





Table of CONTENTS

- Frequently Asked Questions | 5
- Standards by ASTM Method | 9
- Sample Certificate of Analysis | 10
- Sulfur Calibration Sets | 14
- Sulfur Calibration sets for XRF | 24
- EPA Tier 3 Standards | 27
- Polysulfide Calibration Sets | 30
- Sulfur Calibration Sets for EN 14596 | 32
- Sulfur Check Standards | 33
- Nitrogen and Sulfur Ampoules | 36
- Chlorine and Sulfur Calibrations in Various Matrices | 38
- Metal Working Fluids Standards | 39
- Sulfur and Metals In Oil | 40
- Lead Standards in Gasoline and Isooctane | 42
- Vanadium and Nickel Standards | 44
- Lubricating Oil Standards | 46
- Stabilized Organometallic Solutions | 60
- Multi-element Wear Metals Standards for ICP, RDE and Other Techniques | 64
- Reagents | 68
- Stabilization Solutions | 68
- Matrix Oils | 69
- Polymer Standards | 70
- Lead Standards in Paint Coatings on Polyester Film | 77
- Titration Standards | 78
- Physical Testing Standards | 80
- Biodiesel Testing Standards | 84
- Special Projects | 94
- Certifications | 97



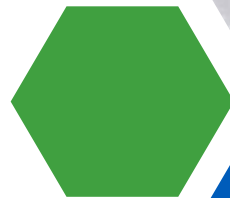
CAPABILITIES

- Technical Assistance
- Special Projects
- World-wide shipping, including Dangerous Goods (DG) classification
- Same day or next day shipping on stock sets



PRODUCTS

- Sulfur and other elements in a variety of non-aqueous matrices
- Multi-Elements in Lubricating Oils and Residual Oils
- Ultra Low Sulfur Standards for EPA regulations
- Nitrogen and Sulfur Ampules for UV Fluorescence and Chemiluminescence instruments
- Sulfur and Metals in Oil
- Sulfur-Free Wear Metal Standards- Organometallic for XRF, AA, ICP or AE applications
- Single-Element Organometallic Standards (ORGM)
- Liquid Organometallic Solutions (LOMS)
- Internal Standards
- Titration Standards
- PE and PVC Standards for RoHS/WEEE in Disc Form
- Physical Testing Standards
- Chlorine in Petroleum Matrices
- Lead in Paint



ORDERING INFORMATION

Ordering/Product Info/Technical Info

Toll Free in the USA: +1 (866) 419-9229
Outside the USA: +1 (281) 419-9229
Fax: +1 (281) 419-9229
E-Mail: sales@asistandards.com
Website: www.asistandards.com

Shipments

- FOB Oak Ridge North TX 77385 USA
- All products packaged in accordance with applicable shipper.
- GHS DOT and IATA compliant
- Stock items and Chemplex consumables generally ship within 24 hours. All others within 5 to 10 business days
- Expedited shipping is available at additional charge
- We ship with UPS, FedEx and other carriers as requested
- Please check all materials upon arrival and handle in a safe and appropriate manner.

Payment and Terms Options

- Net 30 days
- Pro Forma Invoice
- Electronic Transfer: (call or e-mail for transfer information)
- Checks drawn on US banks only All payments in USD
- We accept the following credit cards: Mastercard, VISA and American Express

Pricing

- All pricing expressed in USD
- Pricing subject to change without prior notice

Returns

- All standards are 100% guaranteed. Should you need to return something, a 25% restocking fee may apply, please call us to make appropriate arrangements

Physical Address:

27635 Commerce Oaks Drive
Oak Ridge North, Texas 77385

Accounts Receivable:

P.O. Box 86179
Baton Rouge, LA 70879
Telephone: +1 (281) 419-9229
Fax: +1 (225) 752-5987

ASI QUALITY POLICY



The management system of ASI Standards is certified to ISO 9001

ASI Standards is committed to producing laboratory instrument calibration standards and reference materials, accurately and in a timely manner, for the petrochemical, lube oil, crude oil and polymers industries.

To demonstrate our commitment to product excellence and our focus on customer service, ASI Standards has developed and implemented a formal quality management system, based on compliance with requirements of the ISO 9001 standard.

The management and staff of ASI Standards are committed to complying with requirements and continually improving the effectiveness of our quality management system.



You have questions.

Let us help you find the answers.

From simple, single-element standards to complex multi-element sets, ASI Standards is your trusted source for calibration materials.

We specialize in the custom formulation of calibration standards. We can modify any set or create a custom set based on customer specifications. All standards verified on appropriate instrumentation and include a Certificate of Analysis indicating traceability to NIST reference materials and ASTM methods when available. Shelf life and uncertainty information is also included.

Our state-of-the-art production facility is located in Oak Ridge North / The Woodlands, Texas - we can ship our products anywhere in the world.

GENERAL FREQUENTLY ASKED QUESTIONS

What volume sizes do you offer for liquid standards and polymers?

- Liquids
- Ampules - 2mL, 5mL, 20mL
- Amber Bottles - 25mL, 50mL, 100mL, 200mL, 500mL, 1 Liter, 1 Gallon
- Polymers
- Powder- 10, 25, 50 grams
- Solid Disc in XRF Cup- 31mm or 40mm
- Solid Puck

What matrices do you offer?

Petroleum Products - High Viscosity Mineral, medium viscosity mineral oil, Low Viscosity Mineral Oil, Gasoline, Diesel fuel, Isooctane, Toluene, Xylenes, Crude oil, Residual Oil, Waste Oil, Fuel Oil, Biodiesel, Kerosene, n-Hexane , Metal working fluid, Lubricating Oil, Ethanol, Methanol, Water, Benzene, Gas Oil

Polymers- Polyethylene (PE), Polyvinyl Chloride (PVC), PET

Special matrices for unique applications available upon request

Where can I obtain accurate pricing information?

Up to date pricing for catalog items are located on our online store at www.asistandards.com. You can also email us at sales@asistandards.com for an estimate.

What matrices are considered dangerous goods for shipping?

Crude Oil, Isooctane, Gasoline, Toluene, Xylenes, Kerosene, Hexanes, Heptanes, Ethanol, N-Decane, Undecane

What is the expiration date of your standards?

Two years from date of manufacturing for Sulfur, Nitrogen, and Chlorine standards.
One year from date of manufacturing for multi-element solutions.

Will a COA and SDS be included with my order?

Yes, all orders are shipped with a printed Certificate of Analysis and Safety Data Sheet. Electronic copies are also available.

How can I provide feedback?

ASI appreciates any feedback from our customers to help us improve. Please email sales@asistandards.com for any product feedback or concerns.

What if I don't see what I am looking for?

With so many custom product offerings, it is impossible to list all of them in a catalog. Please email sales@asistandards.com for support with your request and a team member will assist you.

What industries does ASI serve?

ASI Standards serves the petroleum, lubricant, and polymer industries for catalog items. Our Special Projects team serves customers from all industries including academic research centers, universities, and major US brands such as Apple and Coca Cola.

What instrument types do you provide standards for?

ASI provides Certified Reference Materials for:

WD-XRF, ED-XRF, MWD-XRF, Handheld XRF, UV-Fluorescence, Micro-colometry, ICP-OES, Titration, and select Gas Chromatography standards.

GENERAL FREQUENTLY ASKED QUESTIONS

How does ASI certify and ensure the quality of its products?

ASI Standards is committed to providing the highest quality reference materials on the market. The certified value on the Certificate of Analysis of the standard is the gravimetric value of the analyte of interest. All standards are then tested in our in-house quality control laboratory to ensure quality. ASI's quality control laboratory follows ISO 17025 guidelines for testing laboratories for the applicable method.

What certificates does ASI hold?

ASI currently holds certifications to ISO 17034:2016 and ISO 9001:2015.

What is ISO 17034?

ISO 17034 is the highest level of accreditation a reference material producer can achieve. It ensures that the manufacturer demonstrates competency in planning, control, production, assignment of property values, and distribution of certified reference materials. ISO 17025 testing laboratories are required to purchase ISO 17034 certified reference materials when available.

What is ISO 9001?

ISO 9001 is a standard that certifies that an organization has a robust quality management system with a focus on the customer and continual improvement practices. ASI has proudly had this certification since 2011.

Are ASI's certified reference materials traceable to NIST?

Yes, all certified reference materials and calibration sets are traceable to NIST as applicable.

Do you have any exclusive distributors?

No, ASI Standards does not have any exclusive distributor agreements. To inquire about becoming a distributor of ASI's products, please email sales@asistandards.com.

I am doing an R&D project and I need standards for my unique application. Can you help?

ASI specializes in custom formulations for your unique application. Our edge comes from our ability to formulate standards in difficult matrices. Please call or email us at sales@asistandards.com to discuss your project and we will work with you for a proper calibration set for your needs.

What information do I need for ASI to provide an accurate quote?

When requesting a quote, please list the ASTM/ISO/EPA/DIN method that you are following. Also include the element, concentrations, and volume size needed. This will ensure that you receive a quote as quickly as possible.

Does ASI provide discounts?

Yes, ASI provides discounts to eligible distributors and volume discounts for large orders. We also offer discounts on blanket purchase orders.

TECHNICAL FREQUENTLY ASKED QUESTIONS

How many standards do I need for a calibration curve?

A minimum of 6 calibration standards are needed for a proper calibration curve. The calibration standards should be evenly spaced and cover the entire concentration range of the analytes of interest. For example, when analyzing sulfur in gasoline with a range of 0-100 mg/kg, a suggested set of standards would be Blank, 1, 2.5, 5.0, 7.5, 10, 25, 50, 75, 100 mg/kg sulfur in gasoline.

Why do I need to matrix match my standards for XRF analysis?

It is important to use calibration and check standards with the same matrix as the unknown samples for XRF analysis. This is because of interelement effects and the effects of the C/H ratio of the matrix which can impact results negatively. So, if you are analyzing crude oil by XRF the calibration standards should also be in crude oil to get the best analytical results.

How are ASI products prepared?

ASI Standards prepares all our standards gravimetrically on calibrated and certified analytical balances. Volumetric preparations are available upon customer request.

What is blank correction and why is it needed?

Impurities of the blank are not counted (assumed to be 0 ppb or ppm) into the calculation of the check standard/standards. The analyte is added to the “solvent blank” when preparing the standards. When the analysis is conducted, a correction value must be used to subtract the effect of the blank on the standards. This reduces the impact of the limit of detection and limit of quantification of the instrument on the results of the calibration as well as ensures the linearity and accuracy of the calibration curve. **This subtraction is the blank correction!**

If blank correction is not applied to a standard or set of calibration standards that are blank corrected, all the measured values will be off by the amount of analyte that is in the “solvent blank” and will throw off the linearity and accuracy.

If a calibration set is blank corrected, then the check standard for the set must also be blank corrected to ensure they are in agreement with each other and to obtain accurate results.

Blank correction is important for accurate analysis of reference materials, and we strongly recommend it for calibration standards and check standards below 1 ppm. It is good practice to include a blank concentration in a calibration set.

How often should I recalibrate my instrument?

Recalibration should be done upon the recommendation of the instrument manufacturer or based off control chart results. Several out-of-control analysis results on check standards indicate a need for recalibration of the instrument. Please refer to ASTM D6299 for more information on control charting procedure.

How often should I analyze a check standard?

Check standards should be analyzed as often as possible. Ideally at least once a day or once per shift if at a testing laboratory. This ensures the proper functioning of the instrument so the results of the unknown sample can be trusted.

What if I am unsure of what standards I require for my application?

First consult the applicable analytical method for your analysis. It will often provide guidance on the proper calibration materials needed with applicable concentration ranges. If you still need assistance, please call us or email us at sales@asistandards.com. We will be happy to assist you in finding the right set of standards for your application.

TECHNICAL FREQUENTLY ASKED QUESTIONS

What is the difference between a reference material, certified reference material, quality control sample, calibration standard and check standard?

Reference Material- A material with a property that is sufficiently well established to enable the sample to be used for the calibration of an instrument, the assessment of a method, or the assignment of values to similar materials. A material with an accepted reference value, accompanied by an uncertainty at a stated level of confidence for desired properties, which may be used for calibration or QC purposes in the laboratory (ASTM D6792).

Certified Reference Material- A reference material that has one or more property values certified by a technically valid procedure and is accompanied by documentation from a recognized accrediting body.

Quality Control Sample- A stable homogenous material that has similar physical and chemical properties to the unknown samples. Used to monitor the precision and stability of the analytical system.

Calibration Standard- A material with a certified value for a relevant property that is traceable to an official body such as the NIST with properties that are known with sufficient accuracy to permit its use to evaluate the same property of another sample (ASTM D6792). These standards can be used to create a calibration curve to calibrate an analytical instrument.

Check Standard- A sample that has an assigned value used to determine the accuracy of a measurement system. Typically used at least once per day to make sure the instrument is working correctly. A check standard is not used to calibrate an instrument.



METHODS / APPLICATIONS

ASTM F2617	Cr, Br, Cd, Hg, Pb on polymers by XRF	D5453	Sulfur by UVF
ASTM D8252	Nickel and Vanadium in Crude by XRF	D5482	Vapor Pressure
D56	Flash point - Closed Cup	D5708	FE, Ni, V in Crude and Residual Oils
D86	Distillation	D5762	Nitrogen by Bloat Inlet Chemiluminescence
D92	Flash Point - Cleveland Open Cup	D5808	Chlorine in Aromatics
D93	Flash Point - Pensky-Martens	D5863	Fe, Na, Ni, V in Crude and Residual Oils
D97	Pour Point	D5984	Total Base Number
D445	Viscosity	D6247	Elements in Polyolefins by WDXRF
D664	Total Acid Number	D6371	Cold Filter Plug Point
D1159	Bromine Number	D6443	Ca, Cl, Cu, Mg, P, S, Zn by WDXRF
D2386	Freeze Point	D6481	Ca, P, S, Zn by EDXRF
D2500	Cloud Point	D6584	Cas Chromatography for Biodiesel
D2622	Sulfur by WDXRF	D7039	Sulfur by MWDXRF
D2710	Bromine Index	D7212	Sulfur in Fuels by EDXRF
D2896	Total Base Number	D7220	Sulfur by MEDXRF
D3230	Salts in Crude Oil	D7359	Halogens in Aromatics
D4294	Sulfur by EDXRF	D7536	Chlorine in Aromatics by MWDXRF
D4628	Ba, Ca, Mg, Zn by AA	D7751	Additives in lube Oils by EDXRF
D4629	Nitrogen by Syringe Chemiluminescence	EN14538	Ca, K, Mg and NA in FAME
D4927	Ba, Ca, P, S, Zn by WDXRF	EN14596	Sulfur with Zirconium by WDXRF
D4929	Chlorine in Crude Oil	EN14597	Ni, V by WDXRF
D4951	Additives in lube Oil by ICP	EPA 80.580	Ultra Low Sulfur in Diesel
D5059	Lead in Gasoline by XRF	EPA TIER 3	Ultra Low Sulfur in Gasoline
D5185	Wear Metals by ICP	IP501	Elements in Residual Oils by XRF
D5191	Vapor Pressure	UOP163	H2S by Titration
D5291	% Level Nitrogen	UOP269	Nitrogen by Titration

CERTIFICATE OF ANALYSIS

ASI Standards

Certificate of Analysis

**Sulfur in Mineral Oil
Calibration Standards**

Product Code:
SMO10(HL)

Expiration date:
April 8, 2017

Lot Number:
040815BX

Standard Number	Lot Number	Concentration wt %	Expanded Degree of Uncertainty
1	040815BX-1	0.000	0.0000
2	040815BX-2	0.100	0.0008
3	040815BX-3	0.200	0.002
4	040815BX-4	0.500	0.004
5	040815BX-5	0.750	0.006
6	040815BX-6	1.000	0.008
7	040815BX-7	2.000	0.02
8	040815BX-8	3.000	0.02
9	040815BX-9	4.000	0.03
10	040815BX-10	5.000	0.04
Standard deviation (2-Sigma): 0.8 % (Relative)			Density: 0.83 g/mL

These standards were checked by x-ray fluorescence spectrometry, (XRF) method ASTM D2622, and are traceable to NIST SRM 2723a (sulfur in diesel fuel oil), NIST SRM # 1616a (sulfur in kerosene), NIST SRM # 2717a (sulfur in residual fuel oil), NIST SRM 2721 (sulfur in crude oil) or NIST SRM # 2724b (sulfur in diesel fuel oil).

