

Wear Metal Standards Organo-Metallic

Sulfur Free wear metals in 20cst 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 organo-metallics that do not contain metallic sulfonates. Available in 100 mL and 200 mL.

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

Catalogue #	WM11-10	WM11-100	WM11-30	WM11-300	WM11-50	WM11-500	WM11-900
Concentration	10 ppm	100 ppm	30 ppm	300 ppm	50 ppm	500 ppm	900 ppm

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

Catalogue #	WM12-10	WM12-100	WM12-30	WM12-300	WM12-50	WM12-500	WM12-750	WM12-900
Concentration	10 ppm	100 ppm	30 ppm	300 ppm	50 ppm	500 ppm	750 ppm	900 ppm

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

Catalogue #	WM20-10	WM20-100	WM20-30	WM20-300	WM20-50	WM20-500	WM20-900
Concentration	10 ppm	100 ppm	30 ppm	300 ppm	50 ppm	500 ppm	900 ppm

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

Catalogue #	WM21-10	WM21-100	WM21-200	WM21-30	WM21-300	WM21-50	WM21-500	WM21-750	WM21-900
Concentration	10 ppm	100 ppm	200 ppm	30 ppm	300 ppm	50 ppm	500 ppm	750 ppm	900 ppm

A-Series Of Multi Element Wear Metal Standards For ICP, RDE & Other Techniques.

These standards are sulfonated. Available in 100 mL and 200 mL.

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

Catalogue #	A21-10	A21-30	A21-50	A21-100	A21-300	A21-500	A21-900
Concentration	10 ppm	30 ppm	50 ppm	100 ppm	300 ppm	500 ppm	900 ppm

Elements: All of the elements as the A21 standards plus K

Catalogue #	A22-10	A22-30	A22-50	A22-100	A22-300	A22-500	A22900
Concentration	10 ppm	30 ppm	50 ppm	100 ppm	300 ppm	500 ppm	900 ppm

Elements: All of the elements as the A21 standards plus K and Sb

Catalogue #	A23-10	A23-30	A23-50	A23-100	A23-300	A23-500	A23-900
Concentration	10 ppm	30 ppm	50 ppm	100 ppm	300 ppm	500 ppm	900 ppm

Reagents

Catalogue #	DB	DBS	TNA
Description	Dibenzothiophene, 17.13% Sulfur, (Solid) 25, 50 and 100 g.	Di-N-Butyl Sulfide Certified Reagent, 21.9 wt% 100, 200 and 500 mL.	Benzothiophene (Thianaphthene), 23.4% 100, 200 and 500 mL.

Matrix Oils

Available in ½ gal. and 1 L

Catalogue #	GM	HVMO75	LVMO4.5	MVMO25	RFO	SDFM	TLM
Description	Gasoline Matrix, Gasoline with low level of sulfur	High Viscosity Mineral Oil, Hydrotreated 350N <1.0 ppm Sulfur	Low Viscosity Mineral Oil, Odorless and water white: flashpoint >200 degrees F Viscosity at 100 degrees F -2.68 cSt: <1ppm Sulfur	Medium Viscosity Mineral Oil, Hydrotreated 100N <1ppm Sulfur -25 cSt	Residual Fuel Oil, Asphaltic Residual diluted with 100N; Sulfur concentration about 0.25%	Synthetic Diesel Fuel, Mixture of aromatic solvent and low viscosity mineral oil <1ppm Sulfur	Certified Toluene Matrix, Toluene that has been certified for Nitrogen and Sulfur. The values will appear on the Certificate of Analysis

Stabilization Solutions

Available in 50 and 100 mL.

