination, security, speed and cost.

Send your order to:

**MBH Analytical Ltd**  
**Holland House**  
**Queens Road**  
**BARNET, Herts EN5 4DJ**  
**England**

**Tel: +44 (0) 20 8441 2024**  
**Fax: +44 (0) 20 8449 0810**  
**E-mail: [sales@mbh.co.uk](mailto:sales@mbh.co.uk)**

## Prices

The MBH Price List is issued as a separate publication. All prices are stated in pounds sterling and exclude despatch and UK V.A.T. (see below)

Upon request quotations can be provided in US dollars or Euros. However we reserve the right to withdraw quotations made in these currencies in the event of excessive exchange rate movements.

## Hazardous Goods

### IMPORTANT – Please Note

Some materials listed in this catalogue must be treated as hazardous for the purposes of despatch. For these materials we use special packaging and transport and will gladly confirm the costs involved upon enquiry.

We must follow the International 'Dangerous Goods' Regulations, and can only consign these materials by air freight. They CANNOT be despatched by international Courier e.g., FedEx, UPS etc.

## Packing, Insurance and Freight

Packing is included in the price of the goods. Freight is charged at cost. We will be pleased to forward our quotation detailing these costs upon request. Insurance can be arranged when required at extra cost.

## Value Added Tax ( VAT )

All orders delivered to a UK address are subject to VAT at the rate applicable at the time of despatch. European Union customers are also subject to UK VAT. Unless we are advised of your VAT number at the time of placing your purchase order this will be charged at the rate applicable.

MBH Analytical Ltd is registered for UK VAT – Registration Number GB 873 1047 32

## Payments

Payment can be made by any of the following:

- By Visa Purchasing Card or major Credit/Debit cards (Visa or Mastercard).
- Sterling prepayment with your order against our Pro Forma invoice by Bankers Draft or Automated Bank Transfer.
- By irrevocable Letter of Credit through a British bank, payable on sight upon presentation of invoice and despatch documents.
- Established customers may apply to receive strictly Net Monthly Account terms, subject to satisfactory bank and trade references.

Our Bank details are:

Name of Banker: **National Westminster Bank plc**  
Address: **181 Darkes Lane**  
**Potters Bar**  
**Herts. EN6 1XT**  
**England**

Account Name: **MBH Analytical Ltd**  
Account Number Sterling: **13140922** (IBAN) **GB10NWBK60174913140922**  
Bank Code: **60 17 49**  
BIC: **NWBKGB2L**

If paying in other than Sterling please remit payment in the currency stated on the invoice to the corresponding currency account. MBH will only accept our own bank charges. Please ensure that we receive the full amount as invoiced.

Currency Account Numbers: Euro (IBAN) **GB18NWBK60720506848966**  
US Dollar (IBAN) **GB71NWBK60730116500466**

## 25. Organometallic Solutions.

### 25.1 Conostan Single Element Standard Solutions

Single element Conostan standards comprise a paraffinic hydrocarbon matrix oil with a 17cSt viscosity @ 40°C (21cSt @100°F) and a flash point of >175°C (345°F)

<u>Element</u>	<u>Concentration</u>	<u>Size</u>	<u>Catalogue No</u>
<b>Aluminium</b> <b>Al</b>		50g	
Wt/Wt as Al	1,000ppm 5,000ppm		<b>25.1.1000-Al</b> <b>25.1.5000-Al</b>
<b>Antimony</b> <b>Sb</b>		50g	
Wt/Wt as Sb	1,000ppm 5,000ppm		<b>25.1.1000-Sb</b> <b>25.1.5000-Sb</b>
<b>Arsenic</b> <b>As</b>		100g	
Wt/Wt as As	100ppm		<b>255 C 100-As</b>
<b>Barium</b> <b>Ba</b>		50g	
Wt/Wt as Ba	1,000ppm 5,000ppm		<b>25.1.1000-Ba</b> <b>25.1.5000-Ba</b>
<b>Beryllium</b> <b>Be</b>		50g	
Wt/Wt as Be	1,000ppm 5,000ppm		<b>25.1.1000-Be</b> <b>25.1.5000-Be</b>
<b>Bismuth</b> <b>Bi</b>		50g	
Wt/Wt as Bi	1,000ppm 5,000ppm		<b>25.1.1000-Bi</b> <b>25.1.5000-Bi</b>
<b>Boron</b> <b>B</b>		50g	
Wt/Wt as B	1,000ppm 5,000ppm		<b>25.1.1000-B</b> <b>25.1.5000-B</b>
<b>Cadmium</b> <b>Cd</b>		50g	
Wt/Wt as Cd	1,000ppm 5,000ppm		<b>25.1.1000-Cd</b> <b>25.1.5000-Cd</b>
<b>Calcium</b> <b>Ca</b>		50g	
Wt/Wt as Ca	1,000ppm 5,000ppm		<b>25.1.1000-Ca</b> <b>25.1.5000-Ca</b>
<b>Chromium</b> <b>Cr</b>		50g	
Wt/Wt as Cr	1,000ppm 5,000ppm		<b>25.1.1000-Cr</b> <b>25.1.5000-Cr</b>
<b>Cobalt</b> <b>Co</b>		50g	
Wt/Wt as Co	1,000ppm 5,000ppm		<b>25.1.1000-Co</b> <b>25.1.5000-Co</b>
<b>Copper</b> <b>Cu</b>		50g	
Wt/Wt as Cu	1,000ppm 5,000ppm		<b>25.1.1000-Cu</b> <b>25.1.5000-Cu</b>

## 25. Organometallic Solutions.

### 25.1 Conostan Single Element Standard Solutions (continued)

<u>Element</u>	<u>Concentration</u>	<u>Size</u>	<u>Catalogue No</u>
<b>Indium</b> <b>In</b>		50g	
Wt/Wt as In	1,000ppm 5,000ppm		25.1.1000-In 25.1.5000-In
<b>Iron</b> <b>Fe</b>		50g	
Wt/Wt as Fe	1,000ppm 5,000ppm		25.1.1000-Fe 25.1.5000-Fe
<b>Lanthanum</b> <b>La</b>		50g	
Wt/Wt as La	1,000ppm 5,000ppm		25.1.1000-La 25.1.5000-La
<b>Lead</b> <b>Pb</b>		50g	
Wt/Wt as Pb	1,000ppm 5,000ppm		25.1.1000-Pb 25.1.5000-Pb
<b>Lithium</b> <b>Li</b>		50g	
Wt/Wt as Li	1,000ppm 5,000ppm		25.1.1000-Li 25.1.5000-Li
<b>Magnesium</b> <b>Mg</b>		50g	
Wt/Wt as Mg	1,000ppm 5,000ppm		25.1.1000-Mg 25.1.5000-Mg
<b>Manganese</b> <b>Mn</b>		50g	
Wt/Wt as Mn	1,000ppm 5,000ppm		25.1.1000-Mn 25.1.5000-Mn
<b>Mercury</b> <b>Hg</b>		100g	
Wt/Wt as Hg	100ppm		255 C 100-Hg
<b>Molybdenum</b> <b>Mo</b>		50g	
Wt/Wt as Mo	1,000ppm 5,000ppm		25.1.1000-Mo 25.1.5000-Mo
<b>Nickel</b> <b>Ni</b>		50g	
Wt/Wt as Ni	1,000ppm 5,000ppm		25.1.1000-Ni 25.1.5000-Ni
<b>Phosphorus</b> <b>P</b>		50g	
Wt/Wt as P	1,000ppm 5,000ppm		25.1.1000-P 25.1.5000-P
<b>Potassium</b> <b>K</b>		50g	
Wt/Wt as K	1,000ppm 5,000ppm		25.1.1000-K 25.1.5000-K
<b>Scandium</b> <b>Sc</b>		50g	
Wt/Wt as Sc	2,000ppm		255 C 2000-Sc

## 25. Organometallic Solutions.

### 25.1 Conostan Single Element Standard Solutions (continued)

<u>Element</u>		<u>Concentration</u>	<u>Size</u>	<u>Catalogue No</u>
<b>Selenium</b>	<b>Se</b>		100g	
Wt/Wt as Se		100ppm		<b>255 C 100-Se</b>
<b>Silicon</b>	<b>Si</b>		50g	
Wt/Wt as Si		1,000ppm 5,000ppm		<b>25.1.1000-Si</b> <b>25.1.5000-Si</b>
<b>Silver</b>	<b>Ag</b>		50g	
Wt/Wt as Ag		1,000ppm 5,000ppm		<b>25.1.1000-Ag</b> <b>25.1.5000-Ag</b>
<b>Sodium</b>	<b>Na</b>		50g	
Wt/Wt as Na		1,000ppm 5,000ppm		<b>25.1.1000-Na</b> <b>25.1.5000-Na</b>
<b>Strontium</b>	<b>Sr</b>		50g	
Wt/Wt as Sr		1,000ppm 5,000ppm		<b>25.1.1000-Sr</b> <b>25.1.5000-Sr</b>
<b>Tin</b>	<b>Sn</b>		50g	
Wt/Wt as Sn		1,000ppm 5,000ppm		<b>25.1.1000-Sn</b> <b>25.1.5000-Sn</b>
<b>Titanium</b>	<b>Ti</b>		50g	
Wt/Wt as Ti		1,000ppm 5,000ppm		<b>25.1.1000-Ti</b> <b>25.1.5000-Ti</b>
<b>Tungsten</b>	<b>W</b>		50g	
Wt/Wt as W		1,000ppm 5,000ppm		<b>25.1.1000-W</b> <b>25.1.5000-W</b>
<b>Vanadium</b>	<b>V</b>		50g	
Wt/Wt as V		1,000ppm 5,000ppm		<b>25.1.1000-V</b> <b>25.1.5000-V</b>
<b>Yttrium</b>	<b>Y</b>		50g	
Wt/Wt as Y		1,000ppm 5,000ppm		<b>25.1.1000-Y</b> <b>25.1.5000-Y</b>
<b>Zinc</b>	<b>Zn</b>		50g	
Wt/Wt as Zn		1,000ppm 5,000ppm		<b>25.1.1000-Zn</b> <b>25.1.5000-Zn</b>
<b>Element Blank Oil</b>			100g or 400g or 1US gallon	
		20cSt		<b>254 C-20</b>
		75cSt		<b>254 C-75</b>
<b>Premisolv™</b>	ICP Solvent		1 US gallon (3.78 litres) or 5 US gallons	<b>254 C-PREM</b>
<b>Stabiliser</b>			50g	<b>254 C-STAB</b>



## 25. Organometallic Solutions.

### 25 X MBH Single Element Standard Solutions

Unless specified MBH Single element standards comprise a hydrocarbon matrix oil with a viscosity of 20cSt for 1000ppm and 75cSt for 5000ppm solutions

<u>Element</u>	<u>Concentration</u>	<u>Size</u>	<u>Catalogue No</u>
<b>Aluminium</b> <b>Al</b>		50g	
Wt/Wt as Al	1,000µg/g		<b>25 X 1000-Al</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-Al-S</b>
	5,000µg/g		<b>25 X 5000-Al</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-Al-S</b>
<b>Antimony</b> <b>Sb</b>		50g	
Wt/Wt as Sb	1,000µg/g		<b>25 X 1000-Sb</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-Sb-S</b>
	5,000µg/g		<b>25 X 5000-Sb</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-Sb-S</b>
<b>Arsenic</b> <b>As</b>		50g	
Wt/Wt as As	1,000µg/g		<b>25 X 1000-As</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-As-S</b>
<b>Barium</b> <b>Ba</b>		50g	
Wt/Wt as Ba	1,000µg/g		<b>25 X 1000-Ba</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-Ba-S</b>
	5,000µg/g		<b>25 X 5000-Ba</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-Ba-S</b>
<b>Beryllium</b> <b>Be</b>		50g	
Wt/Wt as Be	1,000µg/g		<b>25 X 1000-Be</b>
<b>Bismuth</b> <b>Bi</b>		50g	
Wt/Wt as Bi	1,000µg/g		<b>25 X 1000-Bi</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-Bi-S</b>
	5,000µg/g		<b>25 X 5000-Bi</b>
<b>Boron</b> <b>B</b>		50g	
Wt/Wt as B	1,000µg/g		<b>25 X 1000-B</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-B-S</b>
	5,000µg/g		<b>25 X 5000-B</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-B-S</b>
<b>Cadmium</b> <b>Cd</b>		50g	
Wt/Wt as Cd	1,000µg/g		<b>25 X 1000-Cd</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-Cd-S</b>
	5,000µg/g		<b>25 X 5000-Cd</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-Cd-S</b>
<b>Calcium</b> <b>Ca</b>		50g	
Wt/Wt as Ca	1,000µg/g		<b>25 X 1000-Ca</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-Ca-S</b>
	5,000µg/g		<b>25 X 5000-Ca</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-Ca-S</b>

Selected metals are also available in a Xylene Matrix. **Important note - Xylene standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.**

## 25. Organometallic Solutions.

### 25 X MBH Single Element Standard Solutions (continued)

<u>Element</u>	<u>Concentration</u>	<u>Size</u>	<u>Catalogue No</u>
<b>Cerium</b> <b>Ce</b>		50g	
Wt/Wt as Ce	1,000µg/g    Sulfur Free		<b>25 X 1000-Ce-S</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-Ce-S</b>
<b>Chlorine</b> <b>Cl</b>		50g	
Wt/Wt as Cl	1,000µg/g		<b>25 X 1000-Cl</b>
<b>Chromium</b> <b>Cr</b>		50g	
Wt/Wt as Cr	1,000µg/g		<b>25 X 1000-Cr</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-Cr-S</b>
	5,000µg/g		<b>25 X 5000-Cr</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-Cr-S</b>
<b>Cobalt</b> <b>Co</b>		50g	
Wt/Wt as Co	1,000µg/g		<b>25 X 1000-Co</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-Co-S</b>
	5,000µg/g		<b>25 X 5000-Co</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-Co-S</b>
<b>Copper</b> <b>Cu</b>		50g	
Wt/Wt as Cu	1,000µg/g		<b>25 X 1000-Cu</b>
	1,000µg/g    Sulfur Free		<b># 25 X 1000-Cu-S</b>
	5,000µg/g		<b>25 X 5000-Cu</b>
	5,000µg/g    Sulfur Free		<b># 25 X 5000-Cu-S</b>
<b>Iron</b> <b>Fe</b>		50g	
Wt/Wt as Fe	1,000µg/g		<b>25 X 1000-Fe</b>
	1,000µg/g    Sulfur Free		<b># 25 X 1000-Fe-S</b>
	5,000µg/g		<b>25 X 5000-Fe</b>
	5,000µg/g    Sulfur Free		<b># 25 X 5000-Fe-S</b>
<b>Lanthanum</b> <b>La</b>		50g	
Wt/Wt as La	1,000µg/g    Sulfur Free		<b>25 X 1000-La-S</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-La-S</b>
<b>Lead</b> <b>Pb</b>		50g	
Wt/Wt as Pb	1,000µg/g		<b>25 X 1000-Pb</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-Pb-S</b>
	5,000µg/g		<b>25 X 5000-Pb</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-Pb-S</b>
<b>Lithium</b> <b>Li</b>		50g	
Wt/Wt as Li	1,000µg/g		<b>25 X 1000-Li</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-Li-S</b>
	5,000µg/g		<b>25 X 5000-Li</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-Li-S</b>
<b>Magnesium</b> <b>Mg</b>		50g	
Wt/Wt as Mg	1,000µg/g		<b>25 X 1000-Mg</b>
	1,000µg/g    Sulfur Free		<b>25 X 1000-Mg-S</b>
	5,000µg/g		<b>25 X 5000-Mg</b>
	5,000µg/g    Sulfur Free		<b>25 X 5000-Mg-S</b>

Selected metals are also available in a Xylene Matrix. **Important note - Xylene standards and those prefixed by # are classified as Hazardous Goods for shipping purposes. Shipping costs on request.**

## 25. Organometallic Solutions.

### 25 X MBH Single Element Standard Solutions (continued)

<u>Element</u>	<u>Concentration</u>	<u>Size</u>	<u>Catalogue No</u>
<b>Manganese Mn</b>		50g	
Wt/Wt as Mn	1,000µg/g		25 X 1000-Mn
	1,000µg/g Sulfur Free		25 X 1000-Mn-S
	5,000µg/g		25 X 5000-Mn
	5,000µg/g Sulfur Free		25 X 5000-Mn-S
<b>Mercury Hg</b>		50g	
Wt/Wt as Hg	1,000µg/g		25 X 1000-Hg
	1,000µg/g Sulfur Free		25 X 1000-Hg-S
<b>Molybdenum Mo</b>		50g	
Wt/Wt as Mo	1,000µg/g		25 X 1000-Mo
	1,000µg/g Sulfur Free		25 X 1000-Mo-S
	5,000µg/g		25 X 5000-Mo
	5,000µg/g Sulfur Free		25 X 5000-Mo-S
<b>Nickel Ni</b>		50g	
Wt/Wt as Ni	1,000µg/g		25 X 1000-Ni
	1,000µg/g Sulfur Free		# 25 X 1000-Ni-S
	5,000µg/g		25 X 5000-Ni
	5,000µg/g Sulfur Free		# 25 X 5000-Ni-S
<b>Phosphorus P</b>		50g	
Wt/Wt as P	1,000µg/g		25 X 1000-P
	1,000µg/g Sulfur Free		25 X 1000-P-S
	5,000µg/g		25 X 5000-P
	5,000µg/g Sulfur Free		25 X 5000-P-S
<b>Platinum Pt</b>		50g	
Wt/Wt as Pt	1,000µg/g Xylene Matrix	also available in 200g	# 25 X 1000-Pt-X
<b>Potassium K</b>		50g	
Wt/Wt as K	1,000µg/g		25 X 1000-K
	1,000µg/g Sulfur Free		25 X 1000-K-S
	5,000µg/g		25 X 5000-K
	5,000µg/g Sulfur Free		25 X 5000-K-S
<b>Rhodium Rh</b>		50g	
Wt/Wt as Rh	1,000µg/g Toluene Matrix	also available in 200g	# 25 X 1000-Rh-T
Custom made to order. Allow 3 weeks for delivery.			
<b>Scandium Sc</b>		50g	
Wt/Wt as Sc	1,000µg/g		25 X 1000-Sc
<b>Selenium Se</b>		50g	
Wt/Wt as Se	1,000µg/g Sulfur Free		25 X 1000-Se-S
	5,000µg/g Sulfur Free		25 X 5000-Se-S
<b>Silicon Si</b>		50g	
Wt/Wt as Si	1,000µg/g		25 X 1000-Si
	1,000µg/g Sulfur Free		25 X 1000-Si-S
	5,000µg/g		25 X 5000-Si
	5,000µg/g Sulfur Free		25 X 5000-Si-S

Selected metals are also available in a Xylene Matrix. **Important note - Xylene standards and those prefixed by # are classified as Hazardous Goods for shipping purposes. Shipping costs on request.**

## 25. Organometallic Solutions.

### 25 X MBH Single Element Standard Solutions (continued)

<u>Element</u>	<u>Concentration</u>	<u>Size</u>	<u>Catalogue No</u>
<b>Silver</b>	<b>Ag</b>	50g	
Wt/Wt as Ag	1,000µg/g		25 X 1000-Ag
	1,000µg/g Sulfur Free		25 X 1000-Ag-S
	5,000µg/g		25 X 5000-Ag
	5,000µg/g Sulfur Free		25 X 5000-Ag-S
<b>Sodium</b>	<b>Na</b>	50g	
Wt/Wt as Na	1,000µg/g		25 X 1000-Na
	1,000µg/g Sulfur Free		25 X 1000-Na-S
	5,000µg/g		25 X 5000-Na
	5,000µg/g Sulfur Free		25 X 5000-Na-S
<b>Strontium</b>	<b>Sr</b>	50g	
Wt/Wt as Sr	1,000µg/g		25 X 1000-Sr
	1,000µg/g Sulfur Free		25 X 1000-Sr-S
	5,000µg/g Sulfur Free		25 X 1000-Sr-S
<b>Sulphur</b>	<b>S</b>	50g	
Wt/Wt as S	1,000µg/g		25 X 1000-S
	5,000µg/g		25 X 5000-S
<b>Thallium</b>	<b>Tl</b>	50g	
Wt/Wt as Tl	1,000µg/g		25 X 1000-Tl
	1,000µg/g Sulfur Free		25 X 1000-Tl-S
<b>Tin</b>	<b>Sn</b>	50g	
Wt/Wt as Sn	1,000µg/g		25 X 1000-Sn
	1,000µg/g Sulfur Free		25 X 1000-Sn-S
	5,000µg/g		25 X 5000-Sn
	5,000µg/g Sulfur Free		25 X 5000-Sn-S
<b>Titanium</b>	<b>Ti</b>	50g	
Wt/Wt as Ti	1,000µg/g		25 X 1000-Ti
	1,000µg/g Sulfur Free		25 X 1000-Ti-S
	5,000µg/g		25 X 5000-Ti
	5,000µg/g Sulfur Free		25 X 5000-Ti-S
<b>Vanadium</b>	<b>V</b>	50g	
Wt/Wt as V	1,000µg/g		25 X 1000-V
	1,000µg/g Sulfur Free		# 25 X 1000-V-S
	5,000µg/g		25 X 5000-V
	5,000µg/g Sulfur Free		# 25 X 5000-V-S
<b>Yttrium</b>	<b>Y</b>	50g	
Wt/Wt as Y	1,000µg/g		25 X 1000-Y
	1,000µg/g Sulfur Free		25 X 1000-Y-S
	5,000µg/g		25 X 5000-Y

Selected metals are also available in a Xylene Matrix. **Important note - Xylene standards and those prefixed by # are classified as Hazardous Goods for shipping purposes. Shipping costs on request.**

## 25. Organometallic Solutions.

### 25 X MBH Single Element Standard Solutions (continued)

<u>Element</u>	<u>Concentration</u>	<u>Size</u>	<u>Catalogue No</u>
<b>Zinc</b>	<b>Zn</b>	50g	
Wt/Wt as Zn	1,000µg/g		<b>25 X 1000-Zn</b>
	1,000µg/g Sulfur Free		<b>25 X 1000-Zn-S</b>
	5,000µg/g		<b>25 X 5000-Zn</b>
	5,000µg/g Sulfur Free		<b>25 X 5000-Zn-S</b>
<b>Zirconium</b>	<b>Zr</b>	50g	
Wt/Wt as Zr	1,000µg/g		<b>25 X 1000-Zr</b>
	1,000µg/g Sulfur Free		<b>25 X 1000-Zr-S</b>
	5,000µg/g		<b>25 X 5000-Zr</b>
	5,000µg/g Sulfur Free		<b>25 X 5000-Zr-S</b>

Selected metals are also available in a Xylene Matrix. **Important note - Xylene standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.**

<b>Base Oils</b>	500ml	1 US Gallon (3.785 Litres)	
	20cSt		<b>254 X OIL-20</b>
	20cSt Sulfur Free	$\frac{1}{2}$ US Gallon (1.89 Litres)	<b>254 X OIL-20-S</b>
	75cSt		<b>254 X OIL-75</b>
	75cSt Sulfur Free	$\frac{1}{2}$ US Gallon (1.89 Litres)	<b>254 X OIL-75-S</b>

Base oils for the preparation of working standards.( Also shown on page 22 ).