ASI Standards


Chris Carolan
Production and Quality Control Mgr

NIST Traceability provided on final standards when applicable. May depend on NIST Standard availability.

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Oak Ridge North, Texas 77385
(281) 419-9229 | Toll Free (866) 419-9229
sales@asistandards.com | www.asistandards.com



Concentration units. Very important to ensure you get what you ask for

Stability or "shelf life" of the final standard.

The lot number is a unique product identifier. Often used for reordering and technical assistance.

Uncertainty determined using EURACHEM/CITAC Guide. Type A and Type B factors are included to report a combined uncertainty. Normal distribution is assumed.

Approximate density provided to assist with matrix differences and other instrument software adjustments..

Uncertainty determined using EURACHEM/CITAC Guide. Type A and Type B factors are included to report a combined uncertainty. Normal distribution is assumed.

CERTIFICATE OF ANALYSIS



- Quality Documentation:** This certificate is designed in accordance with ISO guide 31 (Reference Materials - Contents of Certificates and Labels) and ISO Guide 35 (Reference Materials - General and Statistical Principles for Certification).
- Quality Standards:** ISO 9001:2008 Quality Management System - Requirements SAI Global Registrations Certificate Number CERT 0065624
- Intended Use:** The product covered by this certificate is designed for calibration or for use in quality control procedures for the specified chemical compounds listed on the reverse side. This product can be used for quantification and/or identification. This product can also be used as a reference material to validate analytical procedures, subject to the conditions under section 11. If dilution is required use Class A Glassware and diluent compatible with all certified analytes in this preparation. All solutions should be thoroughly mixed prior to use.
- Raw Materials:** Reference Standards are prepared from the highest quality starting materials with defined purities. All analytes and solvents are obtained from pre-qualified vendors and then analyzed or evaluated prior to use.
- Manufacturing:** All Balances are calibrated daily using an in-house procedure with weights that are compared annually to master weights and traceable to NIST. The balances are also calibrated annually by an ISO/IEC 17025 accredited calibration laboratory. Class A glassware is used in the manufacture and quality control of all standards and calibrated using an in-house procedure. Good Laboratory Practices have been used throughout the preparation of this CRM. Please refer to the nist test number listed on the front of this certificate.
- Homogeneity Assessment:** Homogeneity of the finished product is assessed by analyzing sample batches or by other methods consistent with the intended use of the product and by procedures that comply with the appropriate Quality System requirements.
- Stability Assessment:** The manufacturer guarantees the stability of this solution through the expiration date stated on the label when handled and stored according to the conditions stated on the label. To ensure a uniform solution, mix the contents of the sealed container prior to use. Care should be taken not to contaminate the contents of the original container.
- Analytical Quality Control:** Products are tested by validated analytical methods specified in the manufacturer's Quality Management System.
- Uncertainty Statistics and Confidence Limits:** The Uncertainty values as stated on the face of this certificate have been determined using EURACHEM/CITAC Guide (Quantifying Uncertainty in Analytical Measurement). We have evaluated both Type A (based on a series of observations) and Type B (manufacturers specifications and calibration data) factors and report a combined expanded uncertainty equal to the positive square root of the total variance of the uncertainty of the components using the following formula $\sqrt{u(P)^2 + (u(m))^2 + (u(V))^2}$. The expanded uncertainty, U, assumes a normal distribution and a coverage factor of k=2 is chosen using approximately a 95% confidence level. For analysis, the certified value should be used as the actual value.

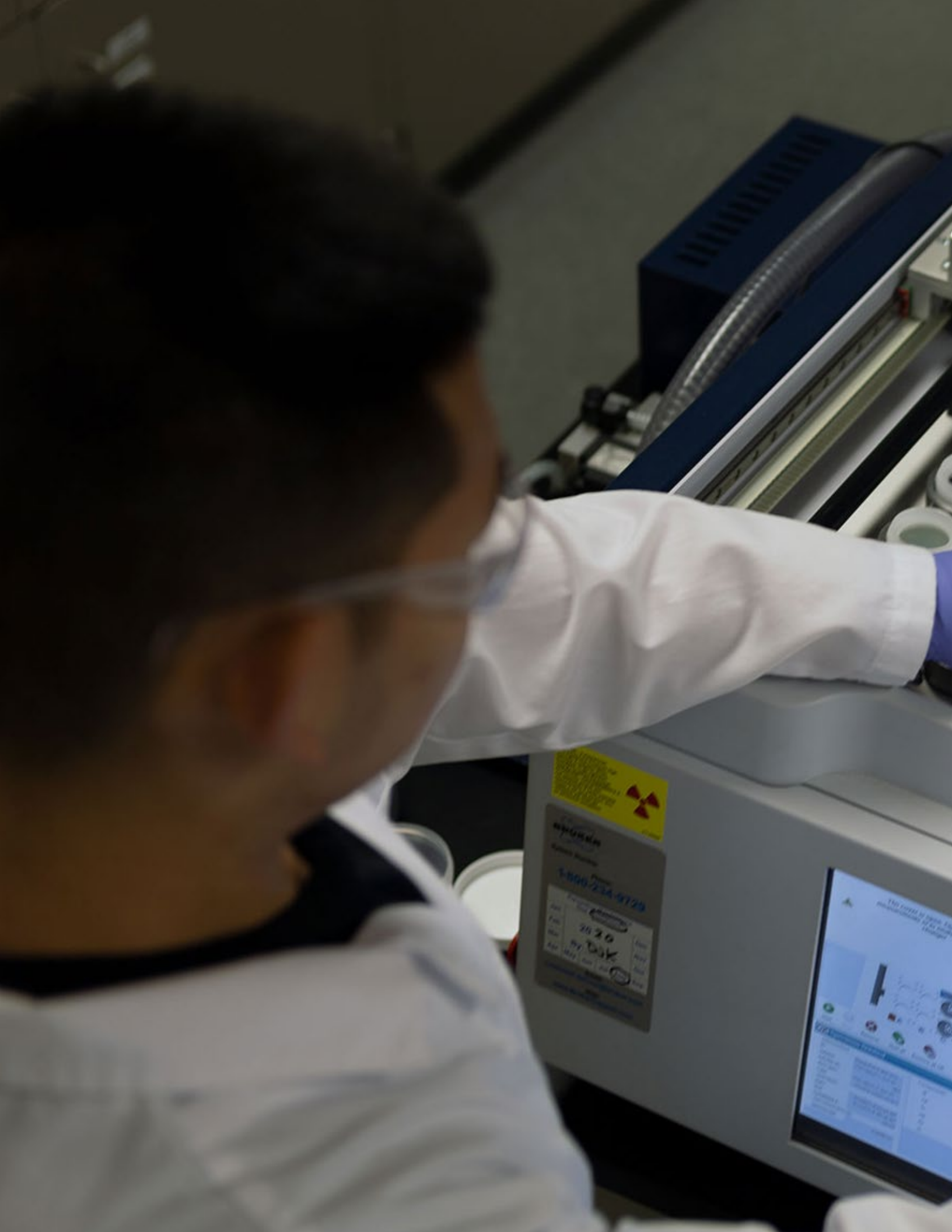
10. Warranties: The Manufacturer warrants that its products shall conform to the description of such products as provided in its catalog or on specific product label. This warranty is exclusive, and the manufacturer makes no other warranty, express or implied, including any implied warranty of merchantability or fitness for any particular purpose.

11. Legal Notice and limit of liability: This product is for routine laboratory analysis and research purposes only. Due to the hazardous nature, only trained personnel should handle this product. The Company's liability will be limited to replacement of product or refund of purchase price. Notice of claims must be made within thirty (30) days from date of delivery.

Our Standards are traceable to various NIST SRMs

Element	NIST SRM	Element	NIST SRM
Ag	1077a	Li	3129a
Al	1075a	Mg	3131a
As	3103a	Mn	3132
Au	3121	Mo	3134
B	3107	Na	1069b
Ba	1051b	Ni	1065b
Be	3105a	P	3139a
Bi	3106	Pb	1059c
Br	3184	Pt	3140
Ca	3109a	S	2724b
Cd	1053a	Sb	3102a
Ce	3110	Se	3149
Cl	1818a	Si	1066a
Co	3113	Sn	1057b
Cr	1078b	Sr	3153a
Cu	1080a	Ti	3162a
Fe	1079b	Tl	3158
Ga	3119a	V	1052b
Hg	3133	Y	3167a
K	3141a	Zn	3168a
		Zr	3169

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ASI Standards



SULFUR CALIBRATION SETS



Sulfur Calibration Sets

SULFUR CALIBRATION SETS

Sulfur source is Di-n-butyl sulfide unless otherwise specified.

Suitable for ASTM Methods D2622, D4294, D5453, D6334, D7039, D7212, D7220, ISO/CD 14596

All sets contain 100 ml bottles, unless otherwise specified

Product Code		SM010	Standard Number		Sulfur Wt%
Test Method	D2622 D4294		1	0.0000	
			2	0.0025	
			3	0.0050	
			4	0.0100	
			5	0.0200	
Description	Sulfur in Mineral Oil Set of 10 Calibration Standards		6	0.0400	
			7	0.0500	
			8	0.0600	
			9	0.0800	
			10	0.1000	
Product Code		SM0-50	Product Code		SM0-500
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	0.0050		Sulfur Wt%	0.0500	



SULFUR CALIBRATION SETS

Product Code		SMO10 (HL)	Standard Number		Sulfur Wt%
Product	Sulfur in Mineral Oil		1		0.0000
Test Method	D2622 D4294		2		0.1000
			3		0.2000
			4		0.5000
			5		0.7500
			6		1.0000
Description	Sulfur in Mineral Oil Set of 10 Calibration Standards		7		2.0000
			8		3.0000
			9		4.0000
			10		5.0000
Product Code		SMO-1.00	Product Code		SMO-3.00
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	1.00		Sulfur Wt%	3.00	

SULFUR CALIBRATION SETS

Product Code		SMO11	Standard Number		Sulfur Wt%
Product	Sulfur in Mineral Oil		1		0.0000
Test Method	D2622 D4294		2		0.0020
			3		0.0050
			4		0.0100
			5		0.0300
			6		0.0600
Description	Sulfur in Mineral Oil Set of 11 Calibration Standards		7		0.1000
			8		0.5000
			9		1.0000
			10		2.5000
			11		5.0000
Product Code		SMO-50	Product Code		SMO-1000
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	1.00		Sulfur Wt%	0.1000	
Product Code		0.0050	Product Code		SMO-3.00
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	1.00		Sulfur Wt%	3.00	

SULFUR CALIBRATION SETS

Product Code		SDF10	Standard Number		Sulfur Wt%
Product	Sulfur in Diesel Fuel		1		0.0000
Test Method	D2622 D4294		2		0.1000
			3		0.2500
			4		0.5000
			5		1.0000
			6		1.5000
Description	Sulfur in Diesel Fuel Set of 10 Calibration Standards		7		2.0000
			8		3.0000
			9		4.0000
			10		5.0000
Product Code		SDF-1.00	Product Code		SDF-3.00
Description	Sulfur in Diesel Fuel Check Standard		Description	Sulfur in Diesel Fuel Check Standard	
Sulfur Wt%	1.00		Sulfur Wt%	3.00	

SULFUR CALIBRATION SETS

Product Code		SCO10	Standard Number		Sulfur Wt%
Product	Sulfur in Crude Oil		1	Blank~0.0400-0.0500	
Test Method	D2622 D4294		2	0.1000	
			3	0.2500	
			4	0.5000	
			5	1.0000	
			6	1.5000	
Description	Sulfur in Crude Oil Set of 10 Calibration Standards		7	2.0000	
			8	3.0000	
			9	4.0000	
			10	5.0000	
Product Code		SCO-1.00	Product Code		SCO-3.00
Description	Sulfur in Crude Oil Check Standard		Description	Sulfur in Crude Oil Check Standard	
Sulfur Wt%	1.00		Sulfur Wt%	3.00	

SULFUR CALIBRATION SETS

Product Code		SRO10	Standard Number		Sulfur Wt%
Product	Sulfur in Residual Oil		1		Blank~0.2000-0.2500
Test Method	D2622 D4294	2		0.5000	
		3		1.0000	
		4		1.5000	
		5		2.0000	
		6		2.5000	
Description	Sulfur in Residual Oil Set of 10 Calibration Standards	7		3.0000	
		8		3.5000	
		9		4.0000	
		10		5.0000	
Product Code		SRO-1.00	Product Code		SRO-3.00
Description	Sulfur in Residual Oil Check Standard		Description	Sulfur in Residual Oil Check Standard	
Sulfur Wt%	1.00		Sulfur Wt%	3.00	

SULFUR CALIBRATION SETS

Product Code		SMO6H	Standard Number		Sulfur Wt%
Product	Sulfur in Mineral Oil		1		0.0000
Test Method	D2622 D4294		2		0.1000
			3		0.5000
			4		1.0000
			5		2.5000
Description	Sulfur in Mineral Oil High level Set of 6 Calibration Standards		6		5.0000
Product Code		SMO-5000	Product Code		SMO-2.50
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	0.5000		Sulfur Wt%	2.50	

Product Code		SM07L	Standard Number		Sulfur Wt%
Product	Sulfur in Mineral Oil		1		0.0000
Test Method	D2622 D4294		2		0.0020
			3		0.0050
			4		0.0100
			5		0.0300
Description	Sulfur in Mineral Oil Low level Set of 7 Calibration Standards		6		0.0600
			7		0.1000
Product Code		SMO-25	Product Code		SMO-500
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	0.0025		Sulfur Wt%	0.0500	

SULFUR CALIBRATION SETS

Product Code		SIN6C	Standard Number		Sulfur mg/kg
Product	Sulfur in Mineral Oil		1		0
Test Method	D7039, ISO 20884		2		10
			3		50
			4		100
			5		200
			6		500
Description	Sulfur in Mineral Oil Set of 6 Calibration Standards				
Product Code		SMO-25	Product Code		SMO-250
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	0.0025		Sulfur Wt%	0.0250	

Product Code		SMO8(OX)	Standard Number		Sulfur mg/kg
Product	Sulfur in Mineral Oil		1		0
Test Method	D7039, ISO 20884		2		5
			3		10
			4		30
			5		50
			6		70
Description	Sulfur in Mineral Oil Set of 8 Calibration Standards		7		100
			8		150
Product Code		SMO-10	Product Code		SMO-75
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	0.0010		Sulfur Wt%	0.0075	

SULFUR CALIBRATION SETS

Product Code		SDF7	Standard Number		Sulfur Wt%
Product	Sulfur in Diesel Fuel		1		0.0000
Test Method	D2622 D4294 D7039		2		0.0200
			3		0.0400
			4		0.0500
			5		0.0600
Description	Sulfur in Diesel Fuel Set of 7 Calibration Standards		6		0.0800
			7		0.1000
Product Code		SDF-250	Product Code		SDF-750
Description	Sulfur in Diesel Fuel Check Standard		Description	Sulfur in Diesel Fuel Check Standard	
Sulfur Wt%	0.0250		Sulfur Wt%	0.0750	

Product Code		SCO7	Standard Number		Sulfur Wt%
Product	Sulfur in Crude Oil		1		Blank~0.0400-0.0500
Test Method	D2622 D4294		2		0.1000
			3		0.2500
			4		0.5000
			5		1.0000
Description	Sulfur in Crude Oil Set of 7 Calibration Standards		6		1.5000
			7		2.0000
Product Code		SCO-1000	Product Code		SCO-1.00
Description	Sulfur in Crude Oil Check Standard		Description	Sulfur in Crude Oil Check Standard	
Sulfur Wt%	0.1000		Sulfur Wt%	1.00	

SULFUR CALIBRATION SETS FOR XRF

Product Code		SIO11	Standard Number	Sulfur ng/μl
Product	Sulfur in Isooctane		1	0.00
Test Method	D5453 D2622		2	0.50
			3	1.00
			4	2.50
			5	5.00
			6	10.00
Description	Sulfur in Isooctane Set of 11 Calibration Standards		7	25.00
			8	50.00
			9	100.0
			10	500.0
			11	1,000.0