Catalogue #	STAB SOLN A	STAB SOLN B	STAB SOLN C
Description	For chelating and solubilizing organo-metallic solids and solutions for single element and multi-element standards	Used in conjunction with STAB SOLN A	Same as STAB SOLN A

Stabilized Organo-Metallic Solutions Formulated Standard Sets

LOMS: Concentrated Liquid Organo-Metallic Solutions (Stabilized and Ready for Use) These concentrated solutions are stabilized with Analytical Services, Inc. proprietary chelation and stabilization solution, and can be used to formulate sets of standards for the analysis of additive elements in lubricating oils; iron, nickel and vanadium in residual oil, and wear metals in oils for XRay Fluorescence Spectroscopy (XRF). These organo-metallic solutions can also be used to prepare single element or multi element standards for plasma emission (ICP or DCP), rotating disk (rotrode), or atomic absorption (AA). The starting materials for the standards are ULTRAPURE REAGENTS and have been certified against NIST SRM'S whenever available. They do not contain phosphorus or sulfur, unless otherwise noted. Trace impurities are documented on the certificate of analysis. Available in 25, 50 and 100 gram sizes.

Element	Aluminum	Antimony	Barium	Cadmium	Calcium	Cerium
Catalogue #	LOMSAl 3.0	LOMSSb 2.0	LOMSBa 12.5	LOMSCd 10.0	LOMSCa 5.0	LOMSCe 5.0
Conc. Wt%	3	2	12.5	10	5	5
Element	Chromium	Cobalt	Copper	Iron	Lead	Lithium
Catalogue #	LOMSCr 3.50	LOMSCo 7.5	LOMSCu 6.0	LOMSFe 4.0	LOMSPb 20.0	LOMSLi 1.5
Conc. Wt%	3.5	7.5	6	4	20	1.5
Element	Magnesium	Manganese	Molybdenum	Nickel	Phosphorus	Potassium
Catalogue #	LOMSMg 3.0	LOMSMn 6.0	LOMSMo 5.0	LOMSNi 5.0	LOMSP 5.0	LOMSK 7.5
Conc. Wt%	3	6	5	5	5	7.5
Element	Praseodymium	Selenium	Silicon	Sodium	Strontium	Thallium
Catalogue #	LOMSPr 3.0	LOMSSe 3.5	LOMSSi 7.5	LOMSNa 2.5	LOMSSr 10.0	LOMSTl 5.0
Conc. Wt%	3	3.5	7.5	2.5	10	5
Element	Tin	Titanium	Vanadium	Yttrium	Zinc	Zirconium
Catalogue #	LOMSSn 7.5	LOMSTi 5.0	LOMSV 4.0	LOMSY 2.5	LOMSZn 6.0	LOMSZr 5.0
Conc. Wt%	7.5	5	4	2.5	6	5

Stabilized Organo-Metallic Solutions

Single element solutions. For X-ray Fluorescence (XRF), plasma emission (ICP or DCP), rotating disk (rotrode), or atomic absorption (AA). They are also stabilized with Analytical Services, Inc. proprietary chelation and solution can be blended together to prepare multielement standards. These standards are sulfur free, unless otherwise noted. Available in 50 and 100 gram sizes.