#### Stabiliser

Use when diluting the single element concentrates range shown on pages 14 & 15.

Conventional	50g	<b>254 X-STAB-2</b>
Sulfur Free	100g	<b>2544 X-STAB (SF) 4</b>

Stabiliser can also improve the stability of mixes or dilutions of 1000ug/g and 5000ug/g metallo-organic standards as well as multi-element mixes.

## 25. Organometallic Solutions.

### 252 C Conostan Multi-element Standard Solutions

Multi-element Conostan standards comprise a hydrocarbon matrix and are blended to approximately 75cSt viscosity @ 40°C

		<u>Size</u>	<u>Catalogue No</u>
<b>AM Special</b>	<b>(5 Element Blend)</b>	100g or 200g	
Elements	<b>Ba, Ca, Mg, P &amp; Zn</b>		
Wt/Wt	100ppm each element		<b>252 C - AM-100</b>
	500ppm each element		<b>252 C - AM-500</b>
	900ppm each element		<b>252 C - AM-900</b>
	1,000ppm each element		<b>252 C - AM-1000</b>
	2,500ppm each element		<b>252 C - AM-2500</b>
	5,000ppm each element		<b>252 C - AM-5000</b>

		<u>Size</u>	
<b>S12</b>	<b>(12 Element Blend)</b>	100g or 200g	
Elements	<b>Ag, Al, Cr, Cu, Fe, Mg, Na, Ni, Pb, Si, Sn &amp; Ti</b>		
Wt/Wt	10ppm each element		<b>252 C - S 12-10</b>
	30ppm each element		<b>252 C - S 12-30</b>
	50ppm each element		<b>252 C - S 12-50</b>
	100ppm each element		<b>252 C - S 12-100</b>
	300ppm each element		<b>252 C - S 12-300</b>
	500ppm each element		<b>252 C - S 12-500</b>
	900ppm each element		<b>252 C - S 12-900</b>

Also available with additional elements, ie. S12 + K. Please enquire.

		<u>Size</u>	
<b>S21</b>	<b>(21 Element Blend)</b>	100g or 200g	
Elements	<b>Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, &amp; Zn</b>		
Wt/Wt	10ppm each element		<b>252 C - S 21-10</b>
	30ppm each element		<b>252 C - S 21-30</b>
	50ppm each element		<b>252 C - S 21-50</b>
	100ppm each element		<b>252 C - S 21-100</b>
	300ppm each element		<b>252 C - S 21-300</b>
	500ppm each element		<b>252 C - S 21-500</b>
	900ppm each element		<b>252 C - S 21-900</b>

Also available with additional elements, ie. S21 + K. Please enquire.

### 256 Conostan Custom Organometallic Standard Solutions

If the established Conostan product range does not meet your needs the expertise and experience of Conostan is available for the quick and accurate production of special and multi-element blends to meet your requirements

Please use the Custom Organometallic Quotation Request Form on Page 16.

Note: Minimum quantity is 100grams

## 25. Organometallic Solutions.

### 252 X MBH Multi-element Standard Solutions

Unless Specified MBH Single element standards comprise a hydrocarbon matrix oil with a 75cSt viscosity

		<u>Size</u>	<u>Catalogue No</u>
<b>MA (5 Element Metal Additives Blend)</b>		100g or 200g	
Elements	<b>Ba, Ca, Mg, P &amp; Zn</b>		
Wt/Wt	900ppm each element		<b>252 X MA-900</b>
	1000ppm each element		<b>252 X MA-1000</b>
	3,000ppm each element		<b>252 X MA-3000</b>
	5,000ppm each element		<b>252 X MA-5000</b>

		<u>Size</u>	
<b>V12 (12 Element Wear Metal Blend)</b>		100g or 200g	
Elements	<b>Ag, Al, Cr, Cu, Fe, Mg, Na, Ni, Pb, Si, Sn &amp; Ti</b>		
Wt/Wt	10ppm each element		<b>252 X V12-10</b>
	30ppm each element		<b>252 X V12-30</b>
	50ppm each element		<b>252 X V12-50</b>
	100ppm each element		<b>252 X V12-100</b>
	300ppm each element		<b>252 X V12-300</b>
	500ppm each element		<b>252 X V12-500</b>
	900ppm each element		<b>252 X V12-900</b>

Also available with additional elements, ie. V12 + K. Please enquire.

		<u>Size</u>	
<b>V21 (21 Element Wear Metal Blend)</b>		100g or 200g	
Elements	<b>Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, &amp; Zn</b>		
Wt/Wt	10ppm each element		<b>252 X V21-10</b>
	30ppm each element		<b>252 X V21-30</b>
	50ppm each element		<b>252 X V21-50</b>
	100ppm each element		<b>252 X V21-100</b>
	300ppm each element		<b>252 X V21-300</b>
	500ppm each element		<b>252 X V21-500</b>
	900ppm each element		<b>252 X V21-900</b>

Also available with additional elements, ie. V21 + K. Please enquire.

		<u>Size</u>	
<b>V23 (23 Element Wear Metal Blend)</b>		100g or 200g	
Elements	<b>Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Si, Sn, Ti, V, &amp; Zn</b>		
Wt/Wt	10ppm each element		<b>252 X V23-10</b>
	30ppm each element		<b>252 X V23-30</b>
	50ppm each element		<b>252 X V23-50</b>
	100ppm each element		<b>252 X V23-100</b>
	300ppm each element		<b>252 X V23-300</b>
	500ppm each element		<b>252 X V23-500</b>
	900ppm each element		<b>252 X V23-900</b>

### 256 X MBH Custom Organometallic Standard Solutions

If the established MBH product range does not meet your needs our expertise and experience is available for the quick and accurate production of special and multi-element blends to meet your requirements

Please use the Custom Organometallic Request Form on Page 16.

Note: Minimum quantity is 100grams

## 25. Organometallic Solutions.

### 253 MBH Single Element Concentrates (Sulphur Free Matrix)

These metallo-organic concentrates are ideal for X-ray fluorescence (XRF) and other spectroscopic techniques. They do not contain phosphorus or sulphur. Each product is supplied with a Certificate of Analysis that documents the assayed concentration and any trace impurities.

<u>Element</u>	<u>Size</u>	<u>Catalogue No</u>
<b>Aluminium</b> <b>Al</b> Nominal Concentration    3%	25g    or    100g	<b>2533 X Al S-F</b>
<b>Antimony</b> <b>Sb</b> Nominal Concentration    2%		<b>2533 X Sb S-F</b>
<b>Barium</b> <b>Ba</b> Nominal Concentration    13%		<b>2533 X Ba S-F</b>
<b>Bismuth</b> <b>Bi</b> Nominal Concentration    5%		<b>2533 X Bi S-F</b>
<b>Boron</b> <b>B</b> Nominal Concentration    3%		<b>2533 X B S-F</b>
<b>Cadmium</b> <b>Cd</b> Nominal Concentration    10%		<b>2533 X Cd S-F</b>
<b>Calcium</b> <b>Ca</b> Nominal Concentration    5%		<b>2533 X Ca S-F</b>
<b>Cerium</b> <b>Ce</b> Nominal Concentration    12%		<b>2533 X Ce S-F</b>
<b>Chromium</b> <b>Cr</b> Nominal Concentration    2%		<b>2533 X Cr S-F</b>
<b>Cobalt</b> <b>Co</b> Nominal Concentration    6%		<b>2533 X Co S-F</b>
<b>Copper</b> <b>Cu</b> Nominal Concentration    3%		<b>2533 X Cu S-F</b>
<b>Iron</b> <b>Fe</b> Nominal Concentration    4%		<b>2533 X Fe S-F</b>
<b>Lead</b> <b>Pb</b> Nominal Concentration    20%		<b>2533 X Pb S-F</b>
<b>Lithium</b> <b>Li</b> Nominal Concentration    2%		<b>2533 X Li S-F</b>
<b>Magnesium</b> <b>Mg</b> Nominal Concentration    3%		<b>2533 X Mg S-F</b>

A stabiliser is required when diluting these products. See page 11.



## 25. Organometallic Solutions.

### 253 MBH Single Element Concentrates (continued)

<u>Element</u>	<u>Size</u>	<u>Catalogue No</u>
<b>Manganese Mn</b> Nominal Concentration 6%	25g or 100g	2533 X Mn S-F
<b>Molybdenum Mo</b> Nominal Concentration 5%		2533 X Mo S-F
<b>Nickel Ni</b> Nominal Concentration 8%		2533 X Ni S-F
<b>Phosphorus P</b> Nominal Concentration 11%		2533 X P S-F
<b>Potassium K</b> Nominal Concentration 5%		2533 X K S-F
<b>Silicon Si</b> Nominal Concentration 18%		2533 X Si S-F
<b>Silver Ag</b> Nominal Concentration 1%		2533 X Ag S-F
<b>Sodium Na</b> Nominal Concentration 3%		2533 X Na S-F
<b>Strontium Sr</b> Nominal Concentration 9%		2533 X Sr S-F
<b>Thallium Tl</b> Nominal Concentration 1%		2533 X Tl S-F
<b>Tin Sn</b> Nominal Concentration 13%		2533 X Sn S-F
<b>Titanium Ti</b> Nominal Concentration 10%		2533 X Ti S-F
<b>Vanadium V</b> Nominal Concentration 2%		2533 X V S-F
<b>Yttrium Y</b> Nominal Concentration 3%		2533 X Y S-F
<b>Zinc Zn</b> Nominal Concentration 6%		2533 X Zn S-F
<b>Zirconium Zr</b> Nominal Concentration 24%		2533 X Zr S-F

A stabiliser is required when diluting these products. See page 11.


## 25. Organometallic Solutions.

### Custom Organometallic Standard Solution

### Quotation Request Form

Element	Units	Conc	Element	Units	Conc	Element	Units	Conc
Aluminium	<b>Al</b>	µg/g	Copper	<b>Cu</b>	µg/g	Rhodium	<b>Rh</b>	µg/g
Antimony	<b>Sb</b>	µg/g	Iodine	<b>I</b>	µg/g	Selenium	<b>Se</b>	µg/g
Arsenic	<b>As</b>	µg/g	Iron	<b>Fe</b>	µg/g	Silicon	<b>Si</b>	µg/g
Barium	<b>Ba</b>	µg/g	Lanthanum	<b>La</b>	µg/g	Silver	<b>Ag</b>	µg/g
Beryllium	<b>Be</b>	µg/g	Lead	<b>Pb</b>	µg/g	Sodium	<b>Na</b>	µg/g
Bismuth	<b>Bi</b>	µg/g	Lithium	<b>Li</b>	µg/g	Strontium	<b>Sr</b>	µg/g
Boron	<b>B</b>	µg/g	Magnesium	<b>Mg</b>	µg/g	Sulphur	<b>S</b>	µg/g
Bromine	<b>Br</b>	µg/g	Manganese	<b>Mn</b>	µg/g	Thallium	<b>Tl</b>	µg/g
Cadmium	<b>Cd</b>	µg/g	Mercury	<b>Hg</b>	µg/g	Tin	<b>Sn</b>	µg/g
Calcium	<b>Ca</b>	µg/g	Molybdenum	<b>Mo</b>	µg/g	Titanium	<b>Ti</b>	µg/g
Cerium	<b>Ce</b>	µg/g	Nickel	<b>Ni</b>	µg/g	Vanadium	<b>V</b>	µg/g
Chlorine	<b>Cl</b>	µg/g	Phosphorus	<b>P</b>	µg/g	Yttrium	<b>Y</b>	µg/g
Chromium	<b>Cr</b>	µg/g	Platinum	<b>Pt</b>	µg/g	Zinc	<b>Zn</b>	µg/g
Cobalt	<b>Co</b>	µg/g	Potassium	<b>K</b>	µg/g	Zirconium	<b>Zr</b>	µg/g

**PLEASE SPECIFY UNITS IF NOT THOSE SHOWN IN TABLE**

<b>Solvent:</b> .....		<b>Volume:</b> .....		<b>Please Specify No of bottles or any Special Packaging Requirements</b> .....	
<b>Name:</b> .....			<b>End User?</b> Yes <input type="checkbox"/> No <input type="checkbox"/>		
<b>Company:</b> .....			<b>Name of End User</b> .....		
<b>Address:</b> .....			<b>Date:</b> .....		
<b>Post Code:</b> .....			<b>Email:</b> .....		
<b>Phone No:</b> .....			<b>Fax No:</b> .....		
<p><b>RETURN THIS FORM TO</b></p> <p><b>MBH ANALYTICAL LTD</b></p> <p><b>Fax: +44 (0) 208 449 0810</b></p>					

Request may also be emailed to [sales@mbh.co.uk](mailto:sales@mbh.co.uk). Please be sure to provide all the required information when sending your request by email

## 25. Organometallic Solutions.

### 258 B NIST Sulphur Standards

<u>Matrix</u>		<u>Size</u>	<u>Catalogue No</u>
<b>Lubricating Oil</b>		5 @ 20g each	
Wt/Wt as S	423.5mg/kg		258 B 1819.1
	741.1mg/kg		258 B 1819.2
	4022mg/kg	(Available as a Set only)	258 B 1819.3
	4869mg/kg		258 B 1819.4
	6135mg/kg		258 B 1819.5

### 258 C Conostan Sulphur Standards

<u>Matrix</u>		<u>Size</u>	<u>Catalogue No</u>
<b>Mineral Oil</b>		100g	
Wt/Wt as S	0ppm (Blank)		258 C S-0
	0.005%		258 C S-50
	0.010%		258 C S-100
	0.025%		258 C S-250
	0.050%		258 C S-500
	0.075%		258 C S-750
	0.100%		258 C S-1000
	0.250%		258 C S-2500
	0.500%		258 C S-5000
	0.750%		258 C S-7500
	1.000%		258 C S-10K
	1.500%		258 C S-15K
	2.000%		258 C S-20K
	2.500%		258 C S-25K
	3.000%		258 C S-30K
	4.000%		258 C S-40K
	5.000%	<u>Size</u>	258 C S-50K
<b>Diesel Fuel</b>		100g	
Wt/Wt as S	0ppm (Blank)		258 C SD-0
	0.0005%		258 C SD-5
	0.0010%		258 C SD-10
	0.0015%		258 C SD-15
	0.005%		258 C SD-50
	0.010%		258 C SD-100
	0.050%		258 C SD-500
	0.100%		258 C SD-1000
	0.500%		258 C SD-5000
	1.000%		258 C SD-10K
	1.500%		258 C SD-15K
	2.000%		258 C SD-20K

### 258 MA Alpha Resources Sulphur Standards

<u>Matrix</u>		<u>Size</u>	<u>Catalogue No</u>
<b>Stabilised Crude Oil</b>		100g	
Wt/Wt as S	0.05%		258 MA-2041
	0.10%		258 MA-2042
	0.20%	The concentrations shown are target values, actual values are shown on the Certificate of Analysis supplied with the product.	258 MA-2043
	0.40%		258 MA-2044
	0.60%		258 MA-2045
	0.80%		258 MA-2046
	1.00%		258 MA-2047
	2.00%		258 MA-2048
	3.00%	<b>Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.</b>	258 MA-2049
	4.00%		258 MA-2050
	5.00%		258 MA-2051

## 25. Organometallic Solutions.

### 258 MA Alpha Resources Sulphur Standards (continued)

<u>Matrix</u>		<u>Size</u>	<u>Catalogue No</u>
<b>Lubricating Oil</b>		100g	
Wt/Wt as S	0.01%		258 MA-2838
	0.07%		258 MA-2831
	0.25%		258 MA-2832
	0.50%		258 MA-2833
	0.70%		258 MA-2834
	1.00%		258 MA-2835
	2.00%		258 MA-2836
	3.00%		258 MA-2839
	4.00%		258 MA-2837

The concentrations shown are target values, actual values are shown on the Certificate of Analysis supplied with the product.