Product Code		SIO6(L)	Standard Number	Sulfur ng/μl
Product	Sulfur in Isooctane Low range		1	0.00
			2	0.50
			3	1.00
			4	2.50
			5	5.00
			6	10.00

Product Code		SIO4(M)	Standard Number	Sulfur ng/μl
Product	Sulfur in Isooctane Mid range		1	5.0
			2	25.0
			3	50.0
			4	100.0

Product Code		SIO3(H)	Standard Number	Sulfur ng/μl
Product	Sulfur in Isooctane High range		1	100.0
			2	500.0
			3	1,000.0

Sulfur Calibration Sets for XRF

SULFUR CALIBRATION SETS FOR XRF

Product Code		S(BS)13	Standard Number		Sulfur Wt%
Product	Sulfur in Isooctane for Gasoline and Reformulated Gasoline analysis		1		0.0000
			2		0.0010
			3		0.0020
Test Method	D2622 D4294 D6334 D7039		4		0.0030
			5		0.0050
			6		0.0100
			7		0.0200
			8		0.0300
Description	Sulfur in Isooctane Set of 13 Calibration Standards		9		0.0400
			10		0.0600
			11		0.1000
			12		0.2000
			13		0.3000
Product Code		SIO-25	Product Code		SIO-1000
Description	Sulfur in Isooctane Check Standard		Description	Sulfur in Isooctane Check Standard	
Sulfur Wt%	0.0025		Sulfur Wt%	0.1000	

SULFUR CALIBRATION SETS FOR XRF

Product Code		S(BS)IT10	Standard Number		Sulfur Wt%
Product	Sulfur in Isooctane for Gasoline and Reformulated Gasoline analysis		1		0.0000
			2		0.0005
Test Method	D4294 D6334 D7039 D7212		3		0.0010
			4		0.0030
			5		0.0050
			6		0.0075
Description	Sulfur in Isooctane/Toluene Set of 10 Calibration Standards		7		0.0100
			8		0.0300
			9		0.0500
			10		0.1000
Product Code		SIO-10	Product Code		SIO-250
Description	Sulfur in Isooctane Check Standard		Description	Sulfur in Isooctane Check Standard	
Sulfur Wt%	0.0010		Sulfur Wt%	0.0250	

Product Code		SG10C
Product	Sulfur in Gasoline	
Test Method	D2622, D4292, D6334	
Description	Sulfur in Gasoline, Set of 10 Calibration Standards, concentrations specified by customer	

Product Code		SG7C
Product	Sulfur in Gasoline	
Test Method	D2622, D4292, D6334	
Description	Sulfur in Gasoline, Set of 7 Calibration Standards, concentrations specified by customer	

EPA TIER 3 STANDARDS

Product Code		ULSD0-25	Standard Number		Sulfur Wt%
Product	Sulfur in Ultra Low Diesel Fuel		1		0.0000
Test Method	EPA 80.580 to 80.585		2		0.0200
			3		0.0400
			4		0.0500
			5		0.0600
			6		0.0800
Description	Sulfur in Ultra Low Diesel Fuel Set of 6 Calibration Standards		7		0.1000
Product Code		SDF-10	Product Code		SDF-15
Description	Sulfur in Diesel Fuel Check Standard		Description	Sulfur in Diesel Fuel Check Standard	
Sulfur Wt%	0.0010		Sulfur Wt%	0.0015	

Product Code		SCO7	Standard Number		Sulfur Wt%
Product	Sulfur in Crude Oil		1		Blank~0.0400-0.0500
Test Method	D2622 D4294		2		0.1000
			3		0.2500
			4		0.5000
			5		1.0000
			6		1.5000
Description	Sulfur in Crude Oil Set of 7 Calibration Standards		7		2.0000
Product Code		SCO-1000	Product Code		SCO-1.00
Description	Sulfur in Crude Oil Check Standard		Description	Sulfur in Crude Oil Check Standard	
Sulfur Wt%	0.1000		Sulfur Wt%	1.00	

EPA TIER 3 STANDARDS

Product Code		SEPA(G)H	Product Code		SEPA(G)L
Product	Sulfur in Mineral Oil		Product	Sulfur in Mineral Oil	
Test Method	EPA 80.580 to 80.585		Test Method	EPA 80.580 to 80.585	
Description	Sulfur in Mineral Oil Check Standards for EPA High Level Requirements. Set of 2 Standards 200 ml each		Description	Sulfur in Mineral Oil Check Standards for EPA Low Level Requirements. Set of 2 Standards 200 ml each	
	Standard Number	Sulfur mg/kg		Standard Number	Sulfur mg/kg
	1	150		1	5
	2	450	2	15	

Product Code		SEPA(P)H	Product Code		SEPA(P)L
Product	Sulfur in Diesel Fuel		Product	Sulfur in Diesel Fuel	
Test Method	EPA 80.580 to 80.585		Test Method	EPA 80.580 to 80.585	
Description	Sulfur in Diesel Fuel, Check Standard for EPA High Level Requirements. 500 ml each		Description	Sulfur in Diesel Fuel Check Standard for EPA Low Level Requirements. 500 ml each	
	Standard Number	Sulfur mg/kg		Standard Number	Sulfur mg/kg
	1	300		1	7

Product Code		SEPA6C
Product	Complete Set	
Test Method	EPA 80.580 to 80.585	
Description	Complete Set of Standards including SEPA(G)H, SEPA(G)L, SEPA(P)H, SEPA(P)L	

EPA TIER 3 STANDARDS

Product Code		SEPA-T2-P
Description	Sulfur in Gasoline Check Standard. For EPA Tier 2 Precision Testing. Concentration = 28 mg/kg	

Product Code		SEPA-T2-L
Description	Sulfur in Gasoline Check Standard. For EPA Tier 2 Accuracy (Low) Testing. Concentration = 25 mg/kg	

Product Code		SEPA-T2-H
Description	Sulfur in Gasoline Check Standard For EPA Tier 2 Accuracy (High) Testing Concentration = 35 mg/kg	

Product Code		SEPA-T2-SET
Description	Sulfur in Gasoline Complete Test Set. For EPA Tier 2 Test Method Qualification, 3 standards per set, (Includes SEPA-T2-L-500, SEPA-T2-H-500 & SEPA-T2-P-1000).	

Product Code		SEPA-T3-P
Description	Sulfur in Gasoline Check Standard. For EPA Tier 3 Precision Testing. Concentration = 6 mg/kg	

Product Code		SEPA-T3-L
Description	Sulfur in Gasoline Check Standard. For EPA Tier 3 Accuracy (Low) Testing. Concentration = 5 mg/kg	

Product Code		SEPA-T3-H
Description	Sulfur in Gasoline Check Standard. For EPA Tier 3 Accuracy (High) Testing Concentration = 15 mg/kg	

Product Code		SEPA-T3-SET
Description	Sulfur in Gasoline Complete Test Set. For EPA Tier 3 Test Method Qualification, 3 standards per set, (Includes SEPA-T3-L-500, SEPA-T3-H-500 & SEPA-T3-P-1000).	

EPA TIER 3 STANDARDS

Product Code		MARPOL-P
Description	Sulfur in Diesel Fuel Check Standard. For MARPOL / EPA Marine Fuel Precision Testing. Concentration = 900 mg/kg	

Product Code		MARPOL-L
Description	Sulfur in Diesel Fuel Check Standard. For MARPOL / EPA Marine Fuel Accuracy (Low) Testing. Concentration = 350 mg/kg	

Product Code		MARPOL-H
Description	Sulfur in Diesel Fuel Check Standard. For MARPOL / EPA Marine Fuel Accuracy (High) Testing. Concentration = 950 mg/kg	

Product Code		MARPOL-SET
Description	Sulfur in Diesel Fuel Complete Test Set. For MARPOL / EPA Marine Fuel Test Method Qualification Testing. 3 standards per set; quantity varies, (Includes MARPOL-L-500, MARPOL-H-500 & MARPOL-P-1000).	

POLYSULFIDE CALIBRATIONS

Product Code	S(PS)MO6(H)	Standard Number	Sulfur Wt%
Product	Polysulfide in Mineral Oil	1	0
Test Method	D2622, D4294, D5453, D7039, D7212, D7220	2	1.0
		3	2.0
		4	3.0
		5	4.0
		6	5.0
Description	Sulfur as Polysulfide in Mineral Oil High level 6 Standards per set		

POLYSULFIDE CALIBRATIONS

Product Code		S(PS)MO6(L)	Standard Number	Sulfur mg/kg
Product	Polysulfide in Mineral Oil		1	0
Test Method	D2622, D4294, D5453, D7039, D7220		2	100
			3	250
			4	500
			5	750
			6	1000
Description	Sulfur as Polysulfide in Mineral Oil Low level 6 Standards per set			

Product Code		S(PS)MO13	Standard Number	Sulfur mg/kg
Product	Polysulfide in Mineral Oil		1	0
Test Method	D2622, D4294, D5453, D7039, D7220		2	1.0
			3	2.5
			4	5.0
			5	10
			6	25
			7	50
			Description	Sulfur as Polysulfide in Mineral Oil Set of 13 Standards per set
9	100			
10	250			
11	500			
12	750			
13	1000			

SULFUR CALIBRATION SETS FOR EN 14596

Product Code		SISOH7	Standard Number	Sulfur Wt%
Product	Sulfur Standards High range with 18% Zirconium Internal Standard		1	0.0000
			2	0.4000
			3	0.7000
Test Method	ISO 14596		4	1.0000
			5	1.5000
			6	2.0000
Description	Sulfur in Mineral Oil High Level with 18% Zirconium Internal Standard Set of 7 Calibration Standards		7	2.5000

Product Code		SISOL8	Standard Number	Sulfur Wt%
Product	Sulfur Standards Low range with 1% Zirconium Internal Standard		1	0.0000
			2	0.0010
			3	0.0050
Test Method	ISO 14596		4	0.0100
			5	0.0250
			6	0.0500
Description	Sulfur in Mineral Oil Low Level with 1% Zirconium Internal Standard Set of 8 Calibration Standards		7	0.0750
			8	0.1000

Sulfur Calibration sets for EN 14596

SULFUR IN MINERAL OIL CHECK STANDARDS

Product Code		SMO-10	Product Code		SMO-25
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	0.0010		Sulfur Wt%	0.0025	

Product Code		SMO-50	Product Code		SMO-75
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	0.0050		Sulfur Wt%	0.0075	

Product Code		SMO-250	Product Code		SMO-500
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	0.0250		Sulfur Wt%	0.0500	

Product Code		SMO-1000	Product Code		SMO-5000
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	0.1000		Sulfur Wt%	0.5000	

Product Code		SMO-1.00	Product Code		SMO-2.50
Description	Sulfur in Mineral Oil Check Standard		Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	1.00		Sulfur Wt%	2.50	

Product Code		SMO-3.00
Description	Sulfur in Mineral Oil Check Standard	
Sulfur Wt%	3.00	

SULFUR IN DIESEL FUEL CHECK STANDARDS

Product Code SDF-10		Product Code SDF-15	
Description	Sulfur in Diesel Fuel Check Standard	Description	Sulfur in Diesel Fuel Check Standard
Sulfur Wt%	0.0010	Sulfur Wt%	0.0015

Product Code SDF-25		Product Code SDF-50	
Description	Sulfur in Diesel Fuel Check Standard	Description	Sulfur in Diesel Fuel Check Standard
Sulfur Wt%	0.0025	Sulfur Wt%	0.0050

Product Code SDF-250		Product Code SDF-750	
Description	Sulfur in Diesel Fuel Check Standard	Description	Sulfur in Diesel Fuel Check Standard
Sulfur Wt%	0.0250	Sulfur Wt%	0.0750

Product Code SDF-1.00		Product Code SDF-3.00	
Description	Sulfur in Diesel Fuel Check Standard	Description	Sulfur in Diesel Fuel Check Standard
Sulfur Wt%	1.00	Sulfur Wt%	3.00

Sulfur Check Standards

SULFUR CALIBRATION CHECK STANDARDS

Product Code		SCO-1000	Product Code		SCO-1.00
Description	Sulfur in Crude Oil Check Standard		Description	Sulfur in Crude Oil Check Standard	
Sulfur Wt%	0.1000		Sulfur Wt%	1.00	

Product Code		SCO-3.00
Description	Sulfur in Crude Oil Check Standard	
Sulfur Wt%	3.00	

SULFUR IN RESIDUAL OIL CHECK STANDARDS

Product Code		SRO-1.00	Product Code		SRO-3.00
Description	Sulfur in Residual Oil Check Standard		Description	Sulfur in Residual Oil Check Standard	
Sulfur Wt%	1.00		Sulfur Wt%	3.00	

SULFUR IN ISOCTANE CHECK STANDARDS

Product Code		SIO-10	Product Code		SIO-25
Description	Sulfur in Isooctane Check Standard		Description	Sulfur in Isooctane Check Standard	
Sulfur Wt%	0.0010		Sulfur Wt%	0.0025	

Product Code		SIO-250	Product Code		SRO-3.00
Description	Sulfur in Isooctane Check Standard		Description	Sulfur in Isooctane Check Standard	
Sulfur Wt%	0.0250		Sulfur Wt%	0.1000	

NITROGEN AND SULFUR AMPOULES

For use in analysis by Chemiluminescence, UV Fluorescence and Oxidative Microcoulometry
Suitable for ASTM Methods D3120, D3246, D4629, D5453, and D5762

NITROGEN AND SULFUR IN PETROLEUM PRODUCTS

Product Code		A-NS(L)
Product	Nitrogen and Sulfur in petroleum products. Sulfur by ultraviolet fluorescence and Nitrogen by chemiluminescence.	
Test Method	S-D5453 N-D4629, D5762	
Description	Dibenzothiophene (S) and Pyridine(N) in Isooctane packaged in 2 ml amber pre-scored ampoules. Concentrations are Blk, 0.25, 0.5, 1.0, 2.5, 5.0 ng/ul	

Product Code		A-NS(M)
Product	Nitrogen and Sulfur in petroleum products. Sulfur by ultraviolet fluorescence and Nitrogen by chemiluminescence.	
Test Method	S-D5453 N-D4629, D5762	
Description	Dibenzothiophene (S) and Pyridine(N) in Isooctane packaged in 2 ml amber pre-scored ampoules. Concentrations are Blk, 5, 25, 50, 100 ng/μl	

Product Code		A-NS(H)
Product	Nitrogen and Sulfur in petroleum products. Sulfur by ultraviolet fluorescence and Nitrogen by chemiluminescence.	
Test Method	S-D5453 N-D4629, D5762	
Description	Dibenzothiophene (S) and Pyridine(N) in Isooctane packaged in 2 ml amber pre-scored ampoules. Concentrations are Blk, 100, 500, 1000 ng/μl	

Product Code		A4629(1)
Product	Nitrogen in petroleum products by syringe-inlet chemiluminescence.	
Test Method	D4629	
Description	Pyridine in Isooctane packaged in 2 ml amber pre-scored ampoules. Concentrations are Blk, 0.25, 0.5, 1.0, 2.5, 5.0 mg/kg	

Product Code		A4629(2)
Product	Nitrogen in petroleum products by syringe-inlet chemiluminescence.	
Test Method	D4629	
Description	Pyridine in Isooctane packaged in 2 ml amber pre-scored ampoules. Concentrations are Blk, 5, 25, 50, 100 mg/kg	

NITROGEN AND SULFUR AMPOULES

NITROGEN IN PETROLEUM PRODUCTS

Product Code		A5762
Product	Nitrogen in petroleum products by boat-inlet chemiluminescence.	
Test Method	D5762	
Description	Acridine in Xylenes packages in 2 ml amber pre-scored ampoules. Concentrations are Blk, 100, 500, 1000 mg/kg	

SULFUR AMPOULES IN PETROLEUM PRODUCTS

Product Code		A5453(L)
Product	Sulfur in liquid petroleum hydrocarbons by ultraviolet fluorescence.	
Test Method	D5453	
Description	Di-n-butyl sulfide in Toluene or Isooctane matrix packaged in 2 ml amber pre-scored ampoules. Concentrations are Blk, 1, 2.5, 5, 7.5, 10 ng/μl. Please specify matrix	

Product Code		A5453(M)
Product	Sulfur in liquid petroleum hydrocarbons by ultraviolet fluorescence.	
Test Method	D5453	
Description	Di-n-butyl sulfide in Toluene or Isooctane matrix packaged in 2 ml amber pre-scored ampoules. Concentrations are Blk, 5, 25, 50, 100, 200 ng/μl. Please specify matrix	

Product Code		A5453(H)
Product	Sulfur in liquid petroleum hydrocarbons by ultraviolet fluorescence.	
Test Method	D5453	
Description	Di-n-butyl sulfide in Toluene or Isooctane matrix packaged in 2 ml amber pre-scored ampoules. Concentrations are Blk, 100, 250, 500, 750, 1000 ng/μl Please specify matrix	

Product Code		A5453(T)
Product	Sulfur in liquid petroleum hydrocarbons by ultraviolet fluorescence.	
Test Method	D5453	
Description	Di-n-butyl sulfide in Toluene or Isooctane matrix packaged in 2 ml amber pre-scored ampoules. Concentrations are from the L, M and H ranges. Please specify matrix	

Product Code		A5453CK
Product	Sulfur in liquid petroleum hydrocarbons by ultraviolet fluorescence.	
Test Method	D5453	
Description	Di-n-butyl sulfide in Toluene or Isooctane matrix packaged in 2 ml amber pre-scored ampoules. Daily calibration check sample. Specify concentration and matrix - 10 ampoules in set.	