Element	Aluminum	Aluminum	Antimony	Antimony	Arsenic	Arsenic
Catalogue #	ORGM-Al0.1	ORGM-Al0.5	ORGM-Sb0.1	ORGM-Sb0.5	ORGM-As0.1	ORGM-As0.5
Conc. Wt%	0.1	0.5	0.1	0.5	0.1	0.5
Element	Barium	Barium	Beryllium	Beryllium	Cadmium	Cadmium
Catalogue #	ORGM-Ba0.1	ORGM-Ba0.5	ORGM-Be0.1	ORGM-Be0.5	ORGM-Cd0.1	ORGM-Cd0.5
Conc. Wt%	0.1	0.5	0.1	0.5	0.1	0.5
Element	Calcium	Calcium	Cerium	Cerium	Chromium	Chromium
Catalogue #	ORGM-Ca0.1	ORGM-Ca0.5	ORGM-Ce0.1	ORGM-Ce0.5	ORGM-Cr0.1	ORGM-Cr0.5
Conc. Wt%	0.1	0.5	0.1	0.5	0.1	0.5
Element	Cobalt	Cobalt	Copper	Copper	Gallium	Gallium
Catalogue #	ORGM-Co0.1	ORGM-Co0.5	ORGM-Cu0.1	ORGM-Cu0.5	ORGM-Ga0.1	ORGM-Ga0.5
Conc. Wt%	0.1	0.5	0.1	0.5	0.1	0.5
Element	Gold	Iron	Iron	Lead	Lead	
Catalogue #	ORGM-Au0.1	ORGM-Fe0.1	ORGM-Fe0.5	ORGM-Pb0.1	ORGM-Pb0.5	
Conc. Wt%	0.1	0.1	0.5	0.1	0.5	
Element	Lithium	Lithium	Magnesium	Magnesium	Manganese	Manganese
Catalogue #	ORGM-Li0.1	ORGM-Li0.5	ORGM-Mg0.1	ORGM-Mg0.5	ORGM-Mn0.1	ORGM-Mn0.5
Conc. Wt%	0.1	0.5	0.1	0.5	0.1	0.5
Element	Mercury	Mercury	Molybdenum	Molybdenum	Nickel	Nickel
Catalogue #	ORGM-Hg0.1	ORGM-Hg0.5	ORGM-Mo0.1	ORGM-Mo0.5	ORGM-Ni0.1	ORGM-Ni0.5
Conc. Wt%	0.1	0.5	0.1	0.5	0.1	0.5
Element	Phosphorous	Phosphorous	Potassium	Potassium	Selenium	Selenium
Catalogue #	ORGM-P0.1	ORGM-P0.5	ORGM-K0.1	ORGM-K0.5	ORGM-Se0.1	ORGM-Se0.5
Conc. Wt%	0.1	0.5	0.1	0.5	0.1	0.5
Element	Silicon	Silicon	Silver	Silver	Sodium	Sodium
Catalogue #	ORGM-Si0.1	ORGM-Si0.5	ORGM-Ag0.1	ORGM-Ag0.5	ORGM-Na0.1	ORGM-Na0.5
Conc. Wt%	0.1	0.5	0.1	0.5	0.1	0.5
Element	Strontium	Strontium	Thallium	Thallium	Tin	Tin
Catalogue #	ORGM-Sr0.1	ORGM-Sr0.5	ORGM-Tl0.1	ORGM-Tl0.5	ORGM-Sn0.1	ORGM-Sn0.5
Conc. Wt%	0.1	0.5	0.1	0.5	0.1	0.5
Element	Titanium	Titanium	Vanadium	Vanadium	Yttrium	Yttrium
Catalogue #	ORGM-Ti0.1	ORGM-Ti0.5	ORGM-V0.1	ORGM-V0.5	ORGM-Y0.1	ORGM-Y0.5
Conc. Wt%	0.1	0.5	0.1	0.5	0.1	0.5

Stabilized Organo-Metallic Solutions

Single element solutions. For Xray Fluorescence (XRF), plasma emission (ICP or DCP), rotating disk (rotrode), or atomic absorption (AA). They are also stabilized with Analytical Services, Inc. proprietary chelation and solution can be blended together to prepare multi element standards. These standards are sulfur free, unless otherwise noted. Available in 50 and 100 gram sizes.

Element	Zinc	Zinc	Zirconium	Zirconium
Catalogue #	ORGM-Zn0.1	ORGM-Zn0.5	ORGM-Zr0.1	ORGM-Zr0.5
Conc. Wt%	0.1	0.5	0.1	0.5

Stabilized Organo-Metallic Solutions Internal Standards

Available in 1 L, 500 mL and 100 mL.