### 258 MI ARMI Sulphur Standards

<u>Matrix</u>		<u>Size</u>	<u>Catalogue No</u>
<b>Residual Fuel Oil</b>		100g	
Wt/Wt as S	0.0000%		258 MI-11000
	0.105%		258 MI-11010A
	0.521%		258 MI-11050A
	1.034%		258 MI-11100A
	2.04%		258 MI-11200B
	3.013%		258 MI-11300A
	4.50%		258 MI-11450A
		<u>Size</u>	
<b>No 2 Diesel Fuel</b>		100g	
Wt/Wt as S	0.0000%		258 MI-14000A
	0.0005%		258 MI-1400005A
	0.0010%		258 MI-140001A
	0.002%		258 MI-140002A
	0.0049%		258 MI-140005A
	0.0101%		258 MI-14001A
	0.0338%		258 MI-14003A
	0.05%		258 MI-14005A
	0.1003%		258 MI-14010A
	0.5032%		258 MI-14050A
	0.9996%		258 MI-14100A
	2.0172%		258 MI-14200A
	2.9811%		258 MI-14300A
	4.511%		258 MI-14450A
		<u>Size</u>	
<b>White Mineral Oil</b>		100g	
Wt/Wt as S	0.0000%		258 MI-13000A
	0.01%		258 MI-13001A
	0.05%		258 MI-13005A
	0.10%		258 MI-13010A
	0.50%		258 MI-13050A
	1.00%		258 MI-13100A
	2.00%		258 MI-13200A
	3.00%		258 MI-13300A

## 25. Organometallic Solutions.

### 258 X MBH Sulphur Standards

<u>Matrix</u>	<u>Size</u>	<u>Catalogue No</u>
<b>Light Mineral Oil (20cst)</b>	100ml	
Wt/Wt as S		258 X MN-0
0 (Blank)		258 X MN-5
0.0005%		258 X MN-10
0.001%		258 X MN-25
0.0025%		258 X MN-50
0.005%		258 X MN-75
0.0075%		258 X MN-100
0.010%		258 X MN-200
0.020%		258 X MN-300
0.030%		258 X MN-400
0.040%		258 X MN-500
0.050%		258 X MN-750
0.075%		258 X MN-1000
0.10%		258 X MN-1500
0.15%		258 X MN-3000
0.30%		258 X MN-5000
0.50%		258 X MN-7500
0.75%		258 X MN-1%
1.00%		258 X MN-2%
2.00%		258 X MN-3%
3.00%		258 X MN-4%
4.00%		258 X MN-5%
5.00%		258 X MN-6%
6.00%		
	<u>Size</u>	
<b>Crude Oil</b>	100ml	
Wt/Wt as S		258 X SC-0
0 (Blank)		258 X SC-1000
0.10%		258 X SC-2500
0.25%		258 X SC-5000
0.50%		258 X SC-1%
1.00%	<b>Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.</b>	258 X SC-2%
2.00%		258 X SC-3%
3.00%		258 X SC-4%
4.00%		258 X SC-5%
5.00%		
	<u>Size</u>	
<b>Iso Octane</b>	100ml	
Wt/Wt as S		258 X SI-0
0 (Blank)		258 X SI-5
5ppm		258 X SI-10
10ppm		258 X SI-25
25ppm		258 X SI-50
50ppm		258 X SI-75
75ppm		258 X SI-100
100ppm		258 X SI-200
200ppm	<b>Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.</b>	258 X SI-300
300ppm		258 X SI-400
400ppm		258 X SI-500
500ppm		258 X SI-750
750ppm		258 X SI-1000
1,000ppm		258 X SI-2000
2,000ppm		258 X SI-3000
3,000ppm		

## 25. Organometallic Solutions.

### 258 X MBH Sulphur Standards (continued)

<u>Matrix</u>	<u>Size</u>	<u>Catalogue No</u>
<b>No 2 Diesel Fuel</b>	100ml	
Wt/Wt as S		
0 (Blank <1ppm)		258 X SD-0
5ppm		258 X SD-5
10ppm		258 X SD-10
25ppm		258 X SD-25
50ppm		258 X SD-50
75ppm		258 X SD-75
100ppm		258 X SD-100
200ppm		258 X SD-200
300ppm		258 X SD-300
400ppm		258 X SD-400
500ppm		258 X SD-500
750ppm		258 X SD-750
1,000ppm		258 X SD-1000
1,500ppm		258 X SD-1500
3,000ppm		258 X SD-3000
5,000ppm		258 X SD-5000
7,500ppm		258 X SD-7500
1.0%		258 X SD-1%
2.0%		258 X SD-2%
3.0%		258 X SD-3%
4.0%		258 X SD-4%
5.0%		258 X SD-5%
6.0%		258 X SD-6%
<b>Heavy Mineral Oil (75cSt)</b>	100ml	
Wt/Wt as S		
0 (Blank)		258 X SM-0
5ppm		258 X SM-5
10ppm		258 X SM-10
25ppm		258 X SM-25
50ppm		258 X SM-50
75ppm		258 X SM-75
100ppm		258 X SM-100
200ppm		258 X SM-200
300ppm		258 X SM-300
400ppm		258 X SM-400
500ppm		258 X SM-500
750ppm		258 X SM-750
1,000ppm		258 X SM-1000
1,500ppm		258 X SM-1500
3,000ppm		258 X SM-3000
5,000ppm		258 X SM-5000
7,500ppm		258 X SM-7500
1.00%		258 X SM-1%
2.00%		258 X SM-2%
3.00%		258 X SM-3%
4.00%		258 X SM-4%
5.00%		258 X SM-5%
6.00%		258 X SM-6%

## 25. Organometallic Solutions.

### 258 X MBH Sulphur Standards (continued)

<u>Matrix</u>		<u>Size</u>	<u>Catalogue No</u>
<b>Kerosene</b>		100ml	
Wt/Wt as S	0 (Blank)		<b>258 X SK-0</b>
	10ppm		<b>258 X SK-10</b>
	50ppm		<b>258 X SK-50</b>
	100ppm		<b>258 X SK-100</b>
	300ppm		<b>258 X SK-300</b>
	500ppm		<b>258 X SK-500</b>
	750ppm		<b>258 X SK-750</b>
	1,000ppm		<b>258 X SK-1000</b>

**Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.**

		<u>Size</u>	
<b>Residual Oil</b>		100ml	
Wt/Wt as S	0.25%		<b>258 X SR-2500</b>
	0.50%		<b>258 X SR-5000</b>
	1.00%		<b>258 X SR-1%</b>
	2.00%		<b>258 X SR-2%</b>
	3.00%		<b>258 X SR-3%</b>
	4.00%		<b>258 X SR-4%</b>
	5.00%		<b>258 X SR-5%</b>

#### Matrix Oils and Solvents

Matrix Oils and Solvents for the preparation of working standards for Hydrocarbon/Petrochemical Analysis

		<u>Size</u>	
		500ml or 1/2 US Gallon (1.89 Litres)	
Diesel Fuel	<1 ppm Sulphur		<b>2520 X DSL</b>
Iso Octane	<1 ppm Sulphur		<b># 2520 X ISO</b>
Kerosene	<1 ppm Sulphur		<b># 2520 X KER</b>
* 20 cSt Mineral Oil	<1 ppm Sulphur		<b>254 X OIL-20-S</b>
* 75 cSt Mineral Oil	<1 ppm Sulphur		<b>254 X OIL-75-S</b>
* 20 cSt Hydrocarbon Oil		1 US Gallon (3.78 Litres)	<b>254 X OIL-20</b>
* 75 cSt Hydrocarbon Oil		1 US Gallon (3.78 Litres)	<b>254 X OIL-75</b>
* Also listed on page 11			

**# Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.**

## 25. Organometallic Solutions.

### 257 Carbon, Hydrogen, Nitrogen & Sulphur in Oil

<u>Matrix</u>	<u>Carbon %</u>	<u>Hydrogen %</u>	<u>Nitrogen %</u>	<u>Sulphur %</u>	<u>BTU/lb</u>	<u>Size</u>	<u>Catalogue No</u>
Kerosene	86.13	13.66	0.11	0.14	19575	100g	# 257 MA 327
No 2 Diesel Fuel	85.64	13.83	0.0108	0.338	19551	100g	257 MA 330
Paraffin	88.94	14.06	<1ppm	35ppb	19877	100g	257 MA 000
Residual Oil	87.28	11.49	0.193	1.00	19141	100g	257 MA 100
Residual Oil	87.16	12.32	0.26	0.18	19551	100g	257 MA 150
Crude Oil	.....	.....	67ppm	.....	.....	100g	# 257 MA 3032
Crude Oil	.....	.....	750ppm	.....	.....	100g	# 257 MA 3033
Crude Oil	.....	.....	1640ppm	.....	.....	100g	# 257 MA 3034

Note: Values are correct at time of printing. Actual batch values will appear on the bottle.

# Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.

### 259 Chlorine in Oil

<u>Matrix</u>		<u>Size</u>	<u>Catalogue No</u>
<b>Lubricating Oil</b>	<b>NIST</b> (Available as a Set only)	5 @ 20g each	
Wt/Vol as Cl	31.6mg/kg		259 B 1818-1
	60.0mg/kg		259 B 1818-2
	78.2mg/kg		259 B 1818-3
	154.4mg/kg		259 B 1818-4
	234.0mg/kg		259 B 1818-5
<b>Mineral Oil</b>	<b>Conostan</b>	100g	
Wt/Vol as Cl	0ppm (Blank)		259 C CL-0
	0.001%		259 C CL-10
	0.010%		259 C CL-100
	0.050%		259 C CL-500
	0.100%		259 C CL-1000
	1.00%		259 C CL-10K
	5.00%		259 C CL-50K
<b>Mineral Oil 75cSt</b>	<b>MBH</b>	100ml	
Wt/Vol as Cl	0 (Blank)		259 X CL-0
	0.001%		259 X CL-10
	0.01%		259 X CL-100
	0.05%		259 X CL-500
	0.1%		259 X CL-1000
	1.0%		259 X CL-1%
	5.0%		259 X CL-5%

### 2510 Lead in Oil

<u>Matrix</u>		<u>Size</u>	<u>Catalogue No</u>
<b>Iso Octane</b>	For use with ASTM D5059 Pt A	100g	
Wt/Vol as Pb	0 (Blank)		2510 X PI-0
(grams / US gal)	0.1g/gal		2510 X PI-0.1
	1.0g/gal		2510 X PI-1.00
	2.0g/gal		2510 X PI-2.00
	3.0g/gal		2510 X PI-3.00
	4.0g/gal		2510 X PI-4.00
	5.0g/gal		2510 X PI-5.00
	Set of 7		2510 X PI-SET A

**Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.**

Note: to convert from g/gal to ug/g (ppm), multiply by 370 i.e., 0.1g/gal = 37ug/g



## 25. Organometallic Solutions.

### 2510 Lead in Oil (continued)

<u>Matrix</u>		<u>Size</u>	<u>Catalogue No</u>
<b>Iso Octane</b>	For use with ASTM D5059 Pt C	100g	
Wt/Vol as Pb	0 (Blank)		2510 X PI-0
(grams per US gal)	0.001g/gal		2510 X PI-0.001
	0.005g/gal		2510 X PI-0.005
	0.010g/gal		2510 X PI-0.010
	0.050g/gal		2510 X PI-0.050
	0.100g/gal		2510 X PI-0.100
	0.300g/gal		2510 X PI-0.300
	Set of 7		2510 X PI-SET C

**Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.**

Note: to convert from g/gal to ug/g (ppm), multiply by 370 i.e., 0.1g/gal = 37ug/g

### 2515 Sulphur & Metals in Oil

<u>Matrix</u>					<u>Size</u>	<u>Catalogue No</u>
<b>Lubricating Oil</b>	<b>S</b>	<b>Ca</b>	<b>P</b>	<b>Zn</b>	100ml	
	%	%	%	%		
Wt/Vol as element	0.000	0.000	0.000	0.000		2515 X LO-1
	0.050	0.600	0.005	0.080		2515 X LO-2
	0.300	0.000	0.020	0.175		2515 X LO-3
	0.150	0.500	0.030	0.070		2515 X LO-4
	0.100	0.300	0.060	0.130		2515 X LO-5
	0.175	0.400	0.200	0.050		2515 X LO-6
	0.075	0.200	0.080	0.120		2515 X LO-7
	0.125	0.250	0.050	0.000		2515 X LO-8
	0.400	0.350	0.040	0.110		2515 X LO-9
	0.500	0.075	0.225	0.150		2515 X LO-10
	0.200	0.050	0.150	0.200		2515 X LO-11
	0.550	0.005	0.000	0.140		2515 X LO-12
	0.450	0.100	0.010	0.250		2515 X LO-13
	0.600	0.010	0.125	0.060		2515 X LO-14
	0.250	0.150	0.100	0.090		2515 X LO-15
	0.350	0.025	0.175	0.100		2515 X LO-16
	Set of 16					2515 X LO-SET
<b>Mineral Oil 20cSt</b>	<b>S</b>	<b>Fe</b>	<b>Ni</b>	<b>V</b>	100ml	
	ppm	ppm	ppm	ppm		
Wt/Vol as element	0	0	0	0		2515 X SO-1
	2.5	400	100	250		2515 X SO-2
	0.5	300	10.00	500		2515 X SO-3
	1.0	0	80	350		2515 X SO-4
	4.5	250	60	100		2515 X SO-5
	4.0	350	30	200		2515 X SO-6
	3.5	200	50	0		2515 X SO-7
	5.5	50	40	400		2515 X SO-8
	2.0	450	20	300		2515 X SO-9
	1.5	500	5	150		2515 X SO-10
	3.0	150	70	25		2515 X SO-11
	5.0	100	0	50		2515 X SO-12
	Set of 12					2515 X SO-SET

### 2516 Bismuth Internal Standard

<u>Matrix</u>		<u>Size</u>	<u>Catalogue No</u>
<b>Mineral Oil</b>			
Wt/Vol as Bi	0.793g/L	100g	2516 X BIS-4
	0.793g/L	400g	2516 X BIS-16
	0.793g/L	800g	2516 X BIS-32

## 26. Aqueous Solutions.

### 26 Single Element ICP Reference Solutions

<b>Aluminium</b>		<b>Al</b>	<b>Size</b>			<b>Catalogue No</b>
<b>Matrix:</b>	<b>5% HCl</b>		0.1L	or	0.5L	
Solute:	Aluminium Metal	1,000µg/ml				# 26 X 1-Al(a)
Wt/Vol as Al		10,000µg/ml				# 26 X 10-Al(a)
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>		0.1L	or	0.5L	
Solute:	Aluminium Nitrate [Al(NO <sub>3</sub> ) <sub>3</sub> ]	1,000µg/ml				# 26 X 1-Al(b)
Wt/Vol as Al		10,000µg/ml				# 26 X 10-Al(b)
<b>Antimony</b>		<b>Sb</b>				
<b>Matrix:</b>	<b>20% HCl</b>		0.1L	or	0.5L	
Solute:	Antimony Metal	1,000µg/ml				# 26 X 1-Sb(a)
Wt/Vol as Sb		10,000µg/ml				# 26 X 10-Sb(a)
<b>Matrix:</b>	<b>Tartaric acid / Trace HNO<sub>3</sub></b>		0.1L	or	0.5L	
Solute:	Antimony Metal	1,000µg/ml				# 26 X 1-Sb(b)
Wt/Vol as Sb		10,000µg/ml				# 26 X 10-Sb(b)
<b>Arsenic</b>		<b>As</b>				
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>		0.1L	or	0.5L	
Solute:	Arsenic Metal	1,000µg/ml				# 26 X 1-As
Wt/Vol as As		10,000µg/ml				# 26 X 10-As
<b>Barium</b>		<b>Ba</b>				
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>		0.1L	or	0.5L	
Solute:	Barium Nitrate [Ba(NO <sub>3</sub> ) <sub>2</sub> ]	1,000µg/ml				# 26 X 1-Ba
Wt/Vol as Ba		10,000µg/ml				# 26 X 10-Ba
<b>Beryllium</b>		<b>Be</b>				
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>		0.1L	or	0.5L	
Solute:	Beryllium Acetate [Be <sub>4</sub> O(C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> ) <sub>6</sub> ]	1,000µg/ml				# 26 X 1-Be
Wt/Vol as Be		10,000µg/ml				# 26 X 10-Be
<b>Bismuth</b>		<b>Bi</b>				
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>		0.1L	or	0.5L	
Solute:	Bismuth Metal	1,000µg/ml				# 26 X 1-Bi
Wt/Vol as Bi		10,000µg/ml				# 26 X 10-Bi
<b>Boron</b>		<b>B</b>				
<b>Matrix:</b>	<b>1% NH<sub>4</sub>OH</b>		0.1L	or	0.5L	
Solute:	Boric Acid [H <sub>3</sub> BO <sub>3</sub> ]	1,000µg/ml				26 X 1-B(a)
Wt/Vol as B		10,000µg/ml				26 X 10-B
<b>Matrix:</b>	<b>H<sub>2</sub>O</b>		0.1L	or	0.5L	
Solute:	Boric Acid [H <sub>3</sub> BO <sub>3</sub> ]	1,000µg/ml				26 X 1-B(b)
Wt/Vol as B		10,000µg/ml				
<b>Cadmium</b>		<b>Cd</b>				
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>		0.1L	or	0.5L	
Solute:	Cadmium Metal	1,000µg/ml				# 26 X 1-Cd
Wt/Vol as Cd		10,000µg/ml				# 26 X 10-Cd

# Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.

## 26. Aqueous Solutions.

### 26 Single Element ICP Reference Solutions (continued)

Caesium		Cs	Size	Catalogue No
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L or 0.5L	
Solute:	Caesium Metal	1,000µg/ml		# 26 X 1-Cs
Wt/Vol as Cs		10,000µg/ml		# 26 X 10-Cs
<b>Calcium</b>		<b>Ca</b>		
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L or 0.5L	
Solute:	Calcium Carbonate [CaCO <sub>3</sub> ]	1,000µg/ml		# 26 X 1-Ca
Wt/Vol as Ca		10,000µg/ml		# 26 X 10-Ca
<b>Carbon</b>		<b>C</b>		
<b>Matrix:</b>	H <sub>2</sub> O		0.1L or 0.5L	
Solute:	Acetic Acid [CH <sub>3</sub> CO <sub>2</sub> H]	1,000µg/ml		26 X 1-C
Wt/Vol as C		10,000µg/ml		26 X 10-C
<b>Cerium</b>		<b>Ce</b>		
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L or 0.5L	
Solute:	Cerium Metal	1,000µg/ml		# 26 X 1-Ce
Wt/Vol as Ce		10,000µg/ml		# 26 X 10-Ce
<b>Chromium</b>		<b>Cr</b>		
<b>Matrix:</b>	5% HCl		0.1L or 0.5L	
Solute:	Chromium Metal	1,000µg/ml		# 26 X 1-Cr(a)
Wt/Vol as Cr		10,000µg/ml		# 26 X 10-Cr(a)
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L or 0.5L	
Solute:	Chromium Nitrate [Cr(NO <sub>3</sub> ) <sub>3</sub> ]	1,000µg/ml		# 26 X 1-Cr(b)
Wt/Vol as Cr		10,000µg/ml		# 26 X 10-Cr(b)
<b>Cobalt</b>		<b>Co</b>		
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L or 0.5L	
Solute:	Cobalt Metal	1,000µg/ml		# 26 X 1-Co
Wt/Vol as Co		10,000µg/ml		# 26 X 10-Co
<b>Copper</b>		<b>Cu</b>		
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L or 0.5L	
Solute:	Copper Metal	1,000µg/ml		# 26 X 1-Cu
Wt/Vol as Cu		10,000µg/ml		# 26 X 10-Cu
<b>Dysprosium</b>		<b>Dy</b>		
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L or 0.5L	
Solute:	Dysprosium Oxide [Dy <sub>2</sub> O <sub>3</sub> ]	1,000µg/ml		# 26 X 1-Dy
Wt/Vol as Dy		10,000µg/ml		# 26 X 10-Dy
<b>Erbium</b>		<b>Er</b>		
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L or 0.5L	
Solute:	Erbium Metal	1,000µg/ml		# 26 X 1-Er
Wt/Vol as Er		10,000µg/ml		# 26 X 10-Er

# Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.

## 26. Aqueous Solutions.

26		Single Element ICP Reference Solutions (continued)	
Europium	Eu	Size	Catalogue No
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Europium Oxide [Eu <sub>2</sub> O <sub>3</sub> ]	1,000µg/ml	# 26 X 1-Eu
Wt/Vol as Eu		10,000µg/ml	# 26 X 10-Eu
<b>Gadolinium</b>	<b>Gd</b>		
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Gadolinium Oxide [Gd <sub>2</sub> O <sub>3</sub> ]	1,000µg/ml	# 26 X 1-Gd
Wt/Vol as Gd		10,000µg/ml	# 26 X 10-Gd
<b>Gallium</b>	<b>Ga</b>		
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Gallium Metal	1,000µg/ml	# 26 X 1-Ga
Wt/Vol as Ga		10,000µg/ml	# 26 X 10-Ga
<b>Germanium</b>	<b>Ge</b>		
<b>Matrix:</b>	5% HNO <sub>3</sub> / Trace HF	0.1L or 0.5L	
Solute:	Germanium Metal	1,000µg/ml	# 26 X 1-Ge(a)
Wt/Vol as Ge		10,000µg/ml	# 26 X 10-Ge
<b>Matrix:</b>	H <sub>2</sub> O / Trace F <sup>-</sup>	0.1L or 0.5L	
Solute:	Ammonium Hexafluorogermanate [(NH <sub>4</sub> ) <sub>2</sub> GeF <sub>6</sub> ]		
Wt/Vol as Ge		1,000µg/ml	26 X 1-Ge(b)
<b>Gold</b>	<b>Au</b>		
<b>Matrix:</b>	20% HCl	0.1L or 0.5L	
Solute:	Gold metal	1,000µg/ml	# 26 X 1-Au
Wt/Vol as Au		10,000µg/ml	# 26 X 10-Au
<b>Hafnium</b>	<b>Hf</b>		
<b>Matrix:</b>	5% HCl	0.1L or 0.5L	
Solute:	Hafnium Oxychloride [HfOCl <sub>2</sub> ]	1,000µg/ml	# 26 X 1-Hf
Wt/Vol as Hf		10,000µg/ml	# 26 X 10-Hf
<b>Holmium</b>	<b>Ho</b>		
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Holmium Oxide [Ho <sub>2</sub> O <sub>3</sub> ]	1,000µg/ml	# 26 X 1-Ho
Wt/Vol as Ho		10,000µg/ml	# 26 X 10-Ho
<b>Indium</b>	<b>In</b>		
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Indium Metal	1,000µg/ml	# 26 X 1-In
Wt/Vol as In		10,000µg/ml	# 26 X 10-In
<b>Iridium</b>	<b>Ir</b>		
<b>Matrix:</b>	20% HCl	0.1L or 0.5L	
Solute:	Iridium Chloride [IrCl <sub>3</sub> .3H <sub>2</sub> O]	1,000µg/ml	# 26 X 1-Ir
Wt/Vol as Ir		10,000µg/ml	# 26 X 10-Ir

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## 26. Aqueous Solutions.