CHLORINE AND SULFUR CALIBRATION IN VARIOUS MATRICES

Product Code			CLSMO10		
Product	Chlorine and Sulfur in Mineral Oil				
Description	Chlorinated Hydrocarbon and Di-n-butyl sulfide in Mineral Oil Set of 10 Calibration Standards				
Standard Number	Chlorine Wt%	Sulfur Wt%	Standard Number	Chlorine Wt%	Sulfur Wt%
1	0.0000	0.0000	6	0.6000	0.3000
2	0.8000	0.1000	7	0.1000	0.4000
3	0.5000	0.6000	8	0.4000	0.5000
4	0.3000	0.2000	9	1.0000	0.8000
5	0.2000	0.7000	10	0.0000	1.0000

Product Code			CLSWO10		
Product	Chlorine and Sulfur in Waste Oil				
Description	Chlorinated Hydrocarbon and Di-n-butyl sulfide in Waste Oil Set of 10 Calibration Standards				
Standard Number	Chlorine Wt%	Sulfur Wt%	Standard Number	Chlorine Wt%	Sulfur Wt%
1	1.0000	0.5000	6	0.8000	1.7500
2	0.0200	2.5000	7	0.0500	1.2500
3	0.6500	0.5000	8	1.0000	2.0000
4	0.2000	0.2000	9	0.3800	2.2500
5	0.5000	1.0000	10	0.1000	0.7500

CHLORINE CALIBRATION SET IN WASTE OIL

Product Code		CLW07	Standard Number	Sulfur mg/kg
Product	Chlorine in Waste Oil		1	0.0500
Description	Chlorinated Hydrocarbon in Waste Oil Set of 7 Calibration Standards		2	0.2000
			3	0.4000
			4	0.5000
			5	0.6000
			6	0.8000
			7	1.0000

METAL WORKING FLUIDS STANDARDS

Product Code		MWFL13	
Product	Metal Working Fluids CI, P, S		
Description	For the analysis of Lubricant Base Metal Working Fluids Set of 13 Calibration Standards		
Standard Number	CI Wt%	P Wt%	S Wt%
1	0.0000	0.0000	0.0000
2	0.7500	0.0250	0.5000
3	0.0500	0.1000	3.0000
4	1.0000	0.5000	2.5000
5	0.1000	0.0050	2.0000
6	1.5000	0.2000	1.0000
7	2.0000	0.0050	3.0000
8	1.0000	0.0500	0.1000
9	0.5000	0.4000	0.0000
10	2.0000	0.2000	1.5000
11	0.0000	0.5000	1.5000
12	1.2500	0.0100	0.0500
13	0.0500	0.3000	0.0500

SULFUR AND METALS IN OIL

Formulated for the analysis of fuel oils and residual oils. Concentrations of Fe, Ni and V are independent of Sulfur concentration. Each certified component added independently. All sets contain 100 ml bottles, unless otherwise specified.

Product Code		SFNVM012			
Product	Sulfur and Metals in Mineral Oil				
Test Method	ASTM D8252				
Description	Sulfur and Metals in Mineral Oil. S, Fe, Ni, V. Set of 12 Calibration Standards				
Standard Number	Sulfur Wt%	Iron (mg/kg)	Nickel (mg/kg)	Vanadium (mg/kg)	
1	0.00	0	0	0	
2	0.50	300	10	500	
3	1.00	500	100	25	
4	0.00	100	80	250	
5	2.00	200	40	100	
6	2.50	400	5	400	
7	3.00	0	60	300	
8	3.50	500	0	200	
9	0.00	100	100	0	
10	4.50	300	50	250	
11	5.00	200	20	500	
12	5.50	50	100	50	

Product Code		SNVMO12		
Product	Sulfur and Metals in Mineral Oil			
Test Method	ASTM D8252			
Description	Sulfur and Metals in Mineral Oil S, Ni, V. Set of 12 Calibration Standards			
Standard Number	Sulfur Wt%	Nickel (mg/kg)		Vanadium (mg/kg)
1	0.00	0		0
2	0.50	10		500
3	1.00	100		25
4	1.50	80		250
5	2.00	40		100
6	2.50	5		400
7	3.00	60		300
8	3.50	0		200
9	4.00	100		0
10	4.50	50		250
11	5.00	20		500
12	5.50	100		50

Sulfur and Metals in Oil

SULFUR AND METALS IN OIL

Product Code		SFNVR012		
Product	Sulfur and Metals in Residual Oil			
Test Method	ASTM D8252			
Description	Sulfur and Metals in Residual Oil. S, Fe, Ni, V. Set of 12 Calibration Standards			
Standard Number	Sulfur Wt%	Iron (mg/kg)	Nickel (mg/kg)	Vanadium (mg/kg)
1	Blank	Blank	Blank	Blank
2	0.50	300	10	500
3	1.00	500	100	25
4	Blank	100	80	250
5	2.00	200	40	100
6	2.50	400	5	400
7	3.00	Blank	60	300
8	3.50	500	Blank	200
9	Blank	100	100	Blank
10	4.50	300	50	250
11	5.00	200	20	500
12	5.50	50	100	50

Sulfur and Metals in Oil

Product Code		SNVRO12		
Product	Sulfur and Metals in Residual Oil			
Test Method	ASTM D8252			
Description	Sulfur and Metals in Residual Oil. S, Ni, V. Set of 12 Calibration Standards			
Standard Number	Sulfur Wt%	Nickel (mg/kg)	Vanadium (mg/kg)	
1	Blank	Blank	Blank	
2	0.50	10	500	
3	1.00	100	25	
4	Blank	80	250	
5	2.00	40	100	
6	2.50	5	400	
7	3.00	60	300	
8	3.50	Blank	200	
9	Blank	100	Blank	
10	4.50	50	250	
11	5.00	20	500	
12	5.50	100	50	

LEAD STANDARDS IN GASOLINE AND ISOCTANE

Suitable for ASTM D5059

Product Code		BIIS
Product	Bismuth Internal Standard	
Test Method	D5059	
Description	Internal Standard Conc: 0.793g Bi/L	

Product Code		PBG7A	Standard Number	Lead g/gal
Product	Lead in Gasoline		1	0.000
Test Method	Covers the scope of ASTM D5059 Part A		2	0.100
			3	1.000
			4	2.000
			5	3.000
Description	Lead in Gasoline Set of 7 Calibration Standards		6	4.000
			7	5.000

Product Code		PBG7C	Standard Number	Lead g/gal
Product	Lead in Gasoline		1	0.000
Test Method	Covers the scope of ASTM D5059 Part C		2	0.001
			3	0.005
			4	0.010
			5	0.050
Description	Lead in Gasoline Set of 7 Calibration Standards		6	0.100
			7	0.300

Product Code		PBG12
Product	Lead in Gasoline	
Test Method	Covers the scope of ASTM D5059 Part A & C	
Description	This set is made up of PBG7A and PBG7C Set of 12 Calibration Standards	

Lead Standards in Gasoline and Isooctane

LEAD STANDARDS IN GASOLINE AND ISOCTANE

Suitable for ASTM D5059

Product Code		PBIO7A	Standard Number	Lead g/gal
Product	Lead in Isooctane		1	0.000
Test Method	D5059 Part A		2	0.100
			3	1.000
			4	2.000
			5	3.000
			6	4.000
Description	Lead in Isooctane Set of 7 Calibration Standards		7	5.000

Product Code		PBIO7C	Standard Number	Lead g/gal
Product	Lead in Isooctane		1	0.000
Test Method	D5059 Part C		2	0.001
			3	0.005
			4	0.010
			5	0.050
			6	0.100
Description	Lead in Isooctane Set of 7 Calibration Standards		7	0.300

Product Code		PBIO12
Product	Lead in Isooctane	
Test Method	D5059 Part A & C	
Description	This set is made up of PBIO7A and PBIO7C Set of 12 Calibration Standards	

VANADIUM AND NICKEL STANDARDS

Product Code	VISOL9	Standard Number	Ni Wt%
Product	Vanadium Standard, Low Range with 0.05% Manganese Internal Standard	1	0.0005
		2	0.0025
		3	0.0050
Test Method	ISO 14957	4	0.0075
		5	0.0100
		6	0.0125
Description	Vanadium Reagent and 0.05% Manganese Internal Standard in Xylene-Mineral Oil Set of 9 Calibration Standards	7	0.0150
		8	0.0175
		9	0.0200

VANADIUM AND NICKEL STANDARDS

With Manganese Internal Standards in Xylene - Mineral Oil Suitable for ISO/CD 14597

All sets contain 100 ml bottles, unless otherwise specified.

Product Code		MNIS-0.05
Product	Manganese Internal Standard	
Test Method	ISO 14597	
Description	Internal Standard Concentration 0.05%	

Product Code		NiISO7	Standard Number	Ni Wt%
Product	Nickel Standards with 0.05% Manganese Internal Standard		1	0.0000
			2	0.0005
			3	0.0010
Test Method	ISO 14597		4	0.0025
			5	0.0050
			6	0.0075
Description	Nickel Reagent and 0.05% Manganese Internal Standard in Xylene-Mineral Oil Set of 7 Calibration Standards		7	0.0100

Product Code		VISOH7	Standard Number	Ni Wt%
Product	Vanadium Standard, High Range with 0.05% Manganese Internal Standard		1	0.0000
			2	0.0300
			3	0.0400
Test Method	ISO 14597		4	0.0500
			5	0.0600
			6	0.0800
Description	Vanadium Reagent and 0.05% Manganese Internal Standard in Xylene-Mineral Oil Set of 7 Calibration Standards		7	0.1000

LUBRICATING OIL STANDARDS



All sets in 100 ml bottles
 Calibration standards for the analysis of lubricating oils
 Concentrations of all elements are independent of Sulfur concentration. Each certified component added independently. ASTM D4927, D6443, D6481, D7751

Product Code							LOE10
Product	Elements in Lubricating Oil						
Test Method	D4927, D6443, D6481						
Description	Abbreviated set for ASTM method Set of 10 Calibration Standards						
Elements	Ca, Cl, Cu, Mg, P, S, Zn						
Standard Number	Ca Wt%	Cl Wt%	Cu Wt%	Mg Wt%	P Wt%	S Wt%	Zn Wt%
1	0.0200	0.0300	0.0100	0.2000	0.2500	1.0000	0.0200
2	0.0200	0.0200	0.0500	0.2000	0.0200	0.0200	0.2500
3	0.0200	0.2000	0.0100	0.0400	0.2500	0.1500	0.2500
4	0.0200	0.2000	0.0500	0.0400	0.0200	1.0000	0.0200
5	0.4000	0.0200	0.0100	0.0400	0.0200	1.0000	0.2500
6	0.4000	0.0200	0.0500	0.0400	0.2500	0.0200	0.0200
7	0.4000	0.2000	0.0100	0.2000	0.0200	0.0200	0.0500
8	0.4000	0.2000	0.0500	0.2000	0.2500	1.0000	0.2500
9	0.2000	0.1000	0.0250	0.0800	0.1500	0.5000	0.1000
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LUBRICATING OIL STANDARDS

Product Code		LOE17		
Product	Elements in Lubricating Oil			
Test Method	D4927, D6443, D6481, D7751			
Description	Engine Oil Set of 17 Calibration Standards			
Elements	Ca, P, S, Zn			
Standard Number	Ca Wt%	P Wt%	S Wt%	Zn Wt%
1	0.6	0.005	0.175	0.06
2	0.5	0.2	0.05	0.08
3	0.4	0.15	0.3	0.18
4	0.26	0.25	0.15	0.12
5	0.005	0.005	0.45	0.07
6	0.4	0.025	0.35	0.1
7	0.3	0.06	0.25	0.12
8	0.2	0.1	0.45	0.1
9	0.06	0.08	0.3	0.13
10	0.06	0.05	0.2	0.05
11	0.05	0.12	0.1	0.075
12	0.025	0.15	0.2	0.13
13	0.005	0.2	0.4	0.15
14	0.17	0.25	0.55	0.11
15	0.1	0.1	0.2	0.2
16	0.01	0.01	0.6	0.25
17	0	0	0	0

LUBRICATING OIL STANDARDS

Product Code		LOA11		
Product	Elements in Lubricating Oil			
Test Method	D4927, D6443, D6481			
Description	Similar to LOE17, but additive package concentration ranges Set of 11 Calibration Standards			
Elements	Ca, P, S, Zn			
Standard Number	Ca Wt%	P Wt%	S Wt%	Zn Wt%
1	0.500	1.000	0.500	0.500
2	2.000	1.000	2.500	2.000
3	2.000	1.250	1.000	1.500
4	5.000	0.000	0.000	0.000
5	4.000	0.500	1.250	0.500
6	2.500	0.750	4.000	1.000
7	3.500	0.000	1.500	1.000
8	0.500	2.000	5.000	1.000
9	1.000	0.750	2.000	1.500
10	2.500	1.200	3.000	0.500
11	0.000	0.000	0.000	0.000

LUBRICATING OIL STANDARDS

Product Code		LOE17A				
Product	Elements in Lubricating Oil					
Test Method	D4927, D6443, D6481					
Description	Same as LOE17, but also contains CI Set of 17 Calibration Standards					
Elements	Ca, Cl, P, S, Zn					
Standard Number	Ca Wt%	Cl Wt%	P Wt%	S Wt%	Zn Wt%	
1	0.6000	0.1000	0.0050	0.1750	0.0600	
2	0.5000	0.0000	0.2000	0.0500	0.0800	
3	0.4000	0.0100	0.1500	0.3000	0.1800	
4	0.2600	0.5000	0.2500	0.1500	0.1200	
5	0.0050	1.0000	0.0050	0.4500	0.0700	
6	0.4000	0.4000	0.0250	0.3500	0.1000	
7	0.3000	0.1000	0.0600	0.2500	0.1200	
8	0.2000	0.0100	0.1000	0.4500	0.1000	
9	0.0600	0.0500	0.0800	0.3000	0.1300	
10	0.0600	0.2000	0.0500	0.2000	0.0500	
11	0.0500	0.5000	0.1200	0.1000	0.0750	
12	0.0250	0.8000	0.1500	0.2000	0.1300	
13	0.0050	1.0000	0.2000	0.4000	0.1500	
14	0.1700	0.6000	0.2500	0.5500	0.1100	
15	0.1000	0.2000	0.1000	0.2000	0.2000	
16	0.0100	0.4000	0.0100	0.6000	0.2500	
17	0.0000	0.0000	0.0000	0.0000	0.0000	