Catalogue #	BIIS	KIS	MNIS	SNIS	ZRIS1	ZRIS16
Concentration	Bismuth Internal Standard. Pb Analysis; Conc. 0.793G Bi/L, 1 Per Set	Potassium Ionization Suppressant. 1% Potassium In Mineral Oil, 1 Per Set	Manganese Internal Standard. Ni And V Analysis; Conc. 0.05%, 1 Per Set	Tin Internal Standard. 6.0%, 1 Per Set	Zirconium Internal Standard, Low Range. 1% Low Range, Sulfur Analysis, 1 Per Set	Zirconium Internal Standard, High Range. 16% High Range, Sulfur Analysis, 1 Per Set
Method	ASTM D5059	ASTM D4628	ISO/CD 14596		ISO/CD 14597	ISO/CD 14597

Sulfur Standard Sets In Various Matrices - Formulated Sets

Individual standards available in 1 gal., 1 L and 100 mL.

Catalogue #	Description	Method	Standard #	Sulfur, Wt %	Standard #	Sulfur, Wt %
S(BS)I13	Sulfur in Isooctane for Gasoline and Reformulated Gasoline Analysis Flammable UN1262. Di-N-butyl sulfide in Isooctane. Conc. Range: 0-0.300 wt%; 13 standards per Set, 100 mL each	ASTM D6334 & D2622	1	0	8	0.03
			2	0.001	9	0.04
			3	0.002	10	0.06
			4	0.003	11	0.1
			5	0.005	12	0.2
			6	0.01	13	0.3
			7	0.02		
S(BS)IT10	Low Level Sulfur Standards Flammable UN1993. Di-N-butyl sulfide in Isooctane-Toluene mixture. Conc. Range: 0-0.1000 wt%; 10 standards per set, 100 mL each	ASTM D6334 & D6445	1	0	6	0.0075
			2	0.0005	7	0.01
			3	0.001	8	0.03
			4	0.003	9	0.05
			5	0.005	10	0.1

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Sulfur Standard Sets In Various Matrices - Formulated Sets

Catalogue #	Description	Method	Standard #	Sulfur, Wt %	Standard #	Sulfur, Wt %
S(T)IT10	Low Level Sulfur Standards Flammable UN1993. Thiophene and Methyl Thiophene Isooctane-Toluene mixture. Conc. Range: 0-0.1000 wt%; 10 standards per set, 100 mL each	ASTM D6334 & D6445	1	0	6	0.0075
			2	0.0005	7	0.01
			3	0.001	8	0.03
			4	0.003	9	0.05
			5	0.005	10	0.1
SCO10	Sulfur In Crude Oil Flammable UN1267. Di-N-butyl sulfide in crude oil. Conc. Range: 0.05-5.0 wt%; 10 standards per set, 100 mL each	ASTM D2622 & D4294	1	0.08	6	1.5
			2	0.1	7	2
			3	0.25	8	3
			4	0.5	9	4
			5	1	10	5
SCO7	Sulfur In Crude Oil Flammable UN1267. Di-N-butyl sulfide in crude oil. Conc. Range: 0.05-2.0 wt%; 7 standards per set, 100 mL each	ASTM D2622 & 4294	1	0.08	5	1
			2	0.1	6	1.5
			3	0.25	7	2
			4	0.5		
SDF10	Sulfur in Diesel Fuel. Di-N-butyl sulfide in synthetic diesel fuel. Conc. Range : 0-5.0 wt%; 10 standards per set, 100 mL each	ASTM D2622 & D4294	1	0	6	1.5
			2	0.1	7	2
			3	0.25	8	3
			4	0.5	9	4
			5	1	10	5
SDF7	Sulfur In Diesel Fuel. Di-N-butyl sulfide in synthetic diesel fuel. Conc. Range: 0-0.100 wt%; 7 standards per set, 100 mL each	ASTM D4294	1	0	5	0.06
			2	0.02	6	0.08
			3	0.04	7	0.1
			4	0.05		
			5	1		
SG10C	Sulfur in Gasoline Flammable UN1203. Di-N-butyl sulfide in unleaded gasoline. Due to the volatility of gasoline these standards are not stocked and are prepared as custom standards upon receipt of order. Specify concentrations; 10 standards per set, 100 mL each	ASTM D2622, D6334, D6445 & D4294				