### 26 Single Element ICP Reference Solutions (continued)

<b>Iron</b>	<b>Fe</b>	<b>Size</b>	<b>Catalogue No</b>
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>	0.1L or 0.5L	
Solute:	Iron Oxide [Fe <sub>2</sub> O <sub>3</sub> ]	1,000µg/ml	# 26 X 1-Fe
Wt/Vol as Fe		10,000µg/ml	# 26 X 10-Fe
<b>Lanthanum</b>	<b>La</b>		
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>	0.1L or 0.5L	
Solute:	Lanthanum Oxide [La <sub>2</sub> O <sub>3</sub> ]	1,000µg/ml	# 26 X 1-La
Wt/Vol as La		10,000µg/ml	# 26 X 10-La
<b>Lead</b>	<b>Pb</b>		
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>	0.1L or 0.5L	
Solute:	Lead Metal	1,000µg/ml	# 26 X 1-Pb
Wt/Vol as Pb		10,000µg/ml	# 26 X 10-Pb
<b>Lithium</b>	<b>Li</b>		
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>	0.1L or 0.5L	
Solute:	Lithium Carbonate [Li <sub>2</sub> CO <sub>3</sub> ]	1,000µg/ml	# 26 X 1-Li
Wt/Vol as Li		10,000µg/ml	# 26 X 10-Li
<b>Lutetium</b>	<b>Lu</b>		
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>	0.1L or 0.5L	
Solute:	Lutetium Oxide [Lu <sub>2</sub> O <sub>3</sub> ]	1,000µg/ml	# 26 X 1-Lu
Wt/Vol as Lu		10,000µg/ml	# 26 X 10-Lu
<b>Magnesium</b>	<b>Mg</b>		
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>	0.1L or 0.5L	
Solute:	Magnesium Metal	1,000µg/ml	# 26 X 1-Mg
Wt/Vol as Mg		10,000µg/ml	# 26 X 10-Mg
<b>Manganese</b>	<b>Mn</b>		
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>	0.1L or 0.5L	
Solute:	Manganese Metal	1,000µg/ml	# 26 X 1-Mn
Wt/Vol as Mn		10,000µg/ml	# 26 X 10-Mn
<b>Mercury</b>	<b>Hg</b>		
<b>Matrix:</b>	<b>5% HNO<sub>3</sub></b>	0.1L or 0.5L	
Solute:	Mercury Metal	1,000µg/ml	# 26 X 1-Hg
Wt/Vol as Hg		10,000µg/ml	# 26 X 10-Hg
<b>Molybdenum</b>	<b>Mo</b>		
<b>Matrix:</b>	<b>5% HNO<sub>3</sub> /Trace HF</b>	0.1L or 0.5L	
Solute:	Molybdenum Metal	1,000µg/ml	# 26 X 1-Mo(a)
Wt/Vol as Mo		10,000µg/ml	# 26 X 10-Mo(a)
<b>Matrix:</b>	<b>1% NH<sub>4</sub>OH</b>	0.1L or 0.5L	
Solute:	Ammonium Molybdate [(NH <sub>4</sub> ) <sub>6</sub> Mo <sub>7</sub> O <sub>24</sub> ·4H <sub>2</sub> O]		
Wt/Vol as Mo		1,000µg/ml	26 X 1-Mo(b)
		10,000µg/ml	26 X 10-Mo(b)

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## 26. Aqueous Solutions.

### 26 Single Element ICP Reference Solutions (continued)

<b>Neodymium Nd</b>		<u>Size</u>	<u>Catalogue No</u>
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Neodymium Metal	1,000µg/ml	# 26 X 1-Nd
Wt/Vol as Nd		10,000µg/ml	# 26 X 10-Nd
<b>Nickel Ni</b>			
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Nickel Metal	1,000µg/ml	# 26 X 1-Ni
Wt/Vol as Ni		10,000µg/ml	# 26 X 10-Ni
<b>Niobium Nb</b>			
<b>Matrix:</b>	2% HF	0.1L or 0.5L	
Solute:	Niobium Chloride [NbCl <sub>5</sub> ]	1,000µg/ml	# 26 X 1-Nb(a)
Wt/Vol as Nb		10,000µg/ml	# 26 X 10-Nb(a)
<b>Matrix:</b>	H <sub>2</sub> O / Trace HF	0.1L or 0.5L	
Solute:	Ammonium Hexafluoronioabate [NH <sub>4</sub> NbF <sub>6</sub> ]	1,000µg/ml	26 X 1-Nb(b)
Wt/Vol as Nb		10,000µg/ml	26 X 10-Nb(b)
<b>Osmium Os</b>			
<b>Matrix:</b>	20% HCl	0.1L or 0.5L	
Solute:	Ammonium Hexchloroosmate [(NH <sub>4</sub> ) <sub>2</sub> OsCl <sub>6</sub> ]	1,000µg/ml	# 26 X 1-Os
Wt/Vol as Os			
<b>Palladium Pd</b>			
<b>Matrix:</b>	20% HCl	0.1L or 0.5L	
Solute:	Palladium Metal	1,000µg/ml	# 26 X 1-Pd(a)
Wt/Vol as Pd		10,000µg/ml	# 26 X 10-Pd(a)
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Palladium Metal	1,000µg/ml	# 26 X 1-Pd(b)
Wt/Vol as Pd		10,000µg/ml	# 26 X 10-Pd(b)
<b>Phosphorus P</b>			
<b>Matrix:</b>	H <sub>2</sub> O	0.1L or 0.5L	
Solute:	Phosphoric Acid H <sub>3</sub> PO <sub>4</sub>	1,000µg/ml	26 X 1-P
Wt/Vol as P		10,000µg/ml	26 X 10-P
<b>Platinum Pt</b>			
<b>Matrix:</b>	20% HCl	0.1L or 0.5L	
Solute:	Platinum Metal	1,000µg/ml	# 26 X 1-Pt
Wt/Vol as Pt		10,000µg/ml	# 26 X 10-Pt
<b>Potassium K</b>			
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Potassium Metal	1,000µg/ml	# 26 X 1-K
Wt/Vol as K		10,000µg/ml	# 26 X 10-K

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## 26. Aqueous Solutions.

### 26 Single Element ICP Reference Solutions (continued)

<b>Praseodymium Pr</b>		<u>Size</u>	<u>Catalogue No</u>
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Praseodymium Oxide [Pr <sub>6</sub> O <sub>11</sub> ]	1,000µg/ml	# 26 X 1-Pr
Wt/Vol as Pr		10,000µg/ml	# 26 X 10-Pr
<b>Rhenium Re</b>			
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Rhenium Metal	1,000µg/ml	# 26 X 1-Re
Wt/Vol as Re		10,000µg/ml	# 26 X 10-Re
<b>Rhodium Rh</b>			
<b>Matrix:</b>	20% HCl	0.1L or 0.5L	
Solute:	Rhodium Chloride [RhCl <sub>3</sub> ]	1,000µg/ml	# 26 X 1-Rh
Wt/Vol as Rh		10,000µg/ml	# 26 X 10-Rh
<b>Rubidium Rb</b>			
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Rubidium Carbonate [Rb <sub>2</sub> CO <sub>3</sub> ]	1,000µg/ml	# 26 X 1-Rb
Wt/Vol as Rb		10,000µg/ml	# 26 X 10-Rb
<b>Ruthenium Ru</b>			
<b>Matrix:</b>	20% HCl	0.1L or 0.5L	
Solute:	Ruthenium Chloride [RuCl <sub>3</sub> ]	1,000µg/ml	# 26 X 1-Ru
Wt/Vol as Ru		10,000µg/ml	# 26 X 10-Ru
<b>Samarium Sm</b>			
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Samarium Oxide [Sm <sub>2</sub> O <sub>3</sub> ]	1,000µg/ml	# 26 X 1-Sm
Wt/Vol as Sm		10,000µg/ml	# 26 X 10-Sm
<b>Scandium Sc</b>			
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Scandium Oxide [Sc <sub>2</sub> O <sub>3</sub> ]	1,000µg/ml	# 26 X 1-Sc
Wt/Vol as Sc		10,000µg/ml	# 26 X 10-Sc
<b>Selenium Se</b>			
<b>Matrix:</b>	5% HNO <sub>3</sub>	0.1L or 0.5L	
Solute:	Selenium Metal	1,000µg/ml	# 26 X 1-Se
Wt/Vol as Se		10,000µg/ml	# 26 X 10-Se
<b>Silicon Si</b>			
<b>Matrix:</b>	5% HNO <sub>3</sub> / Trace HF	0.1L or 0.5L	
Solute:	Silicon Metal	1,000µg/ml	# 26 X 1-Si(a)
Wt/Vol as Si		10,000µg/ml	# 26 X 10-Si(a)
<b>Matrix:</b>	H <sub>2</sub> O / Trace F <sup>-</sup>	0.1L or 0.5L	
Solute:	Ammonium Hexafluorosilicate [(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> ]		
Wt/Vol as Si		1,000µg/ml	26 X 1-Si(b)
		10,000µg/ml	26 X 10-Si(b)

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## 26. Aqueous Solutions.

26		Single Element ICP Reference Solutions (continued)			
<b>Silver</b>	<b>Ag</b>			<b>Size</b>	<b>Catalogue No</b>
<b>Matrix:</b>	5% HNO <sub>3</sub>			0.1L or 0.5L	
Solute:	Silver Metal	1,000µg/ml			# 26 X 1-Ag
Wt/Vol as Ag		10,000µg/ml			# 26 X 10-Ag
<b>Sodium</b>	<b>Na</b>				
<b>Matrix:</b>	5% HNO <sub>3</sub>			0.1L or 0.5L	
Solute:	Sodium Carbonate [Na <sub>2</sub> CO <sub>3</sub> ]	1,000µg/ml			# 26 X 1-Na
Wt/Vol as Na		10,000µg/ml			# 26 X 10-Na
<b>Strontium</b>	<b>Sr</b>				
<b>Matrix:</b>	5% HNO <sub>3</sub>			0.1L or 0.5L	
Solute:	Strontium Nitrate [Sr(NO <sub>3</sub> ) <sub>2</sub> ]	1,000µg/ml			# 26 X 1-Sr
Wt/Vol as Sr		10,000µg/ml			# 26 X 10-Sr
<b>Sulfur</b>	<b>S</b>				
<b>Matrix:</b>	H <sub>2</sub> O			0.1L or 0.5L	
Solute:	Ammonium Sulfate [(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> ]	1,000µg/ml			26 X 1-S
Wt/Vol as S		10,000µg/ml			26 X 10-S
<b>Tantalum</b>	<b>Ta</b>				
<b>Matrix:</b>	2% HF			0.1L or 0.5L	
Solute:	Tantalum Pentachloride [TaCl <sub>5</sub> ]	1,000µg/ml			# 26 X 1-Ta(a)
Wt/Vol as Ta		10,000µg/ml			# 26 X 10-Ta(a)
<b>Matrix:</b>	H <sub>2</sub> O / F <sup>-</sup>			0.1L or 0.5L	
Solute:	Ammonium Hexafluorotantalate [NH <sub>4</sub> TaF <sub>6</sub> ]	1,000µg/ml			26 X 1-Ta(b)
Wt/Vol as Ta		10,000µg/ml			26 X 10-Ta(b)
<b>Tellurium</b>	<b>Te</b>				
<b>Matrix:</b>	20% HCl			0.1L or 0.5L	
Solute:	Tellurium Metal	1,000µg/ml			# 26 X 1-Te(a)
Wt/Vol as Te		10,000µg/ml			# 26 X 10-Te
<b>Matrix:</b>	5% HNO <sub>3</sub>			0.1L or 0.5L	
Solute:	Tellurium Metal				
Wt/Vol as Te		1,000µg/ml			# 26 X 1-Te(b)
<b>Terbium</b>	<b>Tb</b>				
<b>Matrix:</b>	5% HNO <sub>3</sub>			0.1L or 0.5L	
Solute:	Terbium Metal	1,000µg/ml			# 26 X 1-Tb
Wt/Vol as Tb		10,000µg/ml			# 26 X 10-Tb
<b>Thallium</b>	<b>Tl</b>				
<b>Matrix:</b>	5% HNO <sub>3</sub>			0.1L or 0.5L	
Solute:	Thallium Metal	1,000µg/ml			# 26 X 1-Tl
Wt/Vol as Tl		10,000µg/ml			# 26 X 10-Tl
<b>Thorium</b>	<b>Th</b>				
<b>Matrix:</b>	5% HNO <sub>3</sub>			0.1L or 0.5L	
Solute:	Thorium Nitrate [Th(NO <sub>3</sub> ) <sub>4</sub> ]	1,000µg/ml			# 26 X 1-Th
Wt/Vol as Th		10,000µg/ml			# 26 X 10-Th

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## 26. Aqueous Solutions.

### 26 Single Element ICP Reference Solutions (continued)

Thulium		Tm	Size		Catalogue No	
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L	or	0.5L	
Solute:	Thulium Oxide [Tm <sub>2</sub> O <sub>3</sub> ]	1,000µg/ml				# 26 X 1-Tm
Wt/Vol as Tm		10,000µg/ml				# 26 X 10-Tm
<b>Tin</b>		<b>Sn</b>				
<b>Matrix:</b>	20% HCl		0.1L	or	0.5L	
Solute:	Tin Metal	1,000µg/ml				# 26 X 1-Sn(a)
Wt/Vol as Sn		10,000µg/ml				# 26 X 10-Sn(a)
<b>Matrix:</b>	5% HNO <sub>3</sub> / Trace HF		0.1L	or	0.5L	
Solute:	Tin Metal	1,000µg/ml				# 26 X 1-Sn(b)
Wt/Vol as Sn		10,000µg/ml				# 26 X 10-Sn(b)
<b>Titanium</b>		<b>Ti</b>				
<b>Matrix:</b>	5% HNO <sub>3</sub> / Trace HF		0.1L	or	0.5L	
Solute:	Titanium Metal	1,000µg/ml				# 26 X 1-Ti(a)
Wt/Vol as Ti		10,000µg/ml				# 26 X 10-Ti(a)
<b>Matrix:</b>	H <sub>2</sub> O / Trace F <sup>-</sup>		0.1L	or	0.5L	
Solute:	Ammonium Hexafluorotitanate [(NH <sub>4</sub> ) <sub>2</sub> TiF <sub>6</sub> ]	1,000µg/ml				26 X 1-Ti(b)
Wt/Vol as Ti		10,000µg/ml				26 X 10-Ti(b)
<b>Tungsten</b>		<b>W</b>				
<b>Matrix:</b>	5% HNO <sub>3</sub> / Trace HF		0.1L	or	0.5L	
Solute:	Tungsten Metal	1,000µg/ml				# 26 X 1-W(a)
Wt/Vol as W		10,000µg/ml				# 26 X 10-W(a)
<b>Matrix:</b>	H <sub>2</sub> O		0.1L	or	0.5L	
Solute:	Ammonium Tungstate [(NH <sub>4</sub> ) <sub>2</sub> WO <sub>4</sub> ]	1,000µg/ml				26 X 1-W(b)
Wt/Vol as W		10,000µg/ml				26 X 10-W(b)
<b>Uranium</b>		<b>U</b>				
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L	or	0.5L	
Solute:	Uranium Oxide [U <sub>3</sub> O <sub>8</sub> ]	1,000µg/ml				# 26 X 1-U
Wt/Vol as U		10,000µg/ml				# 26 X 10-U
<b>Vanadium</b>		<b>V</b>				
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L	or	0.5L	
Solute:	Vanadium Pentoxide [V <sub>2</sub> O <sub>5</sub> ]	1,000µg/ml				# 26 X 1-V
Wt/Vol as V		10,000µg/ml				# 26 X 10-V
<b>Ytterbium</b>		<b>Yb</b>				
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L	or	0.5L	
Solute:	Ytterbium Oxide [Yb <sub>2</sub> O <sub>3</sub> ]	1,000µg/ml				# 26 X 1-Yb
Wt/Vol as Yb		10,000µg/ml				# 26 X 10-Yb
<b>Yttrium</b>		<b>Y</b>				
<b>Matrix:</b>	5% HNO <sub>3</sub>		0.1L	or	0.5L	
Solute:	Yttrium Oxide [Y <sub>2</sub> O <sub>3</sub> ]	1,000µg/ml				# 26 X 1-Y
Wt/Vol as Y		10,000µg/ml				# 26 X 10-Y

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## 26. Aqueous Solutions.

### 26 Single Element ICP Reference Solutions (continued)

Zinc		Zn	Size	Catalogue No
Matrix:	5% HNO <sub>3</sub>		0.1L or 0.5L	
Solute:	Zinc Metal			26 X 1-Zn
Wt/Vol as Zn	1,000µg/ml			26 X 10-Zn
	10,000µg/ml			
Zirconium		Zr	Size	Catalogue No
Matrix:	5% HCl		0.1L or 0.5L	
Solute:	Zirconyl Chloride [ZrOCl <sub>2</sub> .8H <sub>2</sub> O]			26 X 1-Zr
Wt/Vol as Zr	1,000µg/ml			26 X 10-Zr
	10,000µg/ml			

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### 26 Single Element Atomic Absorption Standards

Element		Size	Catalogue No
		0.1L or 0.5L	
Aluminium	Al	1,000µg/ml in 5% HCl	26 X A-Al
Antimony	Sb	1,000µg/ml in 20% HCl	26 X A-Sb
Arsenic	As	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-As
Barium	Ba	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Ba
Beryllium	Be	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Be
Bismuth	Bi	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Bi
Boron	B	1,000ug/ml in H <sub>2</sub> O	26 X A-B
Cadmium	Cd	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Cd
Calcium	Ca	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Ca
Chromium	Cr	1,000µg/ml in 5% HCl	26 X A-Cr
Cobalt	Co	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Co
Copper	Cu	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Cu
Gold	Au	1,000µg/ml in 20% HCl	26 X A-Au
Iron	Fe	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Fe
Lead	Pb	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Pb
Lithium	Li	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Li
Magnesium	Mg	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Mg
Manganese	Mn	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Mn
Mercury	Hg	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Hg
Molybdenum	Mo	1,000µg/ml in 5% HNO <sub>3</sub> / Trace HF	26 X A-Mo
Nickel	Ni	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Ni
Palladium	Pd	1,000µg/ml in 20% HCl	26 X A-Pd
Platinum	Pt	1,000µg/ml in 20% HCl	26 X A-Pt
Potassium	K	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-K
Selenium	Se	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Se
Silicon	Si	1,000µg/ml in 5% HNO <sub>3</sub> / Trace HF	26 X A-Si
Silver	Ag	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Ag
Sodium	Na	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Na
Strontium	Sr	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Sr
Thallium	Tl	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Tl
Tin	Sn	1,000µg/ml in 20% HCl	26 X A-Sn
Titanium	Ti	1,000µg/ml in 5% HNO <sub>3</sub> / Trace HF	26 X A-Ti
Vanadium	V	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-V
Zinc	Zn	1,000µg/ml in 5% HNO <sub>3</sub>	26 X A-Zn

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## 26. Aqueous Solutions.

### 26 Multi-element ICP Reference Solutions

	<u>Size</u>	<u>Catalogue No</u>
<b>10 Element Blend</b> (Alkali & Alkaline Earths)	0.1L or 0.5L	# 26 X SM10
Elements: <b>Ba, Be, Ca, Cs, K, Li, Mg, Na, Rb &amp; Sr</b>		
Matrix: <b>5% HNO<sub>3</sub></b>		
Concentration: 100µg/ml each element		
	<u>Size</u>	
<b>6 Element Blend</b> (Major Cations)	0.1L or 0.5L	# 26 X SM16
Elements: <b>Al, Ca, Fe, K, Mg &amp; Na</b>		
Matrix: <b>5% HNO<sub>3</sub></b>		
Concentration: 1,000µg/ml each element		
	<u>Size</u>	
<b>5 Element Blend</b> (Anion / Carbon Mix)	0.1L or 0.5L	26 X SM21
Elements: <b>Br, C, Cl, P &amp; S</b>		
Matrix: <b>H<sub>2</sub>O</b>		
Concentration: 1,000µg/ml each element		
	<u>Size</u>	
<b>7 Element Blend</b> (Non Metals)	0.1L or 0.5L	# 26 X SM25A
Elements: <b>As, B, P, S, Se, Si &amp; Te</b>		
Matrix: <b>5% HCl / Trace HF</b>		
Concentration: 100µg/ml each element		
	<u>Size</u>	
<b>12 Element Blend</b> (Refractory Elements)	0.1L or 0.5L	# 26 X SM30A
Elements: <b>Al, B, Cr, Hf, Mo, Nb, Si, Ta, Ti, W, V &amp; Zr</b>		
Matrix: <b>5% HCl / Trace HF</b>		
Concentration: 100µg/ml each element		
	<u>Size</u>	
<b>9 Element Blend</b> (Common Elements Mix 1)	0.1L or 0.5L	# 26 X SM35A
Elements: <b>Cd, Co, Cr, Cu, Fe, Mn, Ni, V &amp; Zn</b>		
Matrix: <b>5% HNO<sub>3</sub></b>		
Concentration: 100µg/ml each element		
	<u>Size</u>	
<b>8 Element Blend</b> (Noble Metals)	0.1L or 0.5L	# 26 X SM40
Elements: <b>Au, Ir, Os, Pd, Pt, Re, Rh &amp; Ru</b>		
Matrix: <b>20% HCl</b>		
Concentration: 100µg/ml each element		

# Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.