LUBRICATING OIL STANDARDS

Product Code						LOE17AB
Product	Elements in Lubricating Oil					
Test Method	D4927, D6443, D6481					
Description	Same as LOE17, but also contains Ba and Cl Set of 17 Calibration Standards					
Elements	Ba, Ca, Cl, P, S, Zn					
Standard Number	Ba Wt%	Ca Wt%	Cl Wt%	P Wt%	S Wt%	Zn Wt%
1	0.1000	0.6000	0.1000	0.0050	0.1750	0.0600
2	0.1750	0.5000	0.0000	0.2000	0.0500	0.0800
3	0.0000	0.4000	0.0100	0.1500	0.3000	0.1800
4	0.0250	0.2600	0.5000	0.2500	0.1500	0.1200
5	0.1500	0.0050	1.0000	0.0050	0.4500	0.0700
6	0.0000	0.4000	0.4000	0.0250	0.3500	0.1000
7	0.2000	0.3000	0.1000	0.0600	0.2500	0.1200
8	0.0000	0.2000	0.0100	0.1000	0.4500	0.1000
9	0.1000	0.0600	0.0500	0.0800	0.3000	0.1300
10	0.0500	0.0600	0.2000	0.0500	0.2000	0.0500
11	0.0750	0.0500	0.5000	0.1200	0.1000	0.0750
12	0.0100	0.0250	0.8000	0.1500	0.2000	0.1300
13	0.0050	0.0050	1.0000	0.2000	0.4000	0.1500
14	0.0000	0.1700	0.6000	0.2500	0.5500	0.1100
15	0.0000	0.1000	0.2000	0.1000	0.2000	0.2000
16	0.0050	0.0100	0.4000	0.0100	0.6000	0.2500
17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LUBRICATING OIL STANDARDS

Product Code		LOE17B				
Product	Elements in Lubricating Oil					
Test Method	D4927, D6443, D6481					
Description	Same as LOE17, but also contains Ba Set of 17 Calibration Standards					
Elements	Ba, Ca, P, S, Zn					
Standard Number	Ba Wt%	Ca Wt%	P Wt%	S Wt%	Zn Wt%	
1	0.1000	0.6000	0.0050	0.1750	0.0600	
2	0.1750	0.5000	0.2000	0.0500	0.0800	
3	0.0000	0.4000	0.1500	0.3000	0.1800	
4	0.0250	0.2600	0.2500	0.1500	0.1200	
5	0.1500	0.0050	0.0050	0.4500	0.0700	
6	0.0000	0.4000	0.0250	0.3500	0.1000	
7	0.2000	0.3000	0.0600	0.2500	0.1200	
8	0.0000	0.2000	0.1000	0.4500	0.1000	
9	0.1000	0.0600	0.0800	0.3000	0.1300	
10	0.0500	0.0600	0.0500	0.2000	0.0500	
11	0.0750	0.0500	0.1200	0.1000	0.0750	
12	0.0100	0.0250	0.1500	0.2000	0.1300	
13	0.0050	0.0050	0.2000	0.4000	0.1500	
14	0.0000	0.1700	0.2500	0.5500	0.1100	
15	0.0000	0.1000	0.1000	0.2000	0.2000	
16	0.0050	0.0100	0.0100	0.6000	0.2500	
17	0.0000	0.0000	0.0000	0.0000	0.0000	

LUBRICATING OIL STANDARDS

Product Code		LOE17C			
Product	Elements in Lubricating Oil				
Test Method	D4927, D6443, D6481				
Description	Same as LOE17, but also contains Mg Set of 17 Calibration Standards				
Elements	Ca, Mg, P, S, Zn				
Standard Number	Ca Wt%	Mg Wt%	P Wt%	S Wt%	Zn Wt%
1	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.5000	0.1500	0.2000	0.0500	0.0800
3	0.4000	0.3500	0.1500	0.3000	0.1800
4	0.2600	0.2250	0.2500	0.1500	0.1200
5	0.0050	0.4500	0.0050	0.4500	0.0700
6	0.4000	0.5000	0.0250	0.3500	0.1000
7	0.3000	0.3250	0.0600	0.2500	0.1200
8	0.2000	0.2500	0.1000	0.4500	0.1000
9	0.0600	0.1000	0.0800	0.3000	0.1300
10	0.0600	0.4000	0.0500	0.2000	0.0500
11	0.0500	0.3000	0.1200	0.1000	0.0750
12	0.0250	0.2000	0.1500	0.2000	0.1300
13	0.0050	0.3750	0.2000	0.4000	0.1500
14	0.1700	0.1750	0.2500	0.5500	0.1100
15	0.1000	0.4250	0.1000	0.2000	0.2000
16	0.0100	0.2750	0.0100	0.6000	0.2500
17	0.6000	0.1000	0.0050	0.1750	0.0600

LUBRICATING OIL STANDARDS

Product Code						LOE17BC
Product	Elements in Lubricating Oil					
Test Method	D4927, D6443, D6481					
Description	Same as LOE17, but also contains Ba and Mg Set of 17 Calibration Standards					
Elements	Ba, Ca, Mg, P, S, Zn					
Standard Number	Ba Wt%	Ca Wt%	Mg Wt%	P Wt%	S Wt%	Zn Wt%
1	0.0250	0.6000	0.1000	0.0050	0.1750	0.0600
2	0.0000	0.5000	0.1500	0.2000	0.0500	0.0800
3	0.1000	0.4000	0.3500	0.1500	0.3000	0.1800
4	0.1750	0.2600	0.2250	0.2500	0.1500	0.1200
5	0.1500	0.0050	0.0000	0.0050	0.4500	0.0700
6	0.0000	0.4000	0.5000	0.0250	0.3500	0.1000
7	0.1000	0.3000	0.3250	0.0600	0.2500	0.1200
8	0.2000	0.2000	0.2500	0.1000	0.4500	0.1000
9	0.0500	0.0600	0.1000	0.0800	0.3000	0.1300
10	0.0750	0.0600	0.4000	0.0500	0.2000	0.0500
11	0.0100	0.0500	0.3000	0.1200	0.1000	0.0750
12	0.0000	0.0250	0.2000	0.1500	0.2000	0.1300
13	0.1750	0.0050	0.3750	0.2000	0.4000	0.1500
14	0.0050	0.1700	0.1750	0.2500	0.5500	0.1100
15	0.0000	0.1000	0.4250	0.1000	0.2000	0.2000
16	0.0050	0.0100	0.2750	0.0100	0.6000	0.2500
17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LUBRICATING OIL STANDARDS

Product Code								LOE22
Product	Elements in Lubricating Oil							
Test Method	D4927, D6443, D6481, D7751							
Description	Complete set for ASTM method D6443 Set of 22 Calibration Standards							
Elements	Ca, Cl, Cu, Mg, P, S, Zn							
Standard Number	Ca Wt%	Cl Wt%	Cu Wt%	Mg Wt%	P Wt%	S Wt%	Zn Wt%	
1	0.3000	0.0800	0.0300	0.0600	0.0600	0.2750	0.0600	
2	0.2500	0.1000	0.0000	0.0100	0.1500	0.0000	0.1500	
3	0.5000	0.0000	0.0350	0.1600	0.1500	0.0000	0.0200	
4	0.3500	0.0100	0.0000	0.1200	0.0800	0.2000	0.0000	
5	0.1100	0.0000	0.0150	0.1000	0.1000	0.3000	0.0500	
6	0.2000	0.1000	0.0000	0.2000	0.0500	0.2500	0.1500	
7	0.0000	0.0500	0.0250	0.0000	0.0000	0.4500	0.0200	
8	0.1500	0.0300	0.0000	0.1000	0.0300	0.4000	0.0400	
9	0.2500	0.1500	0.0100	0.1600	0.0000	0.3500	0.0800	
10	0.1100	0.1500	0.0400	0.0050	0.0300	0.7500	0.1500	
11	0.2600	0.0500	0.0000	0.0000	0.0000	0.7500	0.0000	
12	0.2000	0.0000	0.0050	0.1400	0.0800	0.5000	0.0800	
13	0.0000	0.0000	0.0050	0.0200	0.0200	0.2000	0.0200	
14	0.0700	0.1500	0.0200	0.0800	0.1400	0.6500	0.1500	
15	0.0500	0.0000	0.0000	0.0000	0.1500	0.0000	0.0000	
16	0.4000	0.0000	0.0010	0.0800	0.0000	0.5000	0.0200	
17	0.1800	0.0200	0.0200	0.0000	0.0200	0.6000	0.0600	
18	0.4000	0.0100	0.0010	0.0100	0.0200	0.0000	0.0000	
19	0.0100	0.0200	0.0400	0.0100	0.0200	0.2000	0.1000	
20	0.0500	0.0050	0.0500	0.0000	0.0080	0.0000	0.1200	
21	0.2000	0.0500	0.0200	0.0800	0.0500	0.2750	0.0500	
22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

LUBRICATING OIL STANDARDS

Product Code								LOE23
Product		Lubricating Oil Elements: Ba, Ca, Cl, Cu, Mg, P, S, Zn						
Test Method		D4927, D6443, D6481						
Description		Same as LOE22, but contains Ba, Set of 23 Calibration Standards						
Standard Number	Ba Wt%	Ca Wt%	Cl Wt%	Cu Wt%	Mg Wt%	P Wt%	S Wt%	Zn Wt%
1	0.1000	0.3000	0.0800	0.0300	0.0600	0.0600	0.2750	0.0600
2	0.1750	0.2500	0.1000	0.0000	0.0100	0.1500	0.0000	0.1500
3	0.0400	0.5000	0.0000	0.0350	0.1600	0.1500	0.0000	0.0200
4	0.0200	0.3500	0.0100	0.0000	0.1200	0.0800	0.2000	0.0000
5	0.1500	0.1100	0.0000	0.0150	0.1000	0.1000	0.3000	0.0500
6	0.0000	0.2000	0.1000	0.0000	0.2000	0.0500	0.2500	0.1500
7	0.2000	0.0000	0.0500	0.0250	0.0000	0.0000	0.4500	0.0200
8	0.0000	0.1500	0.0300	0.0000	0.1000	0.0300	0.4000	0.0400
9	0.0000	0.2500	0.1500	0.0100	0.1600	0.0000	0.3500	0.0800
10	0.0000	0.1100	0.1500	0.0400	0.0050	0.0300	0.7500	0.1500
11	0.1000	0.2600	0.0500	0.0000	0.0000	0.0000	0.7500	0.0000
12	0.0500	0.2000	0.0000	0.0050	0.1400	0.0800	0.5000	0.0800
13	0.0000	0.0000	0.0000	0.0050	0.0200	0.0200	0.2000	0.0200
14	0.0800	0.0700	0.1500	0.0200	0.0800	0.1400	0.6500	0.1500
15	0.0100	0.0500	0.0000	0.0000	0.0000	0.1500	0.0000	0.0000
16	0.0000	0.4000	0.0000	0.0010	0.0800	0.0000	0.5000	0.0200
17	0.0000	0.1800	0.0200	0.0200	0.0000	0.0200	0.6000	0.0600
18	0.0000	0.4000	0.0100	0.0010	0.0100	0.0200	0.0000	0.0000
19	0.1500	0.0100	0.0200	0.0400	0.0100	0.0200	0.2000	0.1000
20	0.0050	0.0500	0.0050	0.0500	0.0000	0.0080	0.0000	0.1200
21	0.1000	0.2000	0.0500	0.0200	0.0800	0.0500	0.2750	0.0500
22	0.1200	0.2000	0.0000	0.0000	0.0000	0.0000	0.7500	0.0000
23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Number		Description						
DC		Drift Correction Standard						
Ba Wt%	Ca Wt%	Cl Wt%	Cu Wt%	Mg Wt%	P Wt%	S Wt%	Zn Wt%	
0.1000	0.2000	0.0500	0.0200	0.0800	0.0500	0.2750	0.0500	
Standard Number		Description						
QC		Quality Check Standard						
Ba Wt%	Ca Wt%	Cl Wt%	Cu Wt%	Mg Wt%	P Wt%	S Wt%	Zn Wt%	
0.0800	0.0700	0.1500	0.0200	0.0800	0.1400	0.6500	0.1500	

LUBRICATING OIL STANDARDS

Product Code		LOEASTM1			
Product	Elements in Lubricating Oil				
Test Method	D4927, D6443, D6481				
Description	Same as LOE 17, but slightly different concentration ranges Set of 17 Calibration Standards				
Elements	Ca, P, S, Zn				
Standard Number	Ba Wt%	Ca Wt%	S Wt%	Zn Wt%	
1	0.0050	0.0050	0.0500	0.0500	
2	0.6000	0.0000	0.0000	0.0000	
3	0.0000	0.3000	0.0000	0.0000	
4	1.0000	0.0000	1.0000	0.0000	
5	0.0000	0.0000	0.0000	0.3000	
6	0.0050	0.2500	0.8000	0.3000	
7	0.5000	0.1500	0.5000	0.1500	
8	0.0100	0.2000	0.1000	0.2500	
9	0.0500	0.0100	0.4000	0.0750	
10	0.1000	0.1500	0.2000	0.2000	
11	0.2000	0.2000	0.8000	0.1000	
12	0.4000	0.0050	0.8000	0.3000	
13	0.6000	0.1000	0.5000	0.0500	
14	0.8000	0.0100	0.0500	0.1000	
15	1.0000	0.3000	1.0000	0.1500	
16	0.4000	0.0500	0.6000	0.2500	
17	0.0000	0.0000	0.0000	0.0000	

LUBRICATING OIL STANDARDS

Product Code								LOEASTM2
Product	Elements in Lubricating Oil							
Test Method	D4927, D6443, D6481							
Description	Same as LOE10, but also contains Ba Set of 10 Calibration Standards							
Elements	Ba, Ca, Cl, Cu, Mg, P, S, Zn							
Standard Number	Ba Wt%	Ca Wt%	Cl Wt%	Cu Wt%	Mg Wt%	P Wt%	S Wt%	Zn Wt%
1	0.0200	0.0200	0.0300	0.0100	0.2000	0.2500	1.0000	0.0200
2	0.2500	0.0200	0.0200	0.0500	0.2000	0.0200	0.0200	0.2500
3	0.0200	0.0200	0.2000	0.0100	0.0400	0.2500	0.1500	0.2500
4	0.2500	0.0200	0.2000	0.0500	0.0400	0.0200	1.0000	0.0200
5	0.0200	0.4000	0.0200	0.0100	0.0400	0.0200	1.0000	0.2500
6	0.2500	0.4000	0.0200	0.0500	0.0400	0.2500	0.0200	0.0200
7	0.0200	0.4000	0.2000	0.0100	0.2000	0.0200	0.0200	0.0500
8	0.2500	0.4000	0.2000	0.0500	0.2000	0.2500	1.0000	0.2500
9	0.1300	0.2000	0.1000	0.0250	0.0800	0.1500	0.5000	0.1000
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LUBRICATING OIL STANDARDS

Product Code		LOEASTM4				
Product	Elements in Lubricating Oil					
Test Method	D4927, D6443, D6481					
Description	Same as LOEASTM1, but also contains Mg, Set of 17 Calibration Standards					
Elements	Ca, Mg, P, S, Zn					
Standard Number	Ca Wt%	Mg Wt%	P Wt%	S Wt%	Zn Wt%	
1	0.0050	0.1000	0.0050	0.0500	0.0500	
2	0.6000	0.1500	0.0000	0.0000	0.0000	
3	0.0000	0.3500	0.3000	0.0000	0.0000	
4	1.0000	0.2250	0.0000	1.0000	0.0000	
5	0.0000	0.4500	0.0000	0.0000	0.3000	
6	0.0050	0.5000	0.2500	0.8000	0.3000	
7	0.5000	0.3250	0.1500	0.5000	0.1500	
8	0.0100	0.2500	0.2000	0.1000	0.2500	
9	0.0500	0.0500	0.0100	0.4000	0.0750	
10	0.1000	0.4000	0.1500	0.2000	0.2000	
11	0.2000	0.3000	0.2000	0.8000	0.1000	
12	0.4000	0.2000	0.0050	0.8000	0.3000	
13	0.6000	0.3750	0.1000	0.5000	0.0500	
14	0.8000	0.1750	0.0100	0.0500	0.1000	
15	1.0000	0.4250	0.3000	1.0000	0.1500	
16	0.4000	0.2750	0.0500	0.6000	0.2500	
17	0.0000	0.0000	0.0000	0.0000	0.0000	

LUBRICATING OIL STANDARDS

Product Code										EL011-10E-IP
Product	Elements in Lubricating Oil									
Test Method	IP 501									
Description	Elements in Lubricating Oil for Residual Oil Analysis by WDXRF									
Elements	Al, Ca, Fe, Na, Ni, P, S, Si, V, Zn									
Standard Number	Al Wt%	Ca Wt%	Fe Wt%	Na Wt%	Ni Wt%	P Wt%	S Wt%	Si Wt%	V Wt%	Zn Wt%
1	0.0005	0.0010	0.0250	0.0010	0.0050	0.0020	5.0000	0.0050	0.0075	0.0010
2	0.0100	0.0075	0.0100	0.0000	0.0005	0.0005	2.0000	0.0100	0.0300	0.0002
3	0.0010	0.0100	0.0000	0.0020	0.0000	0.0010	0.5000	0.0000	0.0350	0.0050
4	0.0025	0.0030	0.0050	0.0200	0.0075	0.0050	4.0000	0.0250	0.0050	0.0040
5	0.0075	0.0040	0.0150	0.0005	0.0100	0.0075	0.3000	0.0200	0.0000	0.0015
6	0.0050	0.0000	0.0075	0.0015	0.0040	0.0100	1.0000	0.0030	0.0100	0.0075
7	0.0150	0.0050	0.0200	0.0100	0.0020	0.0040	0.7250	0.0150	0.0010	0.0000
8	0.0000	0.0005	0.0010	0.0000	0.0010	0.0000	0.1000	0.0010	0.0200	0.0020
9	0.0025	0.0020	0.0005	0.0050	0.0150	0.0025	2.5000	0.0050	0.0005	0.0005
10	0.0050	0.0150	0.0025	0.0150	0.0025	0.0015	3.0000	0.0025	0.0025	0.0010
11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STABILIZED ORGANOMETALLIC SOLUTIONS

LOMS: Concentrated Liquid Organometallic Solutions (Stabilized, and Ready for Use.)