Sulfur Standard Sets In Various Matrices - Formulated Sets

Catalogue #	Description	Method	Standard #	Sulfur, Wt %	Standard #	Sulfur, Wt %
SG7C	Sulfur in Gasoline Flammable UN1203. Di-N-butyl sulfide in unleaded gasoline. Due to the volatility of gasoline these standards are not stocked and are prepared as custom standards upon receipt of order. Specify concentrations: 7 standards per set, 100 mL each	ASTM D2622, D6334, D6445 & D4294				
SHDF5	Sulfur Standards in Heavy Diesel Fuel. Di-N-butyl sulfide in synthetic heavy diesel fuel. Conc. Range: 0-0.5 wt%; 5 standards per set, 100 mL each	ASTM D2622				
SIO11	SULFUR IN ISOCTANE COMPLETE RANGE FLAMMABLE UN1262. Di-N-butyl sulfide in Isooctane. Conc. Range: 0-1000.00 ng/uL; 11 standards per set, 100 mL each	ASTM D5453	1	0	7	25
			2	0.5	8	50
			3	1	9	100
			4	2.5	10	500
			5	5	11	1000
			6	10		
SIO3(H)	Sulfur in Isooctane High Range Flammable UN1262. Di-N-butyl sulfide in Isooctane. Conc. Range: 100.00-1000.00 ng/uL; 3 standards per set, 100 mL each	ASTM D5453	1	100		
			2	500		
			3	1000		
SIO4(M)	Sulfur in Isooctane Medium Range Flammable UN1262. Di-N-butyl sulfide in Isooctane. Conc. Range: 5.00-100.00 ng/uL; 4 standards per set, 100 mL each	ASTM D5453	1	5	3	50
			2	25	4	100
SIO6(L)	Sulfur In Isooctane Low Range Flammable UN1262. Di-N-butyl sulfide in Isooctane. Conc. Range: 0.0-10.00 ng/uL; 6 standards per set, 100 mL each	ASTM D5453	1	0	4	2.5
			2	0.5	5	5
			3	1	6	10
SISOH7	Sulfur Standards High Range, with 18% Zirconium Internal Standard. Di-N-butyl sulfide and 18% zirconium internal standard in mineral oil. Conc. Range: 0.40-2.5 wt%; 7 standards per set, 100 mL each	ISO/CD 14596	1	0	5	1.5
			2	0.4	6	2
			3	0.7	7	2.5
			4	1		
SISOL8	Sulfur Standards Low Range, With 1% Zirconium Internal Standard. Di-N-butyl sulfide and 1% zirconium internal standard in mineral oil. Conc. Range: 0-1000 ppm; 8 standards per set, 100 mL each	ISO/CD 14596	1	0	5	0.025
			2	0.001	6	0.05
			3	0.005	7	0.075
			4	0.01	8	0.1