## 26. Aqueous Solutions.

### 26 Multi-element ICP Reference Solutions

	<u>Size</u>	<u>Catalogue No</u>
<b>8 Element Blend (US EPA RCRA Elements)</b> Elements: <b>Ag, As, Ba, Cd, Cr, Pb, Hg &amp; Se</b> Matrix: <b>5% HNO<sub>3</sub></b> Concentration: 100µg/ml each element	0.1L or 0.5L	<b>26 X SM45</b>
<b>11 Element Blend (Metalloids &amp; Hydrides)</b> Elements: <b>As, Bi, Ga, Ge, In, Pb, Sb, Se, Sn, Te &amp; Tl</b> Matrix: <b>20% HCl / Trace HF</b> Concentration: 100µg/ml each element	0.1L or 0.5L	<b>26 X SM50B</b>
<b>21 Element Blend (Rare Earth &amp; Geochem Elements)</b> Elements: <b>Ba, Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Rb, Sc, Sm, Sr, Tb, Th, Tm, U, Y &amp; Yb</b> Matrix: <b>5% HNO<sub>3</sub></b> Concentration: 100µg/ml each element	0.1L or 0.5L	<b>26 X SM60A</b>
<b>15 Element Blend (Lanthanides &amp; Actinides)</b> Elements: <b>Ce, Dy, Er, Eu, Gd, Ho, Lu, Nd, Pr, Sm, Tb, Th, Tm, U &amp; Yb</b> Matrix: <b>5% HNO<sub>3</sub></b> Concentration: 100µg/ml each element	0.1L or 0.5L	<b>26 X SM61</b>
<b>20 Element Blend (Common Elements Mix 2)</b> Elements: <b>Ag, Al, B, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, P, Pb, Si, Sn, Ti, V &amp; Zn</b> Matrix: <b>5% HNO<sub>3</sub> / Trace HF</b> Concentration: 100µg/ml each element	0.1L or 0.5L	<b>26 X SM70B</b>
<b>35 Element Blend (Comprehensive Mix A)</b> Elements: <b>Ag, Al, As, Ba, Bi, Cd, Ca, Ce, Dy, Er, Eu, Gd, Ga, Hg, Ho, La, Lu, Mg, Na, Nd, P, Pb, Pr, Rb, Sm, Sc, Se, Sr, Tb, Th, Tl, Tm, U, Y &amp; Yb</b> Matrix: <b>40% Aqua Regia</b> Concentration: 10µg/ml each element	0.1L or 0.5L	<b>26 X SM80B</b>

Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.

## 26. Aqueous Solutions.

### 26 Multi-element ICP Reference Solutions (continued)

	<u>Size</u>	<u>Catalogue No</u>
<b>32 Element Blend (Comprehensive Mix B)</b> Elements: <b>Au, B, Be, Co, Cr, Cu, Fe, Ge, Hf, Ir, K, Li, Mn, Mo, Ni, Nb, Os, Pd, Pt, Re, Rh, Ru, Sb, Si, Sn, Ta, Te, Ti, W, V, Zn &amp; Zr</b> Matrix: <b>40% Aqua Regia</b> Concentration: 10µg/ml each element	0.1L or 0.5L	<b>26 X SM90C</b>
<b>28 Element Blend (Comprehensive Mix C)</b> Elements: <b>Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sr, Ti, Tl, V &amp; Zn</b> Matrix: <b>10% HNO<sub>3</sub> / Trace HF / Trace Tart.</b> Concentration: 100µg/ml each element	0.1L or 0.5L	<b>26 X ME28</b>
<b>23 Element Blend (USEPA Elements)</b> Elements: <b>Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Tl, V &amp; Zn</b> Matrix: <b>5% HNO<sub>3</sub> / Tr. Tartaric Acid.</b> Concentration: 100µg/ml each element	0.1L or 0.5L	<b>26 X SM23</b>
<b>29 Element Blend (Common &amp; Transition Elements - Multi Concentration)</b> Elements: 100ug/ml each <b>Ag, Al, As, Ba, Be, Bi, Cd, Cr, Co, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Se, Sr, Th, Tl, U, V &amp; Zn</b> Elements: 1000ug/ml each <b>Ca, K, Mg &amp; Na</b> Elements: 10ug/ml each <b>Hg</b> Matrix: <b>10% HNO<sub>3</sub></b>	0.1L or 0.5L	<b>26 X SM75</b>

Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.

## 26. Aqueous Solutions.

### Custom Aqueous Reference Solution

### Quotation Request Form

Element	Units	Conc	Element	Units	Conc	Element	Units	Conc
Aluminium	Al	µg/ml	Holmium	Ho	µg/ml	Ruthenium	Ru	µg/ml
Antimony	Sb	µg/ml	Indium	In	µg/ml	Samarium	Sm	µg/ml
Arsenic	As	µg/ml	Iodine	I	µg/ml	Scandium	Sc	µg/ml
Barium	Ba	µg/ml	Iridium	Ir	µg/ml	Selenium	Se	µg/ml
Beryllium	Be	µg/ml	Iron	Fe	µg/ml	Silicon	Si	µg/ml
Bismuth	Bi	µg/ml	Lanthanum	La	µg/ml	Silver	Ag	µg/ml
Boron	B	µg/ml	Lead	Pb	µg/ml	Sodium	Na	µg/ml
Bromine	Br	µg/ml	Lithium	Li	µg/ml	Strontium	Sr	µg/ml
Cadmium	Cd	µg/ml	Lutetium	Lu	µg/ml	Sulphur	S	µg/ml
Calcium	Ca	µg/ml	Magnesium	Mg	µg/ml	Tantalum	Ta	µg/ml
Carbon	C	µg/ml	Manganese	Mn	µg/ml	Tellurium	Te	µg/ml
Cerium	Ce	µg/ml	Mercury	Hg	µg/ml	Terbium	Tb	µg/ml
Caesium	Cs	µg/ml	Molybdenum	Mo	µg/ml	Thallium	Tl	µg/ml
Chlorine	Cl	µg/ml	Neodymium	Nd	µg/ml	Thorium	Th	µg/ml
Chromium	Cr	µg/ml	Nickel	Ni	µg/ml	Thulium	Tm	µg/ml
Cobalt	Co	µg/ml	Niobium	Nb	µg/ml	Tin	Sn	µg/ml
Copper	Cu	µg/ml	Osmium	Os	µg/ml	Titanium	Ti	µg/ml
Dysprosium	Dy	µg/ml	Palladium	Pd	µg/ml	Tungsten	W	µg/ml
Erbium	Er	µg/ml	Phosphorus	P	µg/ml	Uranium	U	µg/ml
Europium	Eu	µg/ml	Platinum	Pt	µg/ml	Vanadium	V	µg/ml
Gadolinium	Gd	µg/ml	Potassium	K	µg/ml	Ytterbium	Yb	µg/ml
Gallium	Ga	µg/ml	Praseodymium	Pr	µg/ml	Yttrium	Y	µg/ml
Germanium	Ge	µg/ml	Rhenium	Re	µg/ml	Zinc	Zn	µg/ml
Gold	Au	µg/ml	Rhodium	Rh	µg/ml	Zirconium	Zr	µg/ml
Hafnium	Hf	µg/ml	Rubidium	Rb	µg/ml			

100ml Minimum Volume Matrix: Water / Acid **PLEASE SPECIFY UNITS IF NOT THOSE SHOWN IN TABLE**

**Acid:** \_\_\_\_\_ **Volume:** \_\_\_\_\_ **Please Specify No of bottles or any Special Packaging Requirements** \_\_\_\_\_

**Name:** \_\_\_\_\_ **End User?** Yes  No

**Company:** \_\_\_\_\_ **Name of End User** \_\_\_\_\_

**Address:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Post Code:** \_\_\_\_\_ **Email:** \_\_\_\_\_

**Phone No:** \_\_\_\_\_ **Fax No:** \_\_\_\_\_

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## 26. Aqueous Solutions.

### 265 Single Element Ion Chromatography Solutions

					<u>Catalogue No</u>
<b>Acetate</b>	<b>COOH<sup>-</sup></b>			<u>Size</u>	
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml	0.1L	OR	0.5L
<b>Solute:</b>	Sodium Acetate [NaCOOH]				
					<b>265 X A1</b>
<b>Ammonia</b>	<b>NH<sub>3</sub></b>				
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml	0.1L	OR	0.5L
<b>Solute:</b>	Ammonium Sulphate [(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> ]				
					<b>265 X NH1</b>
<b>Ammonium</b>	<b>NH<sub>4</sub><sup>+</sup></b>				
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml	0.1L	OR	0.5L
<b>Solute:</b>	Ammonium Sulphate [(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> ]				
					<b>265 X NH2</b>
<b>Bromate</b>	<b>BrO<sub>3</sub><sup>-</sup></b>				
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml	0.1L	OR	0.5L
<b>Solute:</b>	Sodium Bromate [NaBrO <sub>3</sub> ]				
					<b>265 X BR1</b>
<b>Bromide</b>	<b>Br<sup>-</sup></b>				
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml	0.1L	OR	0.5L
<b>Solute:</b>	Potassium Bromide [KBr]				
					<b>265 X BR1</b>
<b>Calcium</b>	<b>Ca<sup>2+</sup></b>				
<b>Matrix:</b>	5% HNO <sub>3</sub>	1,000µg/ml	0.1L	OR	0.5L
<b>Solute:</b>	Calcium Carbonate [CaCO <sub>3</sub> ]				
					<b># 265 X CA1</b>
<b>Chloride</b>	<b>Cl<sup>-</sup></b>				
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml	0.1L	OR	0.5L
<b>Solute:</b>	Potassium Chloride [KCl]				
					<b>265 X Cl1</b>
<b>Dichromate</b>	<b>Cr<sub>2</sub>O<sub>7</sub><sup>2-</sup></b>				
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml	0.1L	OR	0.5L
<b>Solute:</b>	Sodium Dichromate [Na <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> ]				
					<b>265 X CR1</b>
<b>Fluoride</b>	<b>F<sup>-</sup></b>				
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml	0.1L	OR	0.5L
<b>Solute:</b>	Sodium Fluoride [NaF]				
					<b>265 X FL1</b>
<b>Iodide</b>	<b>I<sup>-</sup></b>				
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml	0.1L	OR	0.5L
<b>Solute:</b>	Potassium Iodide [KI]				
					<b>265 X KI1</b>
<b>Lithium</b>	<b>Li<sup>+</sup></b>				
<b>Matrix:</b>	5% HNO <sub>3</sub>	1,000µg/ml	0.1L	OR	0.5L
<b>Solute:</b>	Lithium Carbonate [Li <sub>2</sub> CO <sub>3</sub> ]				
					<b># 265 X LI1</b>

# Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.

## 26. Aqueous Solutions.

### 265 Single Element Ion Chromatography Solutions (continued)

				<u>Size</u>		<u>Catalogue No</u>	
<b>Magnesium</b>	<b>Mg<sup>2+</sup></b>			0.1L	or	0.5L	
<b>Matrix:</b>	5% HNO <sub>3</sub>	1,000µg/ml					<b># 265 X MG1</b>
<b>Solute:</b>	Magnesium Metal						
<b>Nitrate as N</b>	<b>N</b>			0.1L	or	0.5L	
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml					<b>265 X NT(N)</b>
<b>Solute:</b>	Sodium Nitrate [NaNO <sub>3</sub> ]						
<b>Nitrate</b>	<b>NO<sub>3</sub><sup>-</sup></b>			0.1L	or	0.5L	
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml					<b>265 X NT1</b>
<b>Solute:</b>	Sodium Nitrate [NaNO <sub>3</sub> ]						
<b>Oxalate</b>	<b>C<sub>2</sub>O<sub>4</sub><sup>2-</sup></b>			0.1L	or	0.5L	
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml					<b>265 X OX1</b>
<b>Solute:</b>	Sodium Oxalate [Na <sub>2</sub> C <sub>2</sub> O <sub>4</sub> ]						
<b>Phosphate as P</b>	<b>PO<sub>4</sub><sup>3-</sup></b>			0.1L	or	0.5L	
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml					<b>265 X PA(P)</b>
<b>Solute:</b>	Potassium Dihydrogen Phosphate [KH <sub>2</sub> PO <sub>4</sub> ]						
<b>Phosphate</b>	<b>PO<sub>4</sub><sup>3-</sup></b>			0.1L	or	0.5L	
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml					<b>265 X PA1</b>
<b>Solute:</b>	Potassium Dihydrogen Phosphate [KH <sub>2</sub> PO <sub>4</sub> ]						
<b>Potassium</b>	<b>K<sup>+</sup></b>			0.1L	or	0.5L	
<b>Matrix:</b>	5% HNO <sub>3</sub>	1,000µg/ml					<b># 265 X K1</b>
<b>Solute:</b>	Potassium Nitrate [KNO <sub>3</sub> ]						
<b>Silica</b>	<b>SiO<sub>2</sub></b>			0.1L	or	0.5L	
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml					<b>265 X SI1</b>
<b>Solute:</b>	Sodium Silicate [Na <sub>2</sub> SiO <sub>3</sub> ]						
<b>Sodium</b>	<b>Na<sup>+</sup></b>			0.1L	or	0.5L	
<b>Matrix:</b>	5% HNO <sub>3</sub>	1,000µg/ml					<b># 265 X NA1</b>
<b>Solute:</b>	Sodium Carbonate [Na <sub>2</sub> CO <sub>3</sub> ]						
<b>Sodium</b>	<b>Na<sup>+</sup></b>			0.1L	or	0.5L	
<b>Matrix:</b>	H <sub>2</sub> O	1,000µg/ml					<b>265 X NA2</b>
<b>Solute:</b>	Sodium Chloride[NaCl]						
<b>Sulfate</b>	<b>SO<sub>4</sub><sup>2-</sup></b>			0.1L	or	0.5L	
<b>Matrix:</b>	H <sub>2</sub> O						<b>265 X SU1</b>
<b>Solute:</b>	Potassium Sulfate [K <sub>2</sub> SO <sub>4</sub> ]						

# Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.



## 26. Aqueous Solutions.

### 265 Multi-element Ion Chromatography Solutions

	<u>Size</u>						<u>Catalogue No</u>
<b>Multi Anion Reference # 1</b>	0.1L						<b>265 X ICM1</b>
Anions	<b>Br<sup>-</sup></b>	<b>Cl<sup>-</sup></b>	<b>F<sup>-</sup></b>	<b>NO<sub>3</sub><sup>-</sup></b>	<b>PO<sub>4</sub><sup>3-</sup></b>	<b>SO<sub>4</sub><sup>2-</sup></b>	
Concentration:	100µg/ml	100µg/ml	100µg/ml	100µg/ml	100µg/ml	100µg/ml	
<b>Matrix:</b>	H <sub>2</sub> O						
	<u>Size</u>						
<b>Multi Anion Reference # 2</b>	0.1L						<b>265 X ICM2</b>
Anions	<b>F<sup>-</sup></b>	<b>Cl<sup>-</sup></b>	<b>SO<sub>4</sub><sup>2-</sup></b>				
Concentration:	100µg/ml	100µg/ml	100µg/ml				
<b>Matrix:</b>	H <sub>2</sub> O						
	<u>Size</u>						
<b>Multi Anion Reference # 3</b>	0.1L						<b>265 X ICM3</b>
Anions	<b>Cl<sup>-</sup></b>	<b>F<sup>-</sup></b>	<b>NO<sub>3</sub><sup>-</sup></b>	<b>NO<sub>3</sub><sup>-</sup></b>	<b>PO<sub>4</sub><sup>3-</sup></b>		
Concentration:	1000µg/ml	20µg/ml	100µg/ml	150µg/ml	150µg/ml		
<b>Matrix:</b>	H <sub>2</sub> O						
	<u>Size</u>						
<b>Multi Anion Reference # 4</b>	0.1L						<b>265 X ICM4</b>
Anions	<b>Br<sup>-</sup></b>	<b>Cl<sup>-</sup></b>	<b>F<sup>-</sup></b>	<b>NO<sub>3</sub><sup>-</sup></b>	<b>PO<sub>4</sub><sup>2-</sup></b>	<b>SO<sub>4</sub><sup>2-</sup></b>	
Concentration:	400µg/ml	200µg/ml	100µg/ml	400µg/ml	600µg/ml	400µg/ml	
<b>Matrix:</b>	H <sub>2</sub> O						
	<u>Size</u>						
<b>Multi Anion Reference # 7</b>	0.1L						<b>265 X ICM7</b>
Cations	<b>F<sup>-</sup></b>	<b>Cl<sup>-</sup></b>	<b>NO<sub>3</sub><sup>-</sup></b>	<b>NO<sub>2</sub><sup>-</sup></b>	<b>Br<sup>-</sup></b>	<b>SO<sub>4</sub><sup>2-</sup></b>	<b>PO<sub>4</sub><sup>2-</sup></b>
Concentration:	All at 1000µg/ml						
<b>Matrix:</b>	H <sub>2</sub> O						
	<u>Size</u>						
<b>Multi Anion Reference # 8</b>	0.1L						<b>265 X ICM8</b>
Cations	<b>Cl<sup>-</sup></b>	<b>F<sup>-</sup></b>	<b>NO<sub>3</sub><sup>-</sup></b>	<b>SO<sub>4</sub><sup>2-</sup></b>			
Concentration:	All at 1000µg/ml						
<b>Matrix:</b>	H <sub>2</sub> O						
	<u>Size</u>						
<b>Multi Cation Reference # 1</b>	0.1L						<b># 265 X ICM5A</b>
Cations	<b>NH<sub>4</sub><sup>+</sup></b>	<b>Ca<sup>2+</sup></b>	<b>K<sup>+</sup></b>	<b>Li<sup>+</sup></b>	<b>Mg<sup>2+</sup></b>	<b>Na<sup>+</sup></b>	
Concentration:	250µg/ml	500µg/ml	500µg/ml	50µg/ml	250µg/ml	200µg/ml	
<b>Matrix:</b>	5% HNO <sub>3</sub>						

# Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.

## 26. Aqueous Solutions.

### Custom Ion Chromatography Solution Quotation Request Form

Element		Units	Conc	Element		Units	Conc
Acetate	$\text{CH}_3\text{COO}^-$	$\mu\text{g/ml}$		Nitrate	$\text{NO}_3^+$	$\mu\text{g/ml}$	
Ammonia	$\text{NH}_3$	$\mu\text{g/ml}$		Nitrate as N	<b>N</b>	$\mu\text{g/ml}$	
Ammonium	$\text{NH}_4^+$	$\mu\text{g/ml}$		Oxalate	$\text{C}_2\text{O}_4^{2-}$	$\mu\text{g/ml}$	
Bromide	$\text{Br}^-$	$\mu\text{g/ml}$		Phosphate	$\text{PO}_4^{3-}$	$\mu\text{g/ml}$	
Calcium	$\text{Ca}^{2+}$	$\mu\text{g/ml}$		Phosphate as P	<b>P</b>	$\mu\text{g/ml}$	
Chloride	$\text{Cl}^-$	$\mu\text{g/ml}$		Potassium	$\text{K}^+$	$\mu\text{g/ml}$	
Dichromate	$\text{Cr}_2\text{O}_7^{2-}$	$\mu\text{g/ml}$		Silica	$\text{SiO}_2$	$\mu\text{g/ml}$	
Fluoride	$\text{F}^-$	$\mu\text{g/ml}$		Sodium (ex carbonate)	$\text{Na}^+$	$\mu\text{g/ml}$	
Iodide	$\text{I}^-$	$\mu\text{g/ml}$		Sodium (ex Chloride)	$\text{Na}^+$	$\mu\text{g/ml}$	
Lithium	$\text{Li}^+$	$\mu\text{g/ml}$		Sulphate	$\text{SO}_4^{2-}$	$\mu\text{g/ml}$	
Magnesium	$\text{Mg}^{2+}$	$\mu\text{g/ml}$		Sulphate as S	<b>S</b>	$\mu\text{g/ml}$	

500ml Minimum Volume Matrix: Water **PLEASE SPECIFY UNITS IF NOT THOSE SHOWN IN TABLE**

**Please Specify No of bottles or any Special Packaging Requirements**

Volume: \_\_\_\_\_

Name: \_\_\_\_\_ End User? Yes  No

Company: \_\_\_\_\_ Name of End User \_\_\_\_\_

Address: \_\_\_\_\_ Date: \_\_\_\_\_

Post Code: \_\_\_\_\_ Email: \_\_\_\_\_

Phone No: \_\_\_\_\_ Fax No: \_\_\_\_\_

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## 26. Aqueous Solutions.

### 266 Quality Control Solutions - Water Supply (WS)

These materials are presented in capped vials. Each material is accompanied by a certificate showing the actual values, which fall into the ranges shown below.

Preparation, analysis method, and acceptance criteria are also outlined.