These concentrated solutions are stabilized with ASI Standards' proprietary chelation and stabilization solutions. These Organometallic solutions can also be used to prepare single-element standards for plasma emission (ICP or DCP), or atomic absorption (AA). The starting materials for the standards are HIGH QUALITY REAGENTS and have been certified against NIST SRMs whenever available.

Products below are the starting materials used in our multi-element sets

DOES NOT CONTAIN PHOSPHORUS OR SULFUR, unless otherwise noted.

TRACE IMPURITIES ARE DOCUMENTED ON THE CERTIFICATE OF ANALYSIS.

Element	Product Code	Conc. Wt%
Aluminum	LOMS-Al3.0	3.00
Antimony	LOMS-Sb2.0	2.00
Arsenic	LOMS-As2.0	2.00
Barium	LOMS-Ba12.5	12.50
Cadmium	LOMS-Cd	10.00
Calcium	LOMS-Ca5.0	5.00
Cerium	LOMS-Ce5.0	5.00
Chromium	LOMS-Cr3.50	3.50
Cobalt	LOMS-Co7.5	7.50
Copper	LOMS-Cu6.0	6.00
Iron	LOMS-Fe4.0	4.00
Lead	LOMS-Pb20.0	20.00
Lithium	LOMS-Li1.5	1.50
Magnesium	LOMS-Mg3.0	3.00
Manganese	LOMS-Mn6.0	6.00
Molybdenum	LOMS-Mo5.0	5.00
Nickel	LOMS-Ni5.0	5.00
Phosphorus	LOMS-P5.0	5.00
Potassium	LOMS-K7.5	7.50
Selenium	LOMS-Se3.5	3.50
Silicon	LOMS-Si7.5	7.50
Silver	LOMS-Ag1.0	1.00
Sodium	LOMS-Na2.5	2.50
Strontium	LOMS-Sr10.0	10.00
Thallium	LOMS-Tl5.0	5.00
Tin	LOMS-Sn7.5	7.50
Titanium	LOMS-Ti5.0	5.00
Vanadium	LOMS-V4.0	4.00
Yttrium	LOMS-Y2.5	2.50
Zinc	LOMS-Zn6.0	6.00
Zirconium	LOMSZr	5.00

STABILIZED ORGANOMETALLIC SOLUTIONS

ORGM's: Dilute Single-Element Organometallic Oil Standards

These standards are sulfur-free*, organometallic standards for X-ray fluorescence (XRF), plasma emissions (ICP or DCP), or atomic absorption (AA). They are also stabilized with ASI Standards' proprietary chelation and stabilization solutions.

* unless otherwise noted

ORGM'S DILUTE SINGLE-ELEMENT ORGANOMETALLIC OIL STANDARDS

Element	Product Code	Conc. Wt%
Aluminum	ORGM-Al0.1	0.1000
	ORGM-Al0.5	0.5000
Antimony	ORGM-Sb0.1	0.1000
	ORGM-Sb0.5	0.5000
Arsenic	ORGM-As0.1	0.1000
	ORGM-As0.5	0.5000
Barium	ORGM-Ba0.1	0.1000
	ORGM-Ba0.5	0.5000
Beryllium	ORGM-Be0.1	0.1000
	ORGM-Be0.5	0.5000
Boron	ORGM-B0.1	0.1000
	ORGM-B0.5	0.5000
Cadmium	ORGM-Cd0.1	0.1000
	ORGM-Cd0.5	0.5000
Calcium	ORGM-Ca0.1	0.1000
	ORGM-Ca0.5	0.5000
Cerium	ORGM-Ce0.1	0.1000
	ORGM-Ce0.5	0.5000
Chromium	ORGM-Cr0.1	0.1000
	ORGM-Cr0.5	0.5000
Cobalt	ORGM-Co0.1	0.1000
	ORGM-Co0.5	0.5000
Copper	ORGM-Cu0.1	0.1000
	ORGM-Cu0.5	0.5000
Gallium	ORGM-Ga0.1	0.1000
	ORGM-Ga0.5	0.5000
Gold	ORGM-Au0.1	0.1000
Iron	ORGM-Fe0.1	0.1000
	ORGM-Fe0.5	0.5000
Lead	ORGM-Pb0.1	0.1000
	ORGM-Pb0.5	0.5000
Lithium	ORGM-Li0.1	0.1000
	ORGM-Li0.5	0.5000
Magnesium	ORGM-Mg0.1	0.1000
	ORGM-Mg0.5	0.5000

STABILIZED ORGANOMETALLIC SOLUTIONS

ORGM'S DILUTE SINGLE-ELEMENT ORGANOMETALLIC OIL STANDARDS

Element	Product Code	Conc. Wt%
Manganese	ORGM-Mn0.1	0.1000
	ORGM-Mn0.5	0.5000
Mercury	ORGM-Hg0.1	0.1000
	ORGM-Hg0.5	0.5000
Molybdenum	ORGM-Mo0.1	0.1000
	ORGM-Mo0.5	0.5000
Nickel	ORGM-Ni0.1	0.1000
	ORGM-Ni0.5	0.5000
Palladium	ORGM-Pd0.1	0.1000
	ORGM-Pd0.5	0.5000
Phosphorous	ORGM-P0.1	0.1000
	ORGM-P0.5	0.5000
Platinum	ORGM-Pt0.1	0.1000
	ORGM-Pt0.5	0.5000
Potassium	ORGM-K0.1	0.1000
	ORGM-K0.5	0.5000
Selenium	ORGM-Se0.1	0.1000
	ORGM-Se0.5	0.5000
Silicon	ORGM-Si0.1	0.1000
	ORGM-Si0.5	0.5000
Silver	ORGM-Ag0.1	0.1000
	ORGM-Ag0.5	0.5000
Sodium	ORGM-Na0.1	0.1000
	ORGM-Na0.5	0.5000
Strontium	ORGM-Sr0.1	0.1000
	ORGM-Sr0.5	0.5000
Thallium	ORGM-Tl0.1	0.1000
	ORGM-Tl0.5	0.5000
Tin	ORGM-Sn0.1	0.1000
	ORGM-Sn0.5	0.5000
Titanium	ORGM-Ti0.1	0.1000
	ORGM-Ti0.5	0.5000
Vanadium	ORGM-V0.1	0.1000
	ORGM-V0.5	0.5000
Yttrium	ORGM-Y0.1	0.1000
	ORGM-Y0.5	0.5000
Zinc	ORGM-Zn0.1	0.1000
	ORGM-Zn0.5	0.5000
Zirconium	ORGM-Zr0.1	0.1000
	ORGM-Zr0.5	0.5000

STABILIZED ORGANOMETALLIC SOLUTIONS

INTERNAL STANDARDS

Product Code		BIIS
Product	Bismuth Internal Standards	
Test Method	D5059 - Lead in Gasoline by X-Ray	
Description	Pb Analysis; Conc. 0.793g Bi/L, 1 per set	

Product Code		KIS
Product	Potassium Ionization Suppressant	
Test Method	D4628 - Elements in Lube-Oils by AA	
Description	1% Potassium in Mineral Oil 1 per set	

Product Code		MNIS
Product	Manganese Internal Standard	
Test Method	ISO 14597 - Elements in Petroleum Products by X-Ray	
Description	Ni and V Analysis; Conc. 0.05%, 1 per set	

Product Code		ZRIS-1
Product	Zirconium Internal Standard, Low Range	
Test Method	ISO 14596 - Sulfur in Petroleum Products by X-Ray	
Description	1% Low Range, Sulfur Analysis, 1 per set	

Product Code		ZRIS-16
Product	Zirconium Internal Standard, High Range	
Test Method	ISO 14596 - Sulfur in Petroleum Products by X-Ray	
Description	16% High Range, Sulfur Analysis, 1 per set	

Product Code		ZRIS-18
Product	Zirconium Internal Standard, High Range	
Test Method	ISO 14596 - Sulfur in Petroleum Products by X-Ray	
Description	18% High Range, Sulfur Analysis, 1 per set	

MULTI-ELEMENT WEAR METALS STANDARDS FOR ICP, RDE AND OTHER TECHNIQUES

Sulfur-Free Multi-Element Wear Metals Standards

Sulfur-free multi-element wear metals in 20 cSt lubricating oil for analysis by XRF, AA, ICP or AE for applications for which sulfur interference is undesirable. These standards are prepared with sulfur-free ORGANOMETALLICS and do not contain sulfonates.

Suitable for ASTM D4628, D4927, D4951, D5056, D5185, D6443, D6481.

WM-11 Standards

Elements: Al, Cr, Cu, Fe, Mg, Na, Ni, Pb, Si, Sn, Ti

Product Code	Description
WM11-10	10 mg/kg
WM11-30	30 mg/kg
WM11-50	50 mg/kg
WM11-100	100 mg/kg
WM11-300	300 mg/kg
WM11-500	500 mg/kg
WM11-750	750 mg/kg
WM11-900	900 mg/kg

WM-12 Standards

Elements: Ag, Al, Cr, Cu, Fe, Mg, Na, Ni, Pb, Si, Sn, Ti

Product Code	Description
WM12-10	10 mg/kg
WM12-30	30 mg/kg
WM12-50	50 mg/kg
WM12-100	100 mg/kg
WM12-300	300 mg/kg
WM12-500	500 mg/kg
WM12-750	750 mg/kg
WM12-900	900 mg/kg

SULFUR-FREE MULTI-ELEMENT WEAR METALS STANDARDS

WM-20 Standards

Elements: Al, B, Ba, Ca, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Na, Ni, Pb, P, Si, Sn, Ti, V, Zn

Product Code	Description
WM20-10	10 mg/kg
WM20-30	30 mg/kg
WM20-50	50 mg/kg
WM20-100	100 mg/kg
WM20-300	300 mg/kg
WM20-500	500 mg/kg
WM20-750	750 mg/kg
WM20-900	900 mg/kg

WM-21 Standards

Elements: Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, Zn

Product Code	Description
WM21-10	10 mg/kg
WM21-30	30 mg/kg
WM21-50	50 mg/kg
WM21-100	100 mg/kg
WM21-300	300 mg/kg
WM21-500	500 mg/kg
WM21-750	750 mg/kg
WM21-900	900 mg/kg

SULFONATED WEAR METALS STANDARDS

Sulfonated multi-element wear metals in 20 cSt lubricating oil for analysis by XRF, AA, ICP or AE for applications for which sulfur interference is desirable. Test Methods D4628, D4651, D5056, D5185

Table: A-21 Standards

Elements: Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, and Zn in Hydrocarbon Oil

Product Code	Description
A21-10	10 mg/kg
A21-30	30 mg/kg
A21-50	50 mg/kg
A21-100	100 mg/kg
A21-300	300 mg/kg
A21-500	500 mg/kg
A21-900	900 mg/kg

Table: A-22 Standards

Elements: Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, and Zn in Hydrocarbon Oil

Product Code	Description
A22-10	10 mg/kg
A22-30	30 mg/kg
A22-50	50 mg/kg
A22-100	100 mg/kg
A22-300	300 mg/kg
A22-500	500 mg/kg
A22-900	900 mg/kg

Table: A-23 Standards

Elements: Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Si, Sn, Ti, V, and Zn in Hydrocarbon Oil

Product Code	Description
A23-10	10 mg/kg
A23-30	30 mg/kg
A23-50	50 mg/kg
A23-100	100 mg/kg
A23-300	300 mg/kg
A23-500	500 mg/kg
A23-900	900 mg/kg

ASI Standards



REAGENTS

Product Code		DB
Product	Dibenzothiophene, 17.13% Sulfur (Solid)	

Product Code		DBS
Product	Di-N-Butyl Sulfide Certified Reagent, 21.9 wt% Sulfur	

Product Code		TNA
Product	Benzothiophene (Thianaphthene), 23.4% Sulfur	

STABILIZATION SOLUTIONS

For chelating and solubilizing organometallic solids and solutions for single-element and multi-element standards

Product Code		SSA
Product	Stabilization Solution A	

Product Code		SSB
Product	Stabilization Solution B	

Product Code		SSC
Product	Stabilization Solution C	

Product Code		SSD
Product	Stabilization Solution D	

Product Code		SSE
Product	Stabilization Solution E	

Product Code		SSF
Product	Stabilization Solution F	

MATRIX OILS

Product Code		GM
Product	Gasoline Matrix	
Description	Conventional Gasoline with Low level of Sulfur Not Oxygenated	

Product Code		HVMO75
Product	High Viscosity Mineral Oil	
Description	Hydrotreated 350N <1.0 mg/kg Sulfur 75 cSt	

Product Code		MVMO25
Product	Medium Viscosity Mineral Oil	
Description	Hydrotreated 100N <1 mg/kg Sulfur 25 cSt	

Product Code		LVMO4.5
Product	Low Viscosity Mineral Oil	
Description	White Mineral Oil <1 mg/kg Sulfur 4.5 cSt	

Product Code		RFO
Product	Synthetic Residual Fuel Oil	
Description	Residual Fuel Oil diluted with 100N; Sulfur concentration approximately 0.25 wt%	

Product Code		SDFM
Product	Synthetic Diesel Fuel	
Description	Mixture of aromatic solvent and low viscosity mineral oil <1mg/kg Sulfur	

Product Code		TLM
Product	Certified Toluene Matrix	
Description	Toluene certified for Nitrogen and Sulfur. The values will appear on the Certificate of Analysis	

Product Code		ISOM
Product	Isooctane Matrix	
Description	Isooctane certified for Nitrogen and Sulfur. The values will appear on the Certificate of Analysis	

POLYMER STANDARDS



RoHS/WEEE Compliant Standards for XRF

RoHS/WEEE compliant polymer standards for the analysis of materials in polyethylene (PE) or polvinylchloride (PVC)

Calibration Standards – Polyethylene (PE)

Polyethylene (PE) standards in disc(D) or powder(P) form. *One quality control sample is included with the 9 standard set only.*

Polymer Additive Elements

POLYMER STANDARDS

Product Code					
PL(PE)9-5E(D)					
PL(PE)9-5E(P)					
Standard Number	Br Wt%	Cd Wt%	Cr Wt%	Hg Wt%	Pb Wt%
1	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0025	0.0025	0.0050	0.0100	0.1000
3	0.0400	0.0100	0.0750	0.0075	0.0250
4	0.0100	0.0125	0.1250	0.0500	0.0050
5	0.0250	0.0075	0.1000	0.0250	0.1250
6	0.0500	0.0010	0.0650	0.0800	0.0750
7	0.0200	0.0005	0.0250	0.1000	0.0100
8	0.0300	0.0050	0.0500	0.0030	0.0500
9	0.0050	0.0150	0.0100	0.1200	0.0350
10	0.0050	0.0150	0.0025	0.0150	0.0010
11	0.0000	0.0000	0.0000	0.0000	0.0000

Additional QC Samples – Polyethylene (PE)

Product Code					
Additional QC Samples for PE Analysis PL(PE)9-5E(D)QC					
Additional QC Samples for PE Analysis PL(PE)9-5E(P)QC					
Standard Number	Br Wt%	Cd Wt%	Cr Wt%	Hg Wt%	Pb Wt%
1	0.0250	0.0050	0.0500	0.0500	0.0500

Check Standards – Polyethylene (PE)

Polyethylene (PE) standards in disc (D) or powder (P) form.

Product Code					
PL(PE)3-5E(D)					
PL(PE)3-5E(P)					
Standard Number	Br Wt%	Cd Wt%	Cr Wt%	Hg Wt%	Pb Wt%
1	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0250	0.0050	0.0500	0.0500	0.0500
3	0.0500	0.0100	0.1000	0.1000	0.1000

POLYMER STANDARDS

Calibration Standards – Polyvinyl Chloride (PVC)

Polyvinyl Chloride (PVC) standards in disc(D) or powder(P) form. PVC's also include some Ca and Cl in each sample. One quality control sample is included with the 9 standard set only.

Product Code							
ROHS-PVC9-5ED-31							
Standard Number	Br Wt%	Cd Wt%	Cr Wt%	Hg Wt%	Pb Wt%	Ca Wt%	Cl Wt%
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	40.0000
2	0.0025	0.0025	0.0050	0.0100	0.1000	0.0500	35.0000
3	0.0400	0.0100	0.0750	0.0075	0.0250	1.5000	15.0000
4	0.0100	0.0125	0.1250	0.0500	0.0050	0.2500	40.0000
5	0.0250	0.0075	0.1000	0.0250	0.1250	0.0000	35.0000
6	0.0500	0.0010	0.0650	0.0800	0.0750	3.0000	10.0000
7	0.0200	0.0005	0.0250	0.1000	0.0100	2.0000	40.0000
8	0.0300	0.0050	0.0500	0.0030	0.0500	0.0000	12.5000
9	0.0050	0.0150	0.0100	0.1200	0.0350	0.0000	35.0000

Additional QC Samples – Polyvinyl Chloride (PVC)

Product Code					
Additional QC Samples for PVC Analysis, PL(PVC)9-5E(D)QC					
Additional QC Samples for PVC Analysis, PL(PVC)9-5E(P)QC					
Standard Number	Br Wt%	Cd Wt%	Cr Wt%	Hg Wt%	Pb Wt%
1	0.0250	0.0050	0.0500	0.0500	0.0500

Check Standards – Polyvinyl Chloride (PVC)

Polyvinyl chloride (PVC) standards in disc (D) or powder (P) form.

Product Code					
PL(PVC)3-5E(D)					
PL(PVC)3-5E(P)					
Standard Number	Br Wt%	Cd Wt%	Cr Wt%	Hg Wt%	Pb Wt%
1	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0250	0.0050	0.0500	0.0500	0.0500
3	0.0500	0.0100	0.1000	0.1000	0.1000

POLYMER STANDARDS

Additive Package

PE Additive Package includes 5 Standards with 10 elements each. The elements included are: Al, Ca, F, Mg, Na, P, S, Si, Ti and Zn.

Product Code										
PL(PE)5-10E(D)										
Standard Number	Al mg/kg	Ca mg/kg	F mg/kg	Mg mg/kg	Na mg/kg	P mg/kg	S mg/kg	Si mg/kg	Ti mg/kg	Zn mg/kg
1	0	0	0	0	0	0	0	0	0	0
2	25	100	250	25	50	100	50	750	20	10
3	200	50	75	250	10	25	25	25	100	200
4	400	20	150	550	100	5	5	125	5	50
5	75	200	25	100	200	50	200	300	50	100

For additives and trace elements in polyolefins. Includes all elements in PL(PE)5-10E(D) plus Cr (11 elements).
Concentrations based on Table 1 of Test Method D6247.

Product Code										
PL(PVC)3-5E(D)										

POLYMER STANDARDS

Nitrogen In Solid Polymer For Quality Control

Finely divided synthetic polymer solid that contains a certified amount of nitrogen. Used for calibrating instruments for the analysis of nitrogen in all types of polymers and other solids that are completely combustible.

Concentration Range: 0-3.0 wt% Nitrogen

Product Code

NP

Sulfur In Solid Polymer For Quality Control

Finely divided synthetic polymer solid that contains a certified amount of sulfur. Used for calibrating instruments for the analysis of sulfur in all types of polymers and other solids that are completely combustible.

Concentration Range: 0-5.0 wt% Sulfur

Product Code

SP

Nitrogen And Sulfur In Solid Polymer For Quality Control

Finely divided synthetic polymer solid that contains a certified amount of nitrogen and sulfur. Used for calibrating instruments for the analysis of nitrogen and sulfur in all types of polymers and other solids that are completely combustible. Concentration Range: 0-1.0 wt% Nitrogen and Sulfur

Product Code

NSP





ASI Standard
Elements in Lubricants

Calibration Standard
 Code No: LOE10
 Lot No: 111516F0-6

Standard No.: 8
 Elements: Ca, Cl, Cu, Mg, P, S
 Expiration Date: November 21, 2017
 Content: (Min) 100 ml

ASI Standard
Elements in Lubricants

Calibration Standard
 Code No: LOE10
 Lot No: 111516F0-6

Standard No.: 7
 Elements: Ca, Cl
 Expiration Date: November 21, 2017
 Content: (Min) 100 ml



Calibration Standard
 Code No: SMO10
 Lot No: 010617BL-1

Standard No.: 1
 Conc.: 0.0000 wt%

Expiration Date: January 7, 2017
 Content: (Min) 100 ml

ASI Standard
Sulfur in Mineral Oil

Calibration Standard
 Code No: SMO10
 Lot No: 010617BL-1

Standard No.: 1
 Conc.: 0.0000 wt%

Expiration Date: January 7, 2017
 Content: (Min) 100 ml

ASI Standard
Sulfur in Mineral Oil

Calibration Standard
 Code No: SMO10
 Lot No: 010617BL-5

Standard No.: 5
 Conc.: 0.0200 wt%

Expiration Date: January 7, 2017
 Content: (Min) 100 ml

ASI Standard
Sulfur in Mineral Oil

Calibration Standard
 Code No: SMO10
 Lot No: 010617BL-5

Standard No.: 5
 Conc.: 0.0200 wt%

Expiration Date: January 7, 2017
 Content: (Min) 100 ml

LEAD STANDARDS IN PAINT COATINGS ON POLYESTER FILM

2 mil thickness polyester squares

1.6 mil (40 microns) paint coating thickness

Developed for ASTM WK 21957 "Standard Test Method for Identification and Quantification of Lead in Paint and Similar Coating Materials Using EDXRF" and "New Test Method for Detection and Quantification of Lead in Paint Layers and Similar Coatings or in Substrates by EDXRF using Multiple Monochromatic Excitation Beams"

Product Code		Pb-2mPEF7
Product	Lead (Pb) in Alkyd paint coating on Polyester Film	
Description	7 standards cut as squares per set. Conc: 0.00, 0.375, 0.75, 2.00, 5.50, 12.00 $\mu\text{g}/\text{cm}^2$ QC Standard Conc: 0.80 $\mu\text{g}/\text{cm}^2$	

Product Code		Pb-2mPEFQC
Product	Lead (Pb) in Alkyd paint coating on Polyester Film	
Description	QC Standard only - one standard Conc. 0.80 $\mu\text{g}/\text{cm}^2$	

Product Code		PbBlock1
Product	Lead (Pb) in paint on polyester film on wooden block for handheld XRF analysis	
Description	Concentration 1.0 mg/cm^2	



TITRATION STANDARDS



Hydrogen Sulfide and Mercaptan Standards for UOP 163

Ampoules for titration analysis. 20 mg/kg H₂S and 40 mg/kg Mercaptan

Product Code		H2SRSH-20
Product	20 ml	

Product Code		H2SRSH-2
Product	2 ml	

Bromine Index for ASTM D2710

Product Code		Br13	Bromine Index
Product	Bromine Index		10
			100
			1000
Description	Bromine Index in Toluene, 3 standards per set	200 ml each	

TITRATION STANDARDS

Bromine Index for ASTM D2710

Product Code		BrNo2	Bromine Number
Product	Bromine Number		2
			10
Description	Bromine Number in Toluene 2 standards per set 200 ml each		

Total Acid Number for ASTM D664

Product Code		TAN2	Acid Number
Product	Total Acid Number		2
			5
Description	Total Acid Number in Mineral Oil 2 standards per set 500 ml each		

Base Number for ASTM D2896 and D5984

Total Base Number standards

Product Code		BNo3	Base Number
Product	Total Base Number standards		2
			5
			10
Description	Total Base Number in Mineral Oil 3 standards per set 500 ml each		

Nitrogen Bases In Hydrocarbons

Product Code		N-UOP269
Product	Organic Nitrogen in Petroleum Distillates	
Description	Organic Nitrogen in Petroleum Distillates Conc.: 0.01, 0.05, 0.10, 1.0 wt% 4 standards per set, 200 ml each	

PHYSICAL TESTING STANDARDS

ASTM D97 Pour Point Standards

Pour Points are determined by consensus analysis and are packaged in 250 ml bottles.

Product Code	Approx. Pour Point
PP5	-5 °C
PP10	-10 °C
PP15	-15 °C
PP20	-20 °C
PP40	-40 °C
PP50	-50 °C

ASTM D2386 Freezing Point Standards

Freezing Points are verified by consensus analysis and are packaged in 250 ml amber bottles

Product Code	Nominal Freeze Point
FPZ45	-45 °C
FPZ50	-50 °C

ASTM D2500 Cloud Point Standards

Cloud Points are determined by consensus analysis and are packaged in 250 ml bottles.

Product Code	Approx. Cloud Point
CP2	-2 °C
CP5	-5 °C
CP10	-10 °C
CP15	-15 °C
CP20	-20 °C

PHYSICAL TESTING STANDARDS

ASTM D445 Viscosity Standards

Oils are tested in accordance with ASTM D445 and are packaged in 500 ml amber glass bottles.

Product Code	Viscosity @ 40°C
VIS4	4 cSt
VIS10	9.5 cSt
VIS30	30 cSt
VIS60	54 cSt
VIS100	102 cSt
VIS110	110 cSt
VIS120	120 cSt
VIS360	360 cSt
VIS520	520 cSt
VIS920	920 cSt

PHYSICAL TESTING STANDARDS

ASTM D5482/D5191 Vapor Pressure Standards

ASI Standards offers a range of vapor pressure quality control samples for ASTM D5482 and D5191 (mini-methods), consisting of pure solvents of known vapor pressure. The samples are packaged in 10 ml flame sealed ampoules.

Product Code	Vapor Pressure
VP1	68.3 kPa (9.91 p.s.i)
VP2	68.0 kPa (9.86 p.s.i)
VP3	51.1 kPa (7.41 p.s.i)
VP4	46.7 kPa (6.77 p.s.i)
VP5	22.5 kPa (3.26 p.s.i)
VP6	7.1 kPa (1.03 p.s.i)

ASTM D86 Group 4 Distillation Standard

The group 4 standard is diesel oil characterized with distillation, range is from 410 to 670°F, (210 to 355°C) and is verified by consensus analysis.

Product Code	Description
D86-4-1	Distillation Standard 0.25L
D86-4-2	Distillation Standard 0.50L

ASTM D86 Groups 1 & 2 Distillation Standard

The automatic distillation apparatus duplicates the distillation conditions of the manual method. The increased reliance on electronic control requires an independent standard to verify that the apparatus is performing correctly. ASI Standards has introduced a synthetic blend of hydrocarbons that boil in the temperature range specified in ASTM D86 distillation groups 1 and 2. The group 1 and 2 standard covers the boiling range 129 to 368°F, (54 to 187°C) and was verified by consensus analysis with twelve refinery laboratories.

Product Code	Description
D86-1	Synthetic Distillation Std. 0.5L
D86-2	Synthetic Distillation Std. 2 x 0.5L

PHYSICAL TESTING STANDARDS

ASTM D92 Cleveland Open Cup Flash Point

Standards are verified by consensus analysis and are packaged in 250 ml amber glass bottles.

Product Code	Flash Point
FP200	200 °C
FP230	230 °C

ASTM D93 Pensky Martin Flash Point

Standards are verified by consensus analysis and are packaged in 250 ml amber glass bottles.

Product Code	Flash Point
FP60	60 °C
FP65	65 °C
FP93	93 °C
FP134Hex	134 °C

ASTM D56 Tag Closed Cup Flash Point

Standards are verified by consensus analysis and packaged in 250ml amber glass bottles.

Product Code	Description
TCC68	67 °C

BIODIESEL TESTING STANDARDS

Suitable for ASTM D6751

Sulfur in Biodiesel

Product Code		S(BIO)6L
Product	Sulfur in Biodiesel	
Test Method	D5453	
Description	Low Range: 6 Standards per set, 100 ml each - Conc 0, 5, 10, 15, 20 and 25 mg/kg	

Product Code		S(BIO)6H
Product	Sulfur in Biodiesel	
Test Method	D5453	
Description	High Range: 6 Standards per set, 100 ml each - Conc 0, 200, 400, 600, 800 and 1000 mg/kg	

Free And Total Glycerin

Product Code		D6584-MIX
Product	Combined Standards	
Test Method	D6584, EN14105	
Description	Kit contains: 4 Standards containing the 4 glycerin components and:	
	Butanetriol internal standard at 1000 ng/μl in pyridine-5 ml ampoule	
	Tricaprin internal standard at 800 mg/μl in pyridine-5 ml ampoule	
	MSTFA silyating reagent-5 ml vial with cap	
	250ml bottle of heptane	

Product Code		D6584-SS
Product	Combined Standards	
Test Method	D6584, EN14105	
Description	Kit contains 7 Standards:	
	Glycerin in pyridine at 500 ng/μl	
	Monoolein in pyridine at 5000 ng/μl	
	Diolein in pyridine at 500 ng/μl	
	1, 2, 3 -Tri{cisooctadecanoyl} in pyridine at 5000 ng/μl	
	Butanetriol internal standard at 1000 ng/μl in pyridine	
	Tricaprin internal standard at 8000 ng/μl in pyridine	
	MSTFA all in 5 ml ampoules or vial -1 250ml bottle of heptane	

BIODIESEL TESTING STANDARDS

Free And Total Glycerin

Product Code		D6584-50kit
Product	Individual Standards	
Test Method	D6584, EN14105	
Description	Enough for 50 GC runs, Internal Standard #1 and 2 and MSTFA all in 5 ml ampoules	

Product Code		D6584-100kit
Product	Individual Standards	
Test Method	D6584, EN14105	
Description	Enough for 100 GC runs, Internal Standard #1 and 2 and MSTFA all in 10 ml ampoules	

Product Code		D6584-250kit
Product	Individual Standards	
Test Method	D6584, EN14105	
Description	Enough for 250 GC runs, Internal Standard #1 and 2 and MSTFA all in 25 ml bottles	

Product Code		D6584-500kit
Product	Individual Standards	
Test Method	D6584, EN14105	
Description	Enough for 500 GC runs, Internal Standard #1 and 2 and MSTFA all in 50 ml bottles	

BIODIESEL TESTING STANDARDS

Sodium and Potassium UOP 391 or DIN EN4538

Product Code		EN14538
Product	Calibration Standards	
Test Method	UOP391, EN14538	
Description	Multi-elements Standard 500 mg/kg, each in 100 ml bottle	
Elements	Ca, Mg, K, Na	

Product Code		EN14538-2C
Product	Calibration Standards	
Test Method	UOP391, EN14538	
Description	Multi-elements Standard at 20 mg/kg and 100 mg/kg, 2 standards per set: each in 100 ml bottle	
Elements	Ca, Mg, K, P, Na	