			<u>Size</u>	<u>Catalogue No</u>
<b>Cyanide</b>	Total CN	0.1 - 0.5µg/ml	20ml	<b>266 H QWSCN</b>
<b>Minerals</b>	Alkalinity as CaCO <sub>3</sub>	25 - 200µg/ml	2 x 20ml	<b>266 H QWSMIN</b>
	Calcium	30 - 90µg/ml		
	Calcium Hardness as CaCO <sub>3</sub>	75 - 375µg/ml		
	Chloride	5.0 - 100µg/ml		
	Conductivity	250 - 2,500µmhos/cm		
	Magnesium	2.0 - 20µg/ml		
	Potassium	10 - 40µg/ml		
	Sodium	12 - 24µg/ml		
	Sulphate	5.0 - 500µg/ml		
	Total Dissolved Solids	200 - 450µg/ml		
	Total Hardness as CaCO <sub>3</sub>	83.0 - 307µg/ml		
<b>Nutrients</b>	Nitrate - N	3 - 10µg/ml	3 X 20ml	<b>266 H QWSNUT</b>
	Orthophosphate - P	0.5 - 5.5µg/ml		
	Fluoride - F	1 - 8µg/ml		
	Nitrite - N	0.4 - 2µg/ml		
<b>pH</b>	pH	5 - 10 units	250ml	<b>266 H QCPCP</b>
<b>Residual Chlorine</b>	Total Residual Chlorine	0.5 - 3µg/ml	20ml	<b>266 H QWSRCL</b>
<b>Solids</b>	Total Suspended solids	2 - 450µg/ml	20ml	<b>266 H QWSSOL</b>
	Total Dissolved Solids	200 - 450µg/ml		
	Total Solids	205 - 650µg/ml		
<b>TOC</b>	Total Organic Carbon	1.2 - 4.9µg/ml	20ml	<b>266 H QWSTOC</b>
<b>Turbidity</b>	Turbidity	0.5 - 8NTU	20ml	<b>266 H QWSTURB</b>
<b>Trace Metals</b>	Aluminium	130 - 2500µg/L	2 x 20ml	<b>266 H QWSTM</b>
	Antimony	6 - 50µg/L		
	Arsenic	5 - 50µg/L		
	Barium	500 - 3,000µg/L		
	Beryllium	1 - 10µg/L		
	Boron	800- 2,000µg/L		
	Cadmium	2 - 50µg/L		
	Chromium	10 - 200µg/L		
	Copper	50 - 2,000µg/L		
	Iron	100 - 1,800µg/L		
	Lead	5 - 100µg/L		
	Manganese	49 - 900µg/L		
	Mercury	0.5 - 10µg/L		
	Molybdenum	5 - 130µg/L		
	Nickel	10 - 500µg/L		
	Selenium	10 - 100µg/L		
	Silver	20 - 300µg/L		
	Thallium	2 - 10µg/L		
	Vanadium	315 - 2,500µg/L		
	Zinc	400 - 2,500µg/L		

## 26. Aqueous Solutions.

### 266 Quality Control Solutions - Water Pollution (WP)

These materials are presented in capped vials. Each material is accompanied by a certificate showing the actual values, which fall into the ranges shown below.

Preparation, analysis method, and acceptance criteria are also outlined.

			<u>Size</u>	<u>Catalogue No</u>
<b>Cyanide</b>	Total CN	0.1 - 1µg/ml	20ml	<b>266 H QWPCN</b>
<b>Demand</b>	Biochemical Oxygen Demand	9 - 158µg/ml	20ml	<b>266 H QWPDEM</b>
	Carbonaceous BOD	8 - 136µg/ml		
	Chemical Oxygen Demand	15 - 256µg/ml		
	Total Organic Carbon	6 - 101µg/ml		
<b>Hexavalent Chromium</b>	Hexavalent Chromium	45 - 880µg/L	20ml	<b>266 H QWPCR6</b>
<b>Minerals</b>	Alkalinity as CaCO <sub>3</sub>	10 - 120µg/ml	2 x 20ml	<b>266 H QWPMIN</b>
	Calcium	3.5 - 110µg/ml		
	Chloride	35 - 275µg/ml		
	Conductivity	200 - 930µmos/cm		
	Magnesium	2.0 - 40µg/ml		
	Potassium	4.0 - 40µg/ml		
	Sodium	6 - 100µg/ml		
	Sulphate	5 - 125µg/ml		
	Total Dissolved Solids	140 - 650µg/ml		
	Total Hardness as CaCO <sub>3</sub>	17 - 440µg/ml		
<b>Nutrients</b>	Ammonia Nitrogen as N	0.65 - 19µg/ml	2 X 20ml	<b>266 H QWPNUT</b>
	Nitrate Nitrogen as N	0.25 - 40µg/ml		
	Orthophosphate as P	0.5 - 5.5µg/ml		
	Total Kjeldahl Nitrogen	1.5 - 35µg/ml		
	Total Phosphorus as P	0.5 - 10µg/ml		
<b>Oil &amp; Grease</b>	Oil & Grease	20 - 100µg/ml	20ml	<b>266 H QWPOG</b>
<b>pH</b>	pH	5 - 10 units	250ml	<b>266 H QCPH</b>
<b>Phenolics</b>	Phenolics	0.06 - 5µg/ml	20ml	<b>266 H QWPPHEN</b>
<b>Residual Chlorine</b>	Total Residual Chlorine	0.5 - 3µg/ml	20ml	<b>266 H QWPRCL</b>
<b>Solids</b>	Total Suspended solids	23 - 100µg/ml	20ml	<b>266 H QWPSOL</b>
	Total Dissolved Solids	140 - 650µg/ml		
	Total Solids	140 - 675µg/ml		

## 26. Aqueous Solutions.

### 266 Quality Control Solutions - Water Pollution (WP) continued.

These materials are presented in capped vials. Each material is accompanied by a certificate showing the actual values, which fall into the ranges shown below.

Preparation, analysis method, and acceptance criteria are also outlined.

			<u>Size</u>	<u>Catalogue No</u>
<b>Trace Metals</b>			2 x 20ml	<b>266 H QWPTM</b>
	Aluminium	200 - 4,000µg/L		
	Antimony	95 - 900µg/L		
	Arsenic	70 - 900µg/L		
	Barium	100 - 2,500µg/L		
	Beryllium	8 - 900µg/L		
	Boron	800 - 2,500µg/L		
	Cadmium	8 - 750µg/L		
	Chromium	17 - 1,000µg/L		
	Cobalt	28 - 1,000µg/L		
	Copper	40 - 900µg/L		
	Iron	200 - 4,000µg/L		
	Lead	70 - 3,000µg/L		
	Manganese	70 - 4,000µg/L		
	Mercury	0.5 - 30µg/L		
	Molybdenum	60 - 600µg/L		
	Nickel	80 - 3,000µg/L		
	Selenium	90 - 2,000µg/L		
	Silver	26 - 600µg/L		
	Strontium	30 - 300µg/L		
	Thallium	60 - 900µg/L		
	Tin	1000 - 5000µg/L		
	Titanium	80 - 900µg/L		
	Vanadium	55 - 2,000µg/L		
	Zinc	100 - 2,000µg/L		

## 27. Glassware & Accessories.

### 27 Meinhard Glass Products - ICP Nebulisers

Model Designation generally styled in form: **27 MI TR - P<sub>c</sub>- NR<sub>a</sub>**

**ie 27 MI TR-50-K3**

P<sub>c</sub> = Working Pressure: 20, 30, 50

N = Nozzle Type: A, C, K

R<sub>a</sub> = Aspiration Rate: 0.5, 1, 2, 3

<u>Manufacturer</u>	<u>OEM Part No</u>	<u>Catalogue No</u>
<b>ARL / Fisons</b>		
	914319-000M	27 MI TR-30-A3
	915373-000M	27 MI TR-30-K3
	TR-30-C3	27 MI TR-30-C3
	1040894	27 MI TR-30-A3
	1201318	27 MI TR-30-A1
<b>Finnigan</b>		
	70005-98010	27 MI CIR-50-HK
<b>Jobin Yvon</b>		
	47.929.001	27 MI TR-50-C1
	47.929.002	27 MI TR-30-C2
	47.929.003	27 MI TR-30-C3
	47.929.004	27 MI TR-50-C05
	47.929.005	27 MI TR-30-K3
	47.929.006	27 MI TR-50-C3
<b>Leco</b>		
	700-612-Leco ICP	27 MI TR-30-C3
<b>Perkin Elmer / Sciex Elan</b>		
	N068-1574	27 MI TR-30-K3
	N810-2011	27 MI TR-30-C3
	N810-2012	27 MI TR-30-C05
	0047-2020	27 MI TR-30-A3
	0047-2022	27 MI TR-50-C1
	WE024371	27 MI TQ-30-A3
<b>Spectro</b>		
	76060510	27 MI TR-30-C1
<b>Thermo Jarrell-Ash</b>		
	13960000	27 MI TR-30-K2
	13918400	27 MI TR-30-K2
<b>Varian</b>		
	2010081600	27 MI TR-30-K3
	2010076500	27 MI TR-30-C2
	2010069500	27 MI TR-30-K2
<b>Burgener Nebuliser</b>		27 MI 080963
<b>Nordemeyer Vee Groove Nebuliser</b>		27 MI T2002

If your Part Number is not listed, or for Alternative Requirements, please contact us

## 27. Glassware & Accessories.

### 27 Meinhard Glass Products - ICP Torches

<u>Manufacturer</u>	<u>OEM Part No</u>	<u>Description</u>	<u>Catalogue No</u>
<b>Agilent Tech / HP</b>			
<u>4500 Series</u>			
	G1820-65028	Quartz Torch 2.5 Injector	27 MI 190005
	G1820-65012	Quartz Torch 1.5 Injector	27 MI 190006
	G1820-65035	Quartz Torch Demountable	27 MI 190008
	G1820-65026	Quartz Torch Shield	27 MI 190018
	G1820-80237	Quartz Adaptor, Ball to Socket, 56mm. Replaces G1820-80235	27 MI 190038
	ES13024500	O-ring free, Precision Quartz Torch, ESI	27 MI 13024500
<u>7500 Series</u>			
	G1833-65422	Quartz Torch, demountable,with placement pin	27 MI 190009
	G1833-65423	Quartz Torch, 2.5mm injector with pin	27 MI 190010
	G1833-65424	Quartz Torch, 1.5mm injector, with pin	27 MI 190011
		Quartz socket adaptor, to ¼ inch end	27 MI 190033
	G1833-80235	Pyrex Adapter, ball to socket 82mm	27 MI 190040
	G1833-65426	Quartz Adapter, ball to socket 82mm	27 MI 190041
	G1833-80040	Quartz Torch Shield, 24.5mm	27 MI 190042
	G1833-65421	Quartz Torch Shield, 24.5mm with glass dot	27 MI 190043
	G1833-65427	Quartz T-connector, Ball to Socket, 82mm, with optional gas inlet	27 MI 190044
	G1833-65425	Quartz Torch, 1.0mm injector, with pin, for Oils	28 MI 190012
<b>GV-Micromass</b>			
	6368301	Quartz Torch, 1.5mm Injector	27 MI 165005
	6368307	Quartz Torch, Demountable for Isis	27 MI 165008
	M695210BD1	Quartz Elbow, with ball & socket	27 MI 165020
	M695531A	Quartz Bonnet	27 MI 165025
<b>Jobin Yvon</b>			
	31021589	Alumina Injector, 2.0mm	27 MI MA1589
	31023722	Quartz Torch, Tube, Outer Dem 71mm Long	27 MI 116050
		Quartz Torch Tube, Outer Dem 82.5mm Long	27 MI 116051
	31023723	Quartz Torch Tube, Inner, Dem	27 MI 116052
		Quartz Injector, 2.0mm	27 MI 116059
	31031099	Quartz Torch Tube, Outer, Panorama 105mm	27 MI 116070
	H2012619001	Quartz Injector, 1.3mm	27 MI 116078
	H2012619002	Quartz Injector, 1.6mm	27 MI 116079
	49010100	Quartz Torch, Fixed Injector, 1.5mm	27 MI 135005
<b>Leeman Labs</b>			
	120-3748	Quartz Torch, 1.5mm injector (w/o tubing & fittings 120-00336-1)	27 MI 155020
	120-3749	Quartz Torch, 1.0mm injector (w/o tubing & fittings 120-00336-2)	27 MI 155022
	120-00336-3	Quartz Torch, 2.0mm injector (without tubing and fittings)	27 MI 155023
	318-0001	Quartz Torch, Original demountable	27 MI 155043
	318-00062	Quartz Torch, Axial, AQ, 2.5mm injector (187mm length).	27 MI 155062
	318-00064	Quartz Torch, Axial DRE Aqueous (160mm length).	27 MI 155064
	318-00065	Quartz Torch, Dualview DRE Aqueous	27 MI 155065
	318-00069	Quartz Torch, Demountable, Axial, DRE	27 MI 155069
	318-00070	Quartz Torch, Demountable, Dualview, DRE	27 MI 155070
	318-00066	Purge tube, Axial, for Axial and DV Profile	27 MI 155066
	318-00067	Purge tube, Radial, for DV Profile	27 MI 155067
	318-00068	Purge tube, Radial, for Profile	27 MI 155068
		Tubing (PVC) and quick disconnects for Leeman torch	27 MI 155100
<b>Perkin Elmer</b>			
	0047-2048	Quartz Torch, w/Ball Joint, 1.5 Injector	27 MI 135005
	0047-2033	Quartz Bonnet	27 MI 135025

If your Part Number is not listed, or for Alternative Requirements, please contact us

## 27. Glassware & Accessories.

### 27 Meinhard Glass Products - ICP Torches (continued)

<u>Manufacturer</u>	<u>OEM Part No</u>	<u>Description</u>	<u>Catalogue No</u>
<b>Perkin Elmer (continued)</b>			
<i>Type I Demountable Systems</i>			
	0047-2033	Quartz Bonnet, ICP6500, ICP5500	27 MI 135025
	N058-0233	Quartz Torch Tube	27 MI 131007
	N058-0376	Quartz Torch Tube, Slotted	27 MI 131009
<i>Type II Demountable Systems</i>			
	0047-2033	Quartz Bonnet	27 MI 135025
	N058-2235	Quartz Bonnet for Plasma II	27 MI 131024
	N058-0528	Quartz Torch Tube Type II, Slotted	27 MI 131003
	N068-1690	Quartz Torch Tube Type II, Wear Metals	27 MI 131003W
<i>Optima 2000, 3000, 4000, 53000, / XL / DV / SC Instruments</i>			
		Quartz Torch Tube, Optima 3000R, 3 slots, 138mm	27 MI 131001
N069-0568		Quartz Torch Tube, Optima 3000R, 1 slot, 138mm	27 MI 131004
		Quartz Torch Tube, Optima 3000R, No slot, 125mm	27 MI 131005
N069-5379		Quartz Torch Tube, Optima XL, 1 slot	27 MI 131011
		Quartz Torch Tube, Optima DV 2 Slot	27 MI 131012
N069-1662		Quartz Torch Tube, Optima DV, 1 slot	27 MI 131014
		Quartz Torch Tube, Optima DV 3 Slot	27 MI 131015
N077-1500		Quartz Torch Tube, 4000V, 3 slot	27 MI 131016
N077-0344		Quartz Torch Tube, 2000, 4000, 5000 DV, Short organics	27 MI 131017
N077-0343		Quartz Torch Tube, 2000, 4000, 5000 DV, no slot	27 MI 131019
N077-0338		Quartz Torch Tube, 2000, 4000, 5000 DV, 1 slot	27 MI 131020
N077-2005		Quartz Torch Tube, 2000, 4000, 5000 DV, 3 slot	27 MI 131021
N077-5289		Quartz Bonnet for 2000, 4000 series	27 MI 131025
N069-1664		Quartz Bonnet for 3000 DV	27 MI 131031
N069-5456		Quartz Bonnet for 3000 DV (after 21/9/94)	27 MI 131032
N069-5295		Quartz Bonnet for 3000R (after 21/9/94)	27 MI 131033
N077-5225		Quartz Injector, 2000, 4000 0.8mm	27 MI 131040
N077-5226		Quartz Injector, 2000, 4000 1.2mm	27 MI 131041
N077-5223		Quartz Injector, 2000, 4000 1.6mm	27 MI 131042
N077-5014		Quartz Injector, 2000, 4000 2.0mm	27 MI 131043
N077-5224		Quartz Injector, 2000, 4000 3.0mm	27 MI 131044
N068-1631		Quartz Injector, 1.2mm	27 MI 132033
N047-3292		Quartz Injector, 1.5mm	27 MI 132034
N812-5029		Quartz Injector, 2.0mm	27 MI 132035
N069-5441		Quartz Injector, 2.0mm, 3000	27 MI 132040
N069-5442		Quartz Injector, 2.0mm, 3000XL	27 MI 132041
N069-5449		Quartz Injector, 1.6mm, 3000XL	27 MI 132044
N068-1234		Purge tube	27 MI 132060
N077-1531		Alumina Injector, 2000V, 4000V, 5000V, 1.2mm	27 MI MA1531
N058-2184		Alumina Injector, 1000, 2000, II, 400, 40, 2.0mm	27 MI MA2184
N058-2185		Alumina Injector, 1000, 2000, II, 400, 40, 1.85mm	27 MI MA2185
N058-2186		Alumina Injector, 1000, 2000, II, 400, 40, 0.85mm	27 MI MA2186
N077-5177		Alumina Injector, Optima 2000, 4000, 5000 DV, 2.0mm	27 MI MA5177
N077-5227		Alumina Injector, 2000DV, 4000DV, 0.80mm	27 MI MA5227
N077-5228		Alumina Injector, 2000DV, 4000DV, 1.2mm	27 MI MA5228
N077-5297		Copper Foil, Optima 2000, 4000, 24 pieces	27 MI MA5297
N069-5362		Alumina Injector, 3000, 2.0mm	27 MI MA5362
N077-6093		Alumina Injector, 2000, 4000 Ax, 1.2mm	27 MI MA6093
N069-0269		O-ring kit for 3000R. Pack of 5	27 MI 690269
N069-0769		O-ring kit for 3000XL, 3000DV. Pack of 9	27 MI 690769
990-2155		Viton O-rings for Optima 3000. Pack of 5	27 MI 902155
<b>Plasma Therm ICP</b>			
	PE 0047-2048	Quartz Torch, One Piece, Standard, Fixed 1.5 Inj.	27 MI 135005
	PE 0047-2033	Bonnet, Quartz Torch	27 MI 135025

If your Part Number is not listed, or for Alternative Requirements, please contact us