Simulated Distillation

Product Code		D2887
Product	Calibration Standards	
Test Method	D2887	
Description	6 x 2 ml ampoules per set	

Methanol in FAME

Product Code		EN14110
Product	Methanol in FAME	
Test Method	EN14110	
Description	3 standards per set and 20 ml ampoule of 2-propanol	

Fatty Acid Methyl Esters (FAME) Analysis

Product Code		EN14103
Product	Fatty Acid Methyl Esters (FAME) analysis	
Test Method	EN14103	
Description	3 x 2 ml ampoules	

Product Code		EN14103-IS
Product	Fatty Acid Methyl Esters (FAME) analysis	
Test Method	EN14103	
Description	Methyl Nonadecanoate in Toluene, 10 mg/ml, 1 per set, 100 ml each	

BIODIESEL TESTING STANDARDS

Iodine Value

Product Code		EN14214
Product	Iodine Value	
Test Method	EN14214	
Description	Iodine Number 50 and 200, 2 standards per set, 500 ml each	

Hexane Residue in Fats and Oil

Product Code		HexMe05
Product	Hexane Residue in Fats and Oil	
Test Method	EN14103	
Description	Hexane in Methylolate: Conc. Blk, 10, 100, 500 and 1,500 mg/kg, 5 per set, 20 ml ampoules - 20 ml ampoule of Heptane (Internal Standard)	

CHEMPLEX® THIN-FILM SAMPLE SUPPORTS

Continuous Rolls: 3" x 300' long (7.6cm x 91.4m) *Supplied in 50' (15.2m) lengths

Product Code	Description	Gauge
90	Ultra-Polyester	1.5µm (0.06mil)
95	Etnom®	1.5µm (0.06mil)
100	Mylar	2.5µm (0.10mil)
150	Mylar	3.6µm (0.14mil)
250	Mylar	6.0µm (0.24mil)
416	Prolene®	4.0µm (0.16mil)
425	Polypropylene	6.0µm (0.24mil)
475	Polypropylene	12.0µm (0.50mil)

Precut Circles: 500 pcs/pkg: 2.5" Dia. (6.4cm)

Product Code	Description	Gauge
106	Mylar	2.5µm (0.10mil)
156	Mylar	3.6µm (0.14mil)
256	Mylar	6.0µm (0.24mil)
426	Prolene®	4.0µm (0.16mil)
436	Polypropylene	6.0µm (0.24mil)
476	Polypropylene	12.0µm (0.50mil)

Precut Circles: 1,000 pcs/pkg: 2.5" Dia. (6.4cm)

Product Code	Description	Gauge
107	Mylar	2.5µm (0.10mil)
157	Mylar	3.6µm (0.14mil)
257	Mylar	6.0µm (0.24mil)
427	Prolene®	4.0µm (0.16mil)
437	Polypropylene	6.0µm (0.24mil)
477	Polypropylene	12.0µm (0.50mil)

CHEMPLEX® – SPECTROMEMBRANE®

Thin-Film Supports

Product Code	Description	Gauge	Dia. In.
3011	Mylar	2.5µm (0.10mil)	2.5
3012	Mylar	2.5µm (0.10mil)	3.0
3013	Mylar	3.6µm (0.14mil)	2.5
3014	Mylar	3.6µm (0.14mil)	3.0
3015	Mylar	6.0µm (0.24mil)	2.5
3016	Mylar	6.0µm (0.24mil)	3.0
3017	Prolene®	4.0µm (0.16mil)	2.5
3017A	Prolene®	3.0µm (0.12mil)	2.5
3018	Prolene®	4.0µm (0.16mil)	3.0
3018A	Prolene®	3.0µm (0.12mil)	3.0
3019	Polypropylene	6.0µm (0.24mil)	2.5
3020	Polypropylene	6.0µm (0.24mil)	3.0
3023	Polypropylene	12.0µm (0.50mil)	2.5
3024	Polypropylene	12.0µm (0.50mil)	3.0
3025	Etnom®	3.0µm (0.12mil)	2.5
3026	Etnom®	3.0µm (0.12mil)	3.0
3029	Etnom®	2.5µm (0.10mil)	2.5
3030	Etnom®	2.5µm (0.10mil)	3.0
3031	Etnom®	2.0µm (0.08mil)	2.5
3032	Etnom®	2.0µm (0.08mil)	3.0

CHEMPLEX® – MICROPOROUS FILM

Thin-Film Supports

Product Code	Description
325	Continuous Roll: 3" x 200" (7.6cm x 508cm)
325C	Pre-Cut Circles: 2.5" Diameter; 100/pkg

CHEMPLEX® – PELLET CUPS®

Compressible Straight -Walled Aluminum

Product Code	Description	Pcs/Pkg
500	30.3mm	1000
530	33.8mm	600
540	38.9mm	600

Compressible Tapered Aluminum

Product Code	Description	Pcs/Pkg
505	31.0mm	1000
535	34.6mm	600
545	39.8mm	600
547	44.9mm	500

Compressible Tapered Plastic; PlastiCups

Product Code	Description	Gauge
552	31.0mm	500
555	34.3mm	500
554	39.7mm	500

XRF Sample Cup Caps- Vented, Polyethylene Plastic

Product Code	Size (mm)
1630	32 (Nominal)
1640	40 (Nominal)

CHEMPLEX® – SAMPLE CUPS

XRF Sample Cups: Polyethylene plastic: 100 sets/pkg

Product Code	Dia. (mm)
1060	31.2
1065	31.2
1067	42.1
1068	42.1
1070	38.6
1075	38.4
1083	42.9
1085	42.9
1095	43.4
1330	30.7
1330-SE	30.7
1340	39.0
1430	30.7
1430-SE	30.7
1440	39.3
1440L	39.3
1530	30.9
1530-SE	30.9
1540	39.3
1730	30.4
1730-SE	30.4
1740	39.0
1830	39.0
1830-SE	39.0
1840	39.2
1850	42.9
1930	31.0
1930-SE	31.0
1935-OX	31.2

CHEMPLEX® – SAMPLE CUPS

XRF Sample Cups: Polyethylene plastic: 100 sets/pkg *Formerly 1540L

Product Code	Dia. (mm)
1940	39.1
1940L*	39.1
2131	31.2
2132	31.5
2135	34.3
2140	40.1
2143	40.1
2144	40.1
2145	44.7
2146	44.7
2195	43.4
3106	30.6
3110	30.6
3115	30.6
3120	30.6

Plastic Disposable Pipettes

Product Code	Size	Per Box
13-711-26 (691)	Large Tip	250
13-711-30 (234)	Fine Tip	400

SPECIAL PROJECTS

ASI Standards specializes in custom formulations in difficult matrices. If you require a specialty standard or help with method development, ASI is your one stop shop. Our R&D team will schedule a meeting to discuss your needs for the project. Then we will quote a price for the entire project. This includes all materials needed with a full calibration set, check standards, and technical assistance.









CERTIFICATE OF REGISTRATION

This is to certify that the management system of:

Sardisco Enterprises, Inc. dba ASI Standards

Main Site: 27635 Commerce Oaks Drive
Oak Ridge North
Texas 77385
United States

has been registered by Intertek as conforming to the requirements of:

ISO 9001:2015

The management system is applicable to:

Production of laboratory instrument calibration standards and reference materials for the petrochemical, lube oil, crude oil, geological, metal and polymer industries.

Certificate Number:

CERT-0107358

Initial Certification Date:

19 November 2012

Date of Certification Decision:

31 October 2023

Issuing Date:

31 October 2023

Valid Until:

18 November 2026



intertek

Calin Moldovean

President, Business Assurance

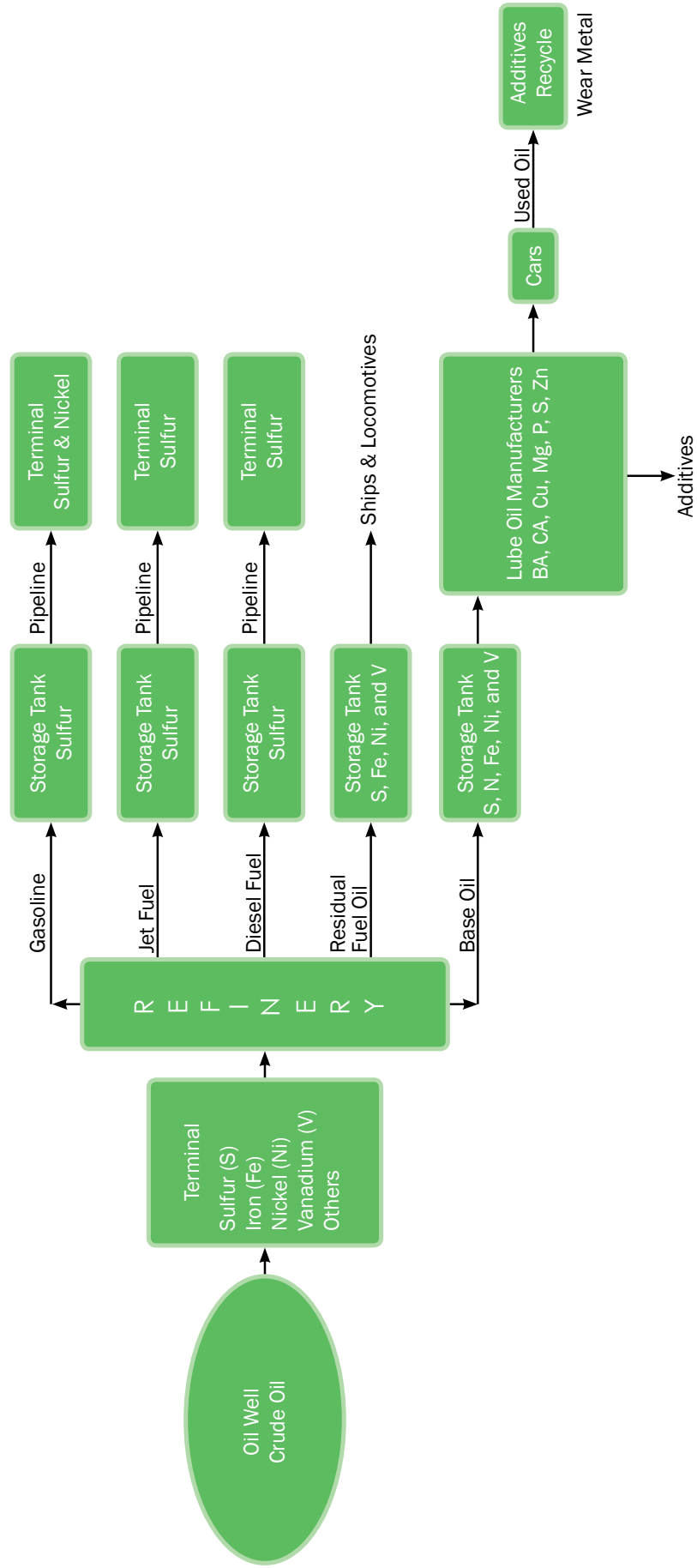
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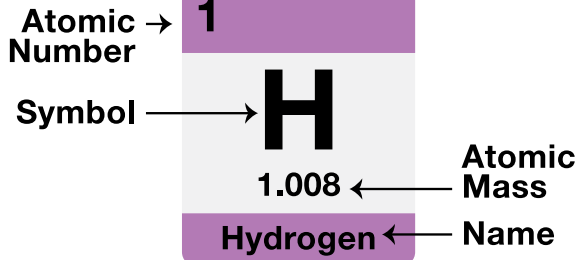
Description of Petroleum and Lubricants Industries







	1	2	3	4	5	6	7	8	9
1	1 H 1.008 Hydrogen								
2	3 Li 6.94 Lithium	4 Be 9.0121831 Beryllium							
3	11 Na 22.98976928 Sodium	12 Mg 24.305 Magnesium							
4	19 K 39.0983 Potassium	20 Ca 40.078 Calcium	21 Sc 44.955908 Scandium	22 Ti 47.867 Titanium	23 V 50.9415 Vanadium	24 Cr 51.9961 Chromium	25 Mn 54.938044 Manganese	26 Fe 55.845 Iron	27 Co 58.933194 Cobalt
5	37 Rb 85.4678 Rubidium	38 Sr 87.62 Strontium	39 Y 88.90584 Yttrium	40 Zr 91.224 Zirconium	41 Nb 92.90637 Niobium	42 Mo 95.95 Molybdenum	43 Tc 98 Technetium	44 Ru 101.07 Ruthenium	45 Rh 102.90550 Rhodium
6	55 Cs 132.90545196 Caesium	56 Ba 137.327 Barium	57 / 71	72 Hf 178.49 Hafnium	73 Ta 180.94788 Tantalum	74 W 183.84 Tungsten	75 Re 186.207 Rhenium	76 Os 190.23 Osmium	77 Ir 192.217 Iridium
7	87 Fr 223 Francium	88 Ra 226 Radium	89 / 103	104 Rf 267 Rutherfordium	105 Db 268 Dubnium	106 Sg 269 Seaborgium	107 Bh 270 Bohrium	108 Hs 269 Hassium	109 Mt 278 Meitnerium



- Alkali Metal
- Alkaline Earth
- Transition Metal
- Basic Metal
- Semimetal

Lanthanide Series

57 La 138.90547 Lanthanum	58 Ce 140.116 Cerium	59 Pr 140.90766 Praseodymium	60 Nd 144.242 Neodymium	61 Pm 145 Promethium	62 Sm 150.36 Samarium	63 Eu 151.964 Europium
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Actinide Series

89 Ac 227 Actinium	90 Th 232.0377 Thorium	91 Pa 231.03588 Protactinium	92 U 238.02891 Uranium	93 Np 237 Neptunium	94 Pu 244 Plutonium	95 Am 243 Americium
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10 11 12 13 14 15 16 17 18

- Nonmetal
- Halogen
- Noble Gas
- Lanthanide
- Actinide

										2
										He 4.002602 Helium
			5	6	7	8	9	10		
			B 10.81 Boron	C 12.011 Carbon	N 14.007 Nitrogen	O 15.999 Oxygen	F 18.998403163 Fluorine	Ne 20.1797 Neon		
			13	14	15	16	17	18		
			Al 26.9815385 Aluminium	Si 28.085 Silicon	P 30.973761998 Phosphorus	S 32.06 Sulfur	Cl 35.45 Chlorine	Ar 39.948 Argon		
28	29	30	31	32	33	34	35	36		
Ni 58.6934 Nickel	Cu 63.546 Copper	Zn 65.38 Zinc	Ga 69.723 Gallium	Ge 72.630 Germanium	As 74.921595 Arsenic	Se 78.971 Selenium	Br 79.904 Bromine	Kr 83.798 Krypton		
46	47	48	49	50	51	52	53	54		
Pd 106.42 Palladium	Ag 107.8682 Silver	Cd 112.414 Cadmium	In 114.818 Indium	Sn 118.710 Tin	Sb 121.760 Antimony	Te 127.60 Tellurium	I 126.90447 Iodine	Xe 131.293 Xenon		
78	79	80	81	82	83	84	85	86		
Pt 195.084 Platinum	Au 196.966569 Gold	Hg 200.592 Mercury	Tl 204.38 Thallium	Pb 207.2 Lead	Bi 208.98040 Bismuth	Po 209 Polonium	At 210 Astatine	Rn 222 Radon		
110	111	112	113	114	115	116	117	118		
Ds 281 Darmstadtium	Rg 281 Roentgenium	Cn 285 Copernicium	Uut 286 Ununtrium	Fl 289 Flerovium	Uup 289 Ununpentium	Lv 293 Livermorium	Uus 294 Ununseptium	Uuo 294 Ununoctium		
64	65	66	67	68	69	70	71			
Gd 157.25 Gadolinium	Tb 158.92535 Terbium	Dy 162.500 Dysprosium	Ho 164.93033 Holmium	Er 167.259 Erbium	Tm 168.93422 Thulium	Yb 173.054 Ytterbium	Lu 174.9668 Lutetium			
96	97	98	99	100	101	102	103			
Cm 247 Curium	Bk 247 Berkelium	Cf 251 Californium	Es 252 Einsteinium	Fm 257 Fermium	Md 258 Mendelevium	No 259 Nobelium	Lr 266 Lawrencium			



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