## 27. Glassware & Accessories.

### 27 Meinhard Glass Products - ICP Torches (continued)

<u>Manufacturer</u>	<u>OEM Part No</u>	<u>Description</u>	<u>Catalogue No</u>
<b>Sciex Elan ICP-MS 5000 / 6000</b>			
	N8102001	Quartz Torch Tube, One Piece, Long Tube 36,4mm	27 MI 140009
	N8122006	Quartz Torch Tube, Demountable System	27 MI 140010
	ES11021000	O-ring free, Precision Quartz Torch, ESI	27 MI ME1000
	WE023948	Quartz Injector, 2.0mm with ball joint & support ring	27 MI 140030
	WE027030	Quartz Injector, 0.85mm with ball joint & support ring	27 MI 140031
		Quartz Injector, 1.6mm with ball joint & support ring	27 MI 140032
	N8126041	Alumina Injector, 2.0mm	27 MI MA2184
	N8126040	Alumina Injector, 1.5mm	27 MI MA2185
	N8126039	Alumina Injector, 0.85mm	27 MI MA2186
<b>Seiko Instruments</b>			
	042220016A3	Quartz Torch, Type A, 1.5mm Injector	27 MI 195005
		Quartz Torch, Type D, 0.85mm Injector	27 MI 195008
	CA16012B3	Quartz Torch, Type C, 2.0mm Injector	27 MI 195010
	CE11511E3	Quartz Torch, Demountable, with joint connect	27 MI 195011
		Quartz Bonnet	27 MI 195025
<b>Shimadzu</b>			
	20470272	Quartz Torch, Tapered Injector (1.5mm), with Ball Joint	27 MI 16005
	21146605	Quartz Torch, Axial, with curved inlet to tapered injector	27 MI 16007
<b>Spectro Analytical Instruments</b>			
	75060596	Quartz Torch, Spectroflame Fixed 1.8mm Injector	27 MI 175005
	75060591	Quartz Torch, Demountable	27 MI 175006
	48205001	Quartz Torch, Spectroflame Fixed, 1.0mm Injector - Oils	27 MI 175007
		Quartz Torch, Spectroflame Fixed, 2.5mm Injector	27 MI 175008
	48105052	Quartz Torch, EOP, Fixed, Flared End, 2.5mm Injector	27 MI 175040
		Quartz Torch, EOP, Fixed, Flared End, 2.2mm Injector	27 MI 175041
	48105052A	Quartz Torch, EOP, Fixed, Flared End, 1.8mm Injector	27 MI 175042
	48206002	Quartz Torch, EOP, Demountable, No Flare	27 MI 175043
	48206007	Quartz Torch, EOP, Demountable with Flare	27 MI 175044
	75260533	Quartz Torch, EOP, with sheath gas, 3.2mm injector	27 MI 175047
	75160537	Quartz Torch, EOP, with sheath gas, 2.5mm Injector	27 MI 175048
	85160592	Quartz Torch, EOP, with sheath gas, 1.8mm Injector	27 MI 175049
		Tubing with gas connectors	27 MI 175055
	48105008	Quartz Injector, 1.5mm	27 MI 175021
	48105010	Quartz Injector, 1.8mm	27 MI 175022
	48105009	Quartz Injector, 2.5mm	27 MI 175023
<b>Thermo ARL, Thermo Elemental, Thermo Jarrell-Ash</b>			
	13643601	Alumina Centre Tube 1.5mm for base torch	27 MI 00700C
	13643602	Alumina Centre Tube 2.0mm for base torch	27 MI 00702C
	139009-0003	Quartz Torch - Maxi	27 MI 110005
	173251-0000	Torch Bonnet, Induction Coil	27 MI 110027
	173463-0000	Quartz Torch, Mini	27 MI 111030
	173473-0000	Quartz Torch, Mini - demountable	27 MI 111031
	173252-0000	Torch Bonnet, Mini	27 MI 111035
	S111403	Quartz Torch, Maxim	27 MI 111038
	173131-0000	Quartz Torch, Maxi - demountable for HF	27 MI 112040
	19040054	Quartz Torch with Removable Injector 1.0	27 MI 125005
		Quartz Torch with 2 Removable Injectors 1.0	27 MI 125005A
		Quartz Injector, Match to existing 125005, 19040054	27 MI 125005T
	12540701	Quartz Center Tube for Base Torch, 1.0mm	27 MI 125040
	12540700	Quartz Center Tube for Base Torch, 1.5mm	27 MI 125041
	13650201	Quartz Center Tube for Base Torch, 2.0mm	27 MI 125042
	13650202	Quartz Center Tube for Base Torch, 2.4mm	27 MI 125043
	12643202	Radial Base Torch Kit, Low Flow, 1.5 Centre Tube	27 MI 127506
	12644002	Radial Base Torch Kit, Low Flow, No Centre Tube	27 MI 127506N
	12643201	Radial Base Torch Kit, High Flow, 1.5 Centre Tube	27 MI 127507
	12644001	Radial Base Torch Kit, High Flow, No Centre Tube	27 MI 127507N
	12512401	Radial Base Torch Kit, High Flow, 1.0 Centre Tube	27 MI 127508
	12643203	Trace Axial Base Torch Kit 1.5 Centre Tube	27 MI 127510
	12644003	Trace Axial Base Torch Body, No Centre Tuber	27 MI 127510N

**If your Part Number is not listed, or for Alternative Requirements, please contact us**

## 27. Glassware & Accessories.

### 27 Meinhard Glass Products - ICP Torches (continued)

<u>Manufacturer</u>	<u>OEM Part No</u>	<u>Description</u>	<u>Catalogue No</u>
<b>Thermo ARL, Thermo Elemental, Thermo Jarrell-Ash (continued)</b>			
	13856200	DUO Axial base Torch Kit, with Hole 1.5 Centre Tube	27 MI 127511
	12644005	DUO Axial Base Torch, with Hole No Centre Tube	27 MI 127511N
	12512405	Radial Base Torch Kit, Slotted, 1.0 Centre Tube	27 MI 127512
	12644006	Radial Base Torch Body, Slotted, No Centre Tube	27 MI 127512N
	12643204	Radial Base Torch Body, Slotted, 1.5 Centre Tube	27 MI 127513
	13913700	Quartz Torch, fixed Injector, 1.5mm	27 MI 127514
	12584700	O-ring for Base Torch Injector. Pack of 4	27 MI 125847
		O-ring for Base Torch Teflon adapter. Pack of 4	27 MI 125849
	842312051141	Radial Quartz Torch, iCAP 6000	27 MI 128005
	842312051241	Duo Quartz Torch, iCAP 6000	27 MI 128007
	842312051341	Quartz Center Tube, 1.0mm, iCAP 6000	27 MI 128040
	842312051351	Quartz Center Tube, 1.5mm, iCAP 6000	27 MI 128041
	842312051371	Quartz Center Tube, 2.0mm, iCAP 6000	27 MI 128042
<b>Thermo Finnigan ICP-MS</b>			
		Quartz Torch, Element, All Glass, 1.0mm Injector	27 MI 185006
		Quartz Torch, Element, All Glass, 1.5mm Injector	27 MI 185007
		Quartz Torch, Element, All Glass, 2.0mm Injector	27 MI 185008
		Quartz Torch, Element, Demountable Tube	27 MI 185010
		Quartz Collar / Sleeve	27 MI 185033
	ES10021000	O' Ring free precision Quartz Torch, Element, ESI	27 MI 10021000
	ES1002	Quartz Torch, Type CD	27 MI ME1002
<b>Thermo VG</b>			
	3201192	Quartz Torch, ICP-MS, with ball joint, 1.5mm Injector	27 MI 145005
	3201732	Quartz Torch, ICP-MS, with ball joint, 2.0mm Injector	27 MI 145006
	1200080	Quartz Torch, ICP-MS, Demountable	27 MI 145008
		Quartz Torch, ICP-MS, Demountable, Axiom	27 MI 145009
	3600970	Quartz Torch, ICP-MS, X Series Demountable	27 MI 145010
	3600969	Quartz Torch, ICP-MS, X Series with ball joint, 1.5mm Injector	27 MI 145011
	3600791	Quartz Torch, ICP-MS, X Series with ball joint, 2.0mm Injector	27 MI 145012
	3203789	Quartz Sheild, ICP-MS (also VG # 3600884)	27 MI 145029
	ES12020201	O' Ring free precision Quartz Torch, PQ Series, ESI	27 MI 12022
	ES12020301	O' Ring free precision Quartz Torch, X Series, ESI	27 MI 12023
<b>Varian Analytical Instruments</b>			
	2010069600	Quartz Torch, ICP-ES	27 MI 180005
	2010069610	Quartz Torch, ICP-ES, with ball joint	27 MI 180005B
		Quartz Torch, ICP-ES, with socket	27 MI 180005S
	2010078300	Quartz Torch, ICP-MS	27 MI 180006
	2010072900	Quartz Torch, Demountable, ICP-ES	27 MI 180010
	2010079390	Quartz Torch, Demountable, ICP-MS	27 MI 180011
	GE#809-0549	Long Transfer Tube, Chamber to Torch, with ball joints	27 MI 180012
	2010081200	Quartz Torch, ICP-AX, 2.3mm injector	27 MI 180014
	2010083400	Quartz Torch, Demountable, ICP-AX	27 MI 180015
	2010090400	Quartz Torch, ICP AX, with right angle bend, 2.3mm injector	27 MI 180016
	2010094800	Quartz Torch, ICP AX, with right angle bend, 2.3mm injector	27 MI 180017
	GE#808-0540	Quartz Torch ICP-AX with right angle socket	27 MI 180018
	2010070700	Quartz Bonnet, ICP (also # 2010070790)	27 MI 180025
	2010104700	Quartz Torch, ICP AX, with right angle bend, 0.8mm injector	27 MI 180026
	2010104800	Quartz Torch, ICP AX, with right angle bend, 1.5mm injector	27 MI 180027
	2010100700	Quartz Torch, ICP-MS, with ball joint	27 MI 180030
	9910057000	Quartz Injector, 1.4mm ID	27 MI 180046
		Quartz Injector, 1.4mm ID. Pack of 3	27 MI 180046/3
	9910057000	Quartz Injector, 0.8mm ID	27 MI 180047
	2410067590	Alumina Injector, 1.8mm ID x 4.0mm OD x 129mm	27 MI MA6759

If your Part Number is not listed, or for Alternative Requirements, please contact us

## 27. Glassware & Accessories.

### 27 Meinhard Glass Products - ICP Spray Chambers

<u>Manufacturer</u>	<u>OEM Part No</u>	<u>Description</u>	<u>Catalogue No</u>
<b>Agilent Tech / HP</b>			
	G1820-65339	Quartz S/C, Double Pass, 12/5 Socket - Cross-flow Nebulisers	27 MI 190013
	G1820-65337	Quartz S/C, Double Pass, 12/5 Socket, Babington and concentric Nebulisers	27 MI 190014
		Quartz Cyclonic Spray Chamber, Top Socket, 90 deg bend	27 MI 190015
		Teflon Adapter (end cap), 6mm Nebuliser to 35mm Spray Chamber	27 MI 151030
<b>GV Micromass</b>			
	6368308	Quartz Spray Chamber, Double Pass	27 MI 165015
	6368303	Pyrex Spray Chamber, Double Pass	27 MI 165106
		Teflon Adapter (end cap), 6mm Nebuliser to 35mm Spray Chamber	27 MI 151030
<b>Jobin Yvon</b>			
	31026996	Spray Chamber "Scott" Type (also # 31031326)	27 MI 116054
	31030809	Cyclonic Spray Chamber (also # 31031279), top socket, 4mm drain	27 MI 116055
		Cyclonic S/C, 50ml, top socket, ground glass tapered (14/20) drain	27 MI 116056
	47929046	27 MI 116055 with water jacket for cooling	27 MI 116057
	47929049	Cyclonic Spray Chamber, 20ml, top socket, 4mm drain	27 MI 116060
		Cyclonic Spray Chamber, Axial, 90 deg outlet to 12/5 socket, baffle, O-ring inlet, 4mm drain	27 MI 116061
	31031479	Cyclonic Spray Chamber, Axial, taper to top socket, O-ring inlet, 4mm Pump Drain	27 MI 116062
	21356040	Pyrex Sheath Gas Tube	27 MI 116063
<b>Leeman Labs</b>			
	120-3751	Spray Chamber, Radial, Scott Type	27 MI 155025
		Spray Chamber, Radia, Cyclonic, with O-rings for 6mm nebuliser	27 MI 155054
	318-00049	Spray Chamber, Axial, Scott Type	27 MI 155055
		Cyclonic Spray Chamber, Axial, Cyclonic, for Hildebrand Grid	27 MI 155058
<b>Perkin Elmer</b>			
	0047-2047	Spray Chamber "Scott" Type, Barrel	27 MI 135012
<b>Optima 2000, 3000, 4000, 5300, XL, DV, SC Instruments</b>			
		Cyclonic Spray Chamber, Optima 3000 Radial, SCR	27 MI 130019
	N812-2188	Cyclonic Spray Chamber, Optima 3000 XL, DV	27 MI 130019X
	N077-6053	Cyclonic Spray Chamber 2000, 4000, 5000 DV, Baffle, Unifit	27 MI 130020
	N077-6052	Cyclonic Spray Chamber 2000, 4000, 5000 DV, No Baffle, Unifit	27 MI 130021
		Cyclonic Spray Chamber 2000, 4000, 5000 DV, Baffle, 'O' rings	27 MI 130022
	N077-1501	Cyclonic Spray Chamber 4000, 5000 V, Baffle, Top Socket, Unifit.	27 MI 130023
	N077-6090	Cyclonic S/C 4000, 5000 V, 4mm Baffle (organics), Unifit.	27 MI 130031
	218080256	Nebuliser Adapter, unifit for 6mm OD nebuliser to 16mm inlet	27 MI 80256
<b>Elan ICP-MS 5000 / 6000</b>			
	N812-0150	Cyclonic Spary Chamber, ICP-MS	27 MI 130019M
	N812-0150Q	Quartz Cyclonic Spray Chamber ICP-MS	27 MI 130019S
	WE02-5221	Quartz Cyclonic Spray Chamber for Ball Joint Injector ICP-MS	27 MI 140020
<b>Plasma Therm ICP</b>			
	PE 0047-2047	Spray Chamber "Scott" Type, Barrel	27 MI 135012
		Cyclonic Spray Chamber	27 MI 135015
<b>Seiko Instruments</b>			
		Pyrex Spray Chamber, Double Pass	27 MI 195012

If your Part Number is not listed, or for Alternative Requirements, please contact us

## 27. Glassware & Accessories.

### 27 Meinhard Glass Products - ICP Spray Chambers (continued)

<u>Manufacturer</u>	<u>OEM Part No</u>	<u>Description</u>	<u>Catalogue No</u>
<b>Spectro Analytical Instruments</b>			
		Spray Chamber, Slurry	27 MI 175010
	48105003	Spray Chamber, Upward, conical, open	27 MI 175012
	48105006	Spray Chamber, Large, Double Pass	27 MI 175014
	48106008	Spray Chamber, Large, Double Pass, Jacketed - Threaded Ports	27 MI 175018
	48105051	Spray Chamber, EOP, Large Double Pass	27 MI 175019
	48105001	Cyclonic Spray Chamber, Top Socket, Pump Drain	27 MI 175026
	48105061	Cyclonic Spray Chamber, EOP, Pump drain	27 MI 175026E
	USA00850	Quartz Cyclonic Spray Chamber, Jacketed with Threaded Ports	27 MI 175026J
		Quartz Cyclonic Spray Chamber. Socket	27 MI 175026Q
	48105011	Adapter, 12/5 socket, 4.5mm for ICP	27 MI 175031
<b>Thermo ARL, Thermo Elemental, Thermo Jarrell-Ash</b>			
	173142-0000	Spray Chamber, Maxi, Conical	27 MI 110012
	173142-0002	Spray Chamber, Mini, Conical	27 MI 111033
	173142-0003	Spray Chamber, Mini, Conical, MDSN	27 MI 111034
	173142-0004	Spray Chamber, Mini, Conical, jacketed	27 MI 111036
	19040065	Spray Chamber, Cylindrical, Glass Only	27 MI 125012
	13008900	Spray Chamber, Cylindrical, Open Both Ends, Glass Only	27 MI 125019
	13462000	Cyclone Axial Spray Chamber, iCAP 61E, Trace	27 MI 127515
	13966200	Cyclone Axial Spray Chamber: Atomscan, Tracescan, Iris	27 MI 127517
	13966300	Cyclone Radial S/C: Benchtop Iris, Iris Advantage, Pump Drain	27 MI 127518
	13610500	Cyclone Radial S/C. Benchtop Iris, Iris Advantage, Gravity Drain	27 MI 127519
	14118700	Vertical Cyclone Radial S/C, Atomscan, Advantage Radial iCAP	27 MI 127521
	13612000	Cyclone Axial S/C, Tracescan Iris, Advantage Axial and Iris AP, Gravity Drain	27 MI 127522
	13612900	Cyclone Spray Chamber, right angle inlet	27 MI 127523
	13921900	Cyclone Spray Chamber, O-ring inlet, Bent Drain	27 MI 127533
	13912300	Cyclone Spray Chamber, Jacketed, O-ring inlet, Bent Drain	27 MI 127534
	842312051411	Glass Cyclonic Spray Chamber, iCAP 6000	27 MI 128010
	842312051311	Glass Cyclonic Spray Chamber, with Baffle, iCAP 6000	27 MI 128012
	842312051151	Spray Chamber Adapter, Radial, iCAP 6000	27 MI 128020
	842312051251	Spray Chamber Adapter, Duo, iCAP 6000	27 MI 128021
	8520700	Anti-arc Cap	27 MI 127525
	8520701	Anti-arc cap, with flat edge	27 MI 127526
		Quartz Spray Chamber, Element , Jacketed for Coolant Threaded port Connections	27 MI 185018
<b>Thermo VG</b>			
	3200841	Quartz Spray Chamber, jacketed for Coolant	27 MI 145016
	3204313	Spray Chamber, Impact, Conical, Jacketed	27 MI 145022
	3600374	Quartz Spray Chamber, Impact, Jacketed	27 MI 145023
	3600170	Quartz Spray Chamber, Peltier Cooled	27 MI 145024
	3600169	Quartz Coupling, Ball / Socket	27 MI 145025
	3600093	Quartz Cyclonic Spray Chamber, X Series	27 MI 145027
	3200727	Quartz Coupling, Ball / Socket for 3200841 Spray Chamber	27 MI 145032
<b>Varian Analytical Instruments</b>			
		Pyrex Cyclone Spray Chamber, with baffle, socket & unifit	27 MI 180013
	7910043700	Pyrex Cyclone S/C, without socket, with baffle & unifit	27 MI 180019
	2010081700	Pyrex Cyclone S/C, O-rings, without socket & baffle	27 MI 180021
		Pyrex Cyclone S/C, O-rings, with inner baffle, without socket,	27 MI 180022
	9910070400	Spray Chamber, Glass, Jacket / Coolant	27 MI 180023
	0102-932	Quartz Spray Chamber, ICP-MS, Double Pass	27 MI 180031
	0102-1064	Quartz Universal Joint, Extension	27 MI 180032
	0102-933	Quartz Make-up IN-Port	27 MI 180033

If your Part Number is not listed, or for Alternative Requirements, please contact us

## 27. Glassware & Accessories.

### 27 2 Tag Peristaltic Pump Tubing

		<u>Catalogue No</u>
<b><u>PVC</u></b>		
Flexible PVC tubing is suitable for use with dilute acids and bases. The overall length of tube is <b>431.8mm</b> with a tag (bridge) spacing of <b>152.4mm</b> .		
Tag Colours	Orange / Blue	0.25mm I.D. 2 tag tubing, pack of 12 <b>27 H 180253</b>
	Orange / Green	0.38mm I.D. 2 tag tubing, pack of 12 <b>27 H 180261</b>
	Orange / Yellow	0.51mm I.D. 2 tag tubing, pack of 12 <b>27 H 180213</b>
	Orange / White	0.64mm I.D. 2 tag tubing, pack of 12 <b>27 H 180222</b>
	Black / Black	0.76mm I.D. 2 tag tubing, pack of 12 <b>27 H 180203</b>
	Orange / Orange	0.89mm I.D. 2 tag tubing, pack of 12 <b>27 H 180202</b>
	White / White	1.02mm I.D. 2 tag tubing, pack of 12 <b>27 H 180219</b>
	Red / Red	1.14mm I.D. 2 tag tubing, pack of 12 <b>27 H 180201</b>
	Gray / gray	1.30mm I.D. 2 tag tubing, pack of 12 <b>27 H 180216</b>
	Yellow / Blue	1.52mm I.D. 2 tag tubing, pack of 12 <b>27 H 180258</b>
	Blue / Blue	1.75mm I.D. 2 tag tubing, pack of 12 <b>27 H 180245</b>
	Black / White	3.15mm I.D. 2 tag tubing, pack of 12 <b>27 H 180226</b>
<b><u>Solvent Flex</u></b>		
Solvent Flex tubing is suitable for use with oils and many solvents. The overall length of tube is <b>431.8mm</b> with a tag (bridge) spacing of <b>139.7mm</b> .		
Tag Colours	Orange / Yellow	0.51mm I.D. 2 tag tubing, pack of 12 <b>27 H 180228</b>
	Orange / White	0.64mm I.D. 2 tag tubing, pack of 12 <b>27 H 180230</b>
	Black / Black	0.76mm I.D. 2 tag tubing, pack of 12 <b>27 H 180209</b>
	Orange / Orange	0.89mm I.D. 2 tag tubing, pack of 12 <b>27 H 180208</b>
	White / White	1.02mm I.D. 2 tag tubing, pack of 12 <b>27 H 180232</b>
	Red / Red	1.14mm I.D. 2 tag tubing, pack of 12 <b>27 H 180207</b>
	Gray / gray	1.30mm I.D. 2 tag tubing, pack of 12 <b>27 H 180240</b>
<b><u>Silicone</u></b>		
Silicone tubing is a high purity product without plasticiser. The overall length of tube is <b>431.8mm</b> with a tag (bridge) spacing of <b>152.4mm</b> .		
Tag Colours	Orange / Blue	0.25mm I.D. 2 tag tubing, pack of 6 <b>27 H 180247</b>
	Orange / Green	0.38mm I.D. 2 tag tubing, pack of 6 <b>27 H 180260</b>
	Orange / Yellow	0.51mm I.D. 2 tag tubing, pack of 6 <b>27 H 180251</b>
	Orange / White	0.64mm I.D. 2 tag tubing, pack of 6 <b>27 H 180263</b>
	Black / Black	0.76mm I.D. 2 tag tubing, pack of 6 <b>27 H 180238</b>
	Orange / Orange	0.89mm I.D. 2 tag tubing, pack of 6 <b>27 H 180255</b>
	White / White	1.02mm I.D. 2 tag tubing, pack of 6 <b>27 H 180267</b>
	Red / Red	1.14mm I.D. 2 tag tubing, pack of 6 <b>27 H 180250</b>
	Gray / gray	1.30mm I.D. 2 tag tubing, pack of 6 <b>27 H 180265</b>
	Yellow / Blue	1.52mm I.D. 2 tag tubing, pack of 6 <b>27 H 180248</b>
<b><u>Viton™</u></b>		
Viton tubing is best suited for solvents and strong acids and bases The overall length of tube is <b>431.8mm</b> with a tag (bridge) spacing of <b>127.0mm</b> .		
Tag Colours	Orange / Yellow	0.51mm I.D. 2 tag tubing, pack of 6 <b>27 H 180235</b>
	Orange / White	0.64mm I.D. 2 tag tubing, pack of 6 <b>27 H 180239</b>
	Black / Black	0.76mm I.D. 2 tag tubing, pack of 6 <b>27 H 180212</b>
	Orange / Orange	0.89mm I.D. 2 tag tubing, pack of 6 <b>27 H 180211</b>
	White / White	1.02mm I.D. 2 tag tubing, pack of 6 <b>27 H 180236</b>
	Red / Red	1.14mm I.D. 2 tag tubing, pack of 6 <b>27 H 180210</b>
	Gray / gray	1.30mm I.D. 2 tag tubing, pack of 6 <b>27 H 180237</b>
<b><u>Santoprene™</u></b>		
Santoprene tubing is a medical grade product. The overall length of tube is <b>431.8mm</b> with a tag (bridge) spacing of <b>152.4mm</b> .		
Tag Colours	Orange / Yellow	0.51mm I.D. 2 tag tubing, pack of 6 <b>27 H 180256</b>
	Black / Black	0.76mm I.D. 2 tag tubing, pack of 6 <b>27 H 180268</b>
	Red / Red	1.14mm I.D. 2 tag tubing, pack of 6 <b>27 H 180259</b>

If your Part Number is not listed, or for Alternative Requirements, please contact us



## 27. Glassware & Accessories.

### 27 3 Tag Peristaltic Pump Tubing

			<u>Catalogue No</u>
<b><u>PVC</u></b>	Flexible PVC tubing is suitable for use with dilute acids and bases. The overall length of tube is <b>431.8mm</b> with a tag (bridge) spacing of <b>71.1mm</b> .		
Tag Colours	Orange / Red	0.19mm I.D. 3 tag tubing, pack of 12	<b>27 H 180215</b>
	Orange / White	0.64mm I.D. 3 tag tubing, pack of 12	<b>27 H 180254</b>
	Black / Black	0.76mm I.D. 3 tag tubing, pack of 12	<b>27 H 180218</b>
	Orange / Orange	0.89mm I.D. 3 tag tubing, pack of 12	<b>27 H 180206</b>
	White / White	1.02mm I.D. 3 tag tubing, pack of 12	<b>27 H 180214</b>
	Red / Red	1.14mm I.D. 3 tag tubing, pack of 12	<b>27 H 180204</b>
	Yellow / Blue	1.52mm I.D. 3 tag tubing, pack of 12	<b>27 H 180221</b>
<b><u>Silicone</u></b>	Silicone tubing is a high purity product without plasticiser. The overall length of tube is <b>431.8mm</b> with a tag (bridge) spacing of <b>66.0mm</b> .		
Tag Colours	Orange / Red	0.19mm I.D. 3 tag tubing, pack of 6	<b>27 H 180252</b>
	Orange / White	0.64mm I.D. 3 tag tubing, pack of 6	<b>27 H 180264</b>
	Orange / Orange	0.89mm I.D. 3 tag tubing, pack of 6	<b>27 H 180225</b>
	White / White	1.02mm I.D. 3 tag tubing, pack of 6	<b>27 H 180257</b>
	Red / Red	1.14mm I.D. 3 tag tubing, pack of 6	<b>27 H 180227</b>
<b><u>Viton</u></b> <sup>TM</sup>	Silicone tubing is a high purity product without plasticiser. The overall length of tube is <b>431.8mm</b> with a tag (bridge) spacing of <b>81.3mm</b> .		
Tag Colours	Orange / White	0.64mm I.D. 3 tag tubing, pack of 6	<b>27 H 180266</b>
	Orange / Orange	0.89mm I.D. 3 tag tubing, pack of 6	<b>27 H 180234</b>
	Red / Red	1.14mm I.D. 3 tag tubing, pack of 6	<b>27 H 180223</b>
<b><u>Santoprene</u></b> <sup>TM</sup>	Santoprene tubing is a medical grade product. The overall length of tube is <b>431.8mm</b> with a tag (bridge) spacing of <b>71.1mm</b> .		
Tag Colours	Black / Black	0.76mm I.D. 3 tag tubing, pack of 6	<b>27 H 180270</b>
	Orange / Orange	0.89mm I.D. 3 tag tubing, pack of 6	<b>27 H 180249</b>
	White / White	1.02mm I.D. 3 tag tubing, pack of 6	<b>27 H 180271</b>
	Red / Red	1.14mm I.D. 3 tag tubing, pack of 6	<b>27 H 180269</b>
	Yellow / Blue	1.52mm I.D. 3 tag tubing, pack of 6	<b>27 H 180242</b>

If your Part Number is not listed, or for Alternative Requirements, please contact us

## 45. Viscometry

### 45 Viscometer Tubes

#### Houillon viscometer for Transparent Liquids

	<u>Catalogue No</u>
3.2 cSt	45 TN 13932
6.4 cSt	45 TN 13933
12 cSt	45 TN 13934
28 cSt	45 TN 13935
80 cSt	45 TN 13936
200 cSt	45 TN 13937
400 cSt	45 TN 13938
960 cSt	45 TN 13939
2000 cSt	45 TN 13940

#### Cannon-fenske Routine viscometer for Transparent Liquids

Size 25 - 0.4 to 2 cSt	45 TN 14002
Size 50 - 0.8 to 4 cSt	45 TN 14003
Size 75 - 1.6 to 8 cSt	45 TN 14004
Size 100 - 3 to 15 cSt	45 TN 14005
Size 150 - 7 to 35 cSt	45 TN 14006
Size 200 - 20 to 100 cSt	45 TN 14007
Size 300 - 50 to 200 cSt	45 TN 14008
Size 350 - 100 to 500 cSt	45 TN 14009
Size 400 - 240 to 1200 cSt	45 TN 14010
Size 450 - 500 to 2500 cSt	45 TN 14011
Size 500 - 1600 to 8000 cSt	45 TN 14012
Size 600 - 4000 to 20,000 cSt	45 TN 14013
10,000 to 40,000 cSt	45 TN 14014
20,000 to 80,000 cSt	45 TN 14015

#### Cannon-fenske Reverse Flow viscometer for Opaque Liquids

Size 25 - 0.4 to 2 cSt	45 TN 14016
Size 50 - 0.8 to 4 cSt	45 TN 14017
Size 75 - 1.6 to 8 cSt	45 TN 14018
Size 100 - 3 to 15 cSt	45 TN 14019
Size 150 - 7 to 35 cSt	45 TN 14020
Size 200 - 20 to 100 cSt	45 TN 14021
Size 300 - 50 to 200 cSt	45 TN 14022
Size 350 - 100 to 500 cSt	45 TN 14023
Size 400 - 240 to 1200 cSt	45 TN 14024
Size 450 - 500 to 2500 cSt	45 TN 14025
Size 500 - 1600 to 8000 cSt	45 TN 14026
Size 600 - 4000 to 20,000 cSt	45 TN 14027
10,000 to 40,000 cSt	45 TN 14028
20,000 to 80,000 cSt	45 TN 14029

#### Ubbelohde Viscometer for Transparent Liquids

Size 0 - 0.3 to 1 cSt	45 TN 14030
Size 0C - 0.6 to 3 cSt	45 TN 14031
Size 0B - 1 to 5 cSt	45 TN 14032
Size 1 - 2 to 10 cSt	45 TN 14034
Size 1C - 6 to 30 cSt	45 TN 14035
Size 1B - 10 to 50 cSt	45 TN 14036
Size 2 - 20 to 100 cSt	45 TN 14037
Size 2C - 60 to 300 cSt	45 TN 14038
Size 2B - 100 to 500 cSt	45 TN 14039
Size 3 - 200 to 1000 cSt	45 TN 14041
Size 2C - 600 to 3000 cSt	45 TN 14042
Size 3B - 1000 to 5000 cSt	45 TN 14043
Size 4 - 2000 to 10,000 cSt	45 TN 14044
Size 4C - 6000 to 30,000 cSt	45 TN 14045
Size 4B - 10,000 to 50,000 cSt	45 TN 13993
Size 5 - 20,000 to 100,000 cSt	45 TN 13994

All the above viscometers can be supplied without a certificate on special request

## 45. Viscometry

### 45 Viscometer Tubes

#### CANNON UBBELOHDE viscometer for transparent liquids

(without v-connection to washer)

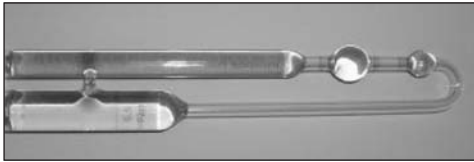


0.003 (approx constant)  
0.005 (approx constant)  
0.01 (approx constant)  
0.03 (approx constant)  
0.1 (approx constant)  
0.3 (approx constant)  
1 (approx constant)  
3 (approx constant)  
10 (approx constant)

#### Catalogue No

45 TN 15253  
45 TN 15255  
45 TN 15256  
45 TN 15257  
45 TN 15259  
45 TN 15260  
45 TN 15263  
45 TN 15264  
45 TN 15266

#### BS /IP U RF viscometer for Opaque Liquids



Size 1 - 0.6 to 3 cSt  
Size 2 - 2 to 10 cSt  
Size 3 - 6 to 30 cSt  
Size 4 - 20 to 100 cSt  
Size 5 - 60 to 300 cSt  
Size 6 - 200 to 1000 cSt  
Size 7 - 600 to 3000 cSt  
Size 8 - 2000 to 10,000 cSt  
Size 9 - 6000 to 30,000 cSt  
Size 10 - 20,000 to 100,000 cSt  
Size 11 - 60,000 to 300,000 cSt

45 TN 18670  
45 TN 18671  
45 TN 18672  
45 TN 18673  
45 TN 18674  
45 TN 18675  
45 TN 18676  
45 TN 18677  
45 TN 18678  
45 TN 18679  
45 TN 18680

#### BS / IP SL viscometer for Transparent Liquids



10 cSt  
30 cSt  
100 cSt  
300 cSt  
1000 cSt  
3000 cSt  
10,000 cSt  
30,000 cSt  
100,000 cSt

45 TN 19283  
45 TN 19284  
45 TN 19285  
45 TN 19286  
45 TN 19287  
45 TN 19288  
45 TN 19289  
45 TN 19290  
45 TN 19291

#### S.I.L. viscometer for Transparent Liquids



3 cSt  
10 cSt  
30 cSt  
100 cSt  
300 cSt  
1000 cSt  
3000 cSt  
10,000 cSt

45 TN 19631  
45 TN 19632  
45 TN 19497  
45 TN 19498  
45 TN 19499  
45 TN 19500  
45 TN 19501  
45 TN 19502

#### CANNON UBBELOHDE viscometer for transparent liquids

(with v-connection to washer)



0.003 (approx constant)  
0.005 (approx constant)  
0.01 (approx constant)  
0.03 (approx constant)  
0.1 (approx constant)  
0.3 (approx constant)  
1 (approx constant)  
3 (approx constant)  
10 (approx constant)

45 TN 22882  
45 TN 22883  
45 TN 22884  
45 TN 22885  
45 TN 22886  
45 TN 22887  
45 TN 22888  
45 TN 22889  
45 TN 22890

All the above viscometers can be supplied without a certificate on special request



## 45. Viscometry

### 45 Viscometer Tubes

#### BAUME VIGNERON viscometer for Transparent Liquids

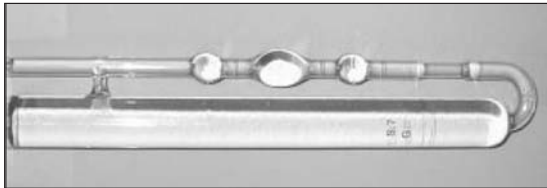


0.63 cSt  
1 cSt  
1.6 cSt  
2.5 cSt  
4 cSt  
6.3 cSt  
10 cSt  
15 cSt  
25 cSt  
40 cSt  
63 cSt  
100 cSt  
160 cSt  
250 cSt  
400 cSt  
630 cSt  
1000 cSt  
1600 cSt  
2500 cSt  
4000 cSt  
6300 cSt

#### Catalogue No

45 TN 14740  
45 TN 14741  
45 TN 14742  
45 TN 14743  
45 TN 14744  
45 TN 14745  
45 TN 14746  
45 TN 14747  
45 TN 14748  
45 TN 14749  
45 TN 14750  
45 TN 14751  
45 TN 14752  
45 TN 14753  
45 TN 14754  
45 TN 14755  
45 TN 14756  
45 TN 14757  
45 TN 14758  
45 TN 14759  
45 TN 14760

#### CANNON MANNING VACUUM viscometer for Bitumen



0.8 cSt  
2.4 cSt  
8 cSt  
24 cSt  
80 cSt  
240 cSt  
800 cSt  
2400 cSt  
8000 cSt  
24,000 cSt  
80,000 cSt

45 TN 18892  
45 TN 18893  
45 TN 18894  
45 TN 18895  
45 TN 18896  
45 TN 18897  
45 TN 18898  
45 TN 18899  
45 TN 18900  
45 TN 18901  
45 TN 18902

All the above viscometers can be supplied without a certificate on special request

### 45 Viscosity Standards

#### All Standards provided with UKAS Endorsed Certificate

Standard mm <sup>2</sup> /s	Size			500ml
	25°C (77°F)	40°C (104°F)	100°C (212°F)	
N.4	0.47	0.4	-	45 GP 2700-V01
N.8	0.95	0.75	-	45 GP 2700-V02
N1.0	1.3	1.2	-	45 GP 2700-V03
S3	4	2.9	1.2	45 GP 2700-V04
S6	8.9	5.7	1.8	45 GP 2700-V05
N10	17	10	2.7	45 GP 2700-V06
S20	34	18	3.8	45 GP 2700-V07
N35	66	32	5.3	45 GP 2700-V08
S60	120	54	7.3	45 GP 2700-V09
N100	230	97	11	45 GP 2700-V10
S200	460	180	16	45 GP 2700-V11
N350	850	310	23	45 GP 2700-V12
S600	1600	520	33	45 GP 2700-V13
N1000	2400	940	48	45 GP 2700-V14
S2000	5900	1700	69	45 GP 2700-V15
N4000	12,000	3400	120	45 GP 2700-V16
S8000	25,000	6700	240	45 GP 2700-V17
N15000	47,000	13,000	360	45 GP 2700-V18
S30000	89,000	23,000	630	45 GP 2700-V19

Nominal Kinematic Viscosity values, stated in mm<sup>2</sup>/s, cSt

## 45. Viscometry

### 45 Reference Oils

Product	ASTM No	Test Description	Value	Volume	Catalogue No
<b>Gasoline</b>					
	D4052	Density @ 15°C	743kg/m <sup>3</sup>	250ml	# 45 TN 60018
	D323	Reid Vapour Pressure	58.9kPa	250ml	# 45 TN 60019
	D86	Automatic Distillation	34°C - 180°C	250ml	# 45 TN 60020
	D2700	Motor Octane Number	85.7	1 litre	# 45 TN 60021
	D2699	Research Octane Number	97.5	1 litre	# 45 TN 60022
<b>Diesel</b>					
	D4052	Density @ 15°C	836kg/m <sup>3</sup>	50ml	# 45 TN 60001
	D2500	Cloud Point	-17°C	250ml	# 45 TN 60002
	D97	Pour Point	-22°C	250ml	# 45 TN 60003
	EN116/IP309	Cold Filter Plugging point	-20°C	250ml	# 45 TN 60004
	D86	Automatic Distillation	193°C to 320°C	250ml	# 45 TN 60005
	D93	Pensky-Martens Flash Point	74.5°C	250ml	# 45 TN 60006
	D4052	Density @ 15°C	832kg/m <sup>3</sup>	250ml	# 45 TN 60010
	D613	Cetane Index	52.2	1 litre	# 45 TN 60011
	All Methods	Sulphur Content	296mg/kg	50ml	# 45 TN 60014
	D5453	Sulphur Content	48.5mg/kg	50ml	# 45 TN 60015
	D5453	Sulphur Content	4.7mg/kg	50ml	# 45 TN 60017
<b>Kerosene</b>					
	D4052	Density @ 15°C	799kg/m <sup>3</sup>	250ml	# 45 TN 60024
	D2386	Freezing Point	-48.9°C	250ml	# 45 TN 60025
	D445	Kinematic Viscosity @-20OC	3.5cSt	250ml	# 45 TN 60026
	D611	Anline Point	56.44°C	250ml	# 45 TN 60028
	D86	Automatic Distillation	161°C to 257°C	250ml	# 46 TN 60030
	IP170	Abel Flash Point	40.9°C	250ml	# 47 TN 60031
<b>Lubricant</b>					
	D4052	Density @ 15°C	882kg/m <sup>3</sup>	250ml	45 TN 60007
	D92	Cleveland Flash Point	243°C	250ml	45 TN 60008
	D93	Pensky-Martens Flash Point	213°C	250ml	45 TN 60009

Please note - values stated are nominal. Actual values will be supplied with the product.

# Important note - these standards are classified as Hazardous Goods for shipping purposes. Shipping costs on request.

# CERTIFICATE OF ANALYSIS

## Single Element Reference Solution

Element: **Sodium (Na)**

Product No: 26 X 1-NA .1L

Certified wt/vol Concentration: **1,000 µg/ml\***

Lot No: 801-0146RR

Certified wt/wt Concentration: **982 µg/g**

Matrix: 5% HNO<sub>3</sub>

Expiration: Earlier of **18 months** or 12 months from date opened

DATE OPENED

This solution is intended for use as a calibration standard for plasma emission spectroscopy (ICP or DCP), inductively coupled plasma mass spectroscopy (ICP-MS), or atomic absorption spectroscopy (AA or GFAA). This solution was prepared gravimetrically to contain nominally 1,000 µg of sodium per ml of solution. The certified concentration is based upon gravimetric procedures, i.e., weight per volume composition of 99.999% pure sodium carbonate (Na<sub>2</sub>CO<sub>3</sub>) dissolved in high purity nitric acid (HNO<sub>3</sub>) and diluted with filtered (0.22µm) 18 megohm deionized water. The uncertainty associated with the certified value is ± 0.3% relative which is the sum of the estimated errors due to the purity of the raw material, the gravimetric preparation of the solution, and transpiration of the solution through the container wall.

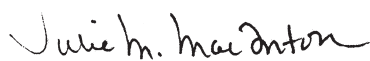
**Traceability:** This standard was manufactured under an **ISO 9002** certified quality system. The balance used to weigh the raw material is accurate to ± 0.0001g and is calibrated regularly using mass standards, which are traceable to NIST according to ME Report No. 3819ME and NIST Test No. 39760. All volumetric dilutions are performed in class A glassware which is recalibrated regularly according to NIST recommended procedures. In order to verify the concentration, the final solution was checked by plasma emission spectrometry (ICP or DCP) against **NIST SRM 3152a, lot #10728**. Trace level elements and impurities, in the final solution, were also determined by ICP-AES or ICP-MS. MBH guarantees the accuracy of this solution until the expiration date, provided it is kept tightly capped, and stored and used in accordance with good laboratory practice.

### Trace Impurities (µg/L)

Ag	<0.5	Ce	0.5	Gd	<0.2	Lu	<0.2	Pb	<1	Se	<2	Tl	<0.5
Al	30	Co	1	Ge	4	Mg	8	Pd	<0.5	Si	<100	Tm	<0.2
As	<2	Cs	<0.5	Hf	<0.2	Mn	<1	Pr	<0.2	Sm	<0.2	U	<0.5
Au	<0.5	Cr	<0.5	Hg	<0.5	Mo	<0.5	Pt	<0.5	Sn	<0.5	V	<1
B	<5	Cu	4	Ho	<0.2	Na	major	Rb	<0.5	Sr	<1	W	<0.5
Ba	<1	Dy	<0.2	In	nd	Nb	<0.5	Re	<0.2	Ta	<0.5	Y	<0.5
Be	<0.5	Er	<0.2	Ir	<0.2	Nd	<0.2	Rh	<0.5	Tb	<0.5	Yb	<0.2
Bi	<0.2	Eu	<0.2	K	90	Ni	<2	Ru	2	Te	9	Zn	6
Ca	<10	Fe	<20	La	<0.5	Os	<0.5	Sb	<0.5	Th	<0.5	Zr	<0.5
Cd	12	Ga	<0.5	Li	<2	P	<100	Sc	<5	Ti	<2		

**Recommendations:** To achieve the highest accuracy, the analyst should prepare fresh working solutions daily, by making serial dilutions. We recommend that the solution be thoroughly mixed, by shaking the bottle, immediately prior to use. All glass or plastic surfaces, which come into contact with the solution, must have been previously cleaned in accordance with good laboratory practice. Dilutions should be made with certified volumetric class A flasks and pipettes and with the same matrix as the original standard.

**MBH Analytical Ltd.**



Julie M. MacIntosh



**MBH**

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