Sulfur Standard Sets In Various Matrices - Formulated Sets

Catalogue #	Description	Method	Standard #	Sulfur, Wt %	Standard #	Sulfur, Wt %
SITCS5(H)	Sulfur Standards for Canadian General Standards Board High Range Flammable UN1993. Di-N-butyl sulfide in IsooctaneToluene mixture. Conc. Range: 0.020-0.100 wt%; 5 standards per set, 100 mL each	CAN/ GS3.0 NO. 16.198	1	0.02	4	0.075
			2	0.035	5	0.1
			3	0.05		
SITCS5(L)	Sulfur Standards for Canadian General Standards Board Low Range Flammable UN1993. Di-N-butyl sulfide in IsooctaneToluene mixture. Conc. Range: 0-0.020 wt%; 5 standards per set, 100 mL each	CAN/ GS3.0 NO. 16.198	1	0	4	0.01
			2	0.001	5	0.02
			3	0.005		
SITCS9	Sulfur Standards for Canadian General Standards Board Complete Range Flammable UN1993. Di-N-butyl sulfide in Isooctane Toluene mixture. Conc. Range: 0-0.1000 wt%; 9 standards per set, 100 mL each	CAN/ GS3.0 NO. 16.198	1	0	6	0.035
			2	0.001	7	0.05
			3	0.005	8	0.075
			4	0.01	9	0.1
			5	0.02		
SMO10	Sulfur In Mineral Oil. Di-N-butyl sulfide in mineral oil. Conc. Range: 0-0.100 wt%; 10 standards per set, 100 mL Each	ASTM D2622 & D4294	1	0	6	0.04
			2	0.0025	7	0.05
			3	0.005	8	0.06
			4	0.01	9	0.08
			5	0.02	10	0.1
SMO10(HL)	Sulfur in Mineral Oil. Di-N-butyl sulfide in mineral oil. Conc. Range: 05.00 wt%; 10 standards per set, 100 mL each	ASTM D2622 & D4294	1	0	6	1
			2	0.1	7	2
			3	0.2	8	3
			4	0.5	9	4
			5	0.75	10	5

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Standards designed to meet your Solutions*

Sulfur Standard Sets In Various Matrices - Formulated Sets

Catalogue #	Description	Method	Standard #	Sulfur, Wt %	Standard #	Sulfur, Wt %
SMO11	Sulfur in Mineral Oil Complete Range. Di-N-butyl sulfide in mineral oil. Conc. Range: 0-5.00 wt%; 11 standards per set, 100 mL each	ASTM D4294	1	0	7	0.1
			2	0.002	8	0.5
			3	0.005	9	1
			4	0.01	10	2.5
			5	0.03	11	5
			6	0.06		
SMO6H	Sulfur In Mineral Oil High Range. Di-N-butyl sulfide in mineral oil. Conc. Range: 0.100-5.000 wt%; 6 standards per set, 100 mL each	ASTM D4294	1	0	4	1
			2	0.1	5	2.5
			3	0.5	6	5
SMO7L	Sulfur In Mineral Oil Low Range. Di-N-butyl sulfide in mineral oil. Conc. Range: 0-0.100 wt%; 7 standards per set, 100 mL each	ASTM D4294	1	0	5	0.03
			2	0.002	6	0.06
			3	0.005	7	0.1
			4	0.01		
SMOCS10	Sulfur Standards for Canadian General Standards Board Complete Range. Di-N-butyl sulfide in mineral oil. Conc. Range: 0-0.5000 wt%; 10 standards per set, 100 mL each	CAN/GS3.0 NO. 16.198	1	0	6	0.1
			2	0.01	7	0.2
			3	0.03	8	0.3
			4	0.05	9	0.4
			5	0.07	10	0.5
SMOCS5(H)	Sulfur Standards For Canadian General Standards Board High Range. Di-N-butyl sulfide in mineral oil. Conc. Range: 0.100-0.500 wt%; 5 standards per set, 100 mL each	CAN/GS-3.0 NO. 16.1-98	1	0.1	4	0.4
			2	0.2	5	0.5
			3	0.3		
SMOCS6(L)	Sulfur Standards For Canadian Standards Board Low Range. Di-N-butyl sulfide in mineral oil. Conc. Range: 0-0.1000 wt%; 6 standards per set, 100 mL each	CAN/GS-3.0 NO. 16.1-98	1	0	4	0.05
			2	0.01	5	0.07
			3	0.03	6	0.1
SRO10	Sulfur in residual oil. Di-N-butyl sulfide in residual oil. Conc. Range: 0.25-5.00 wt%; 10 standards per set, 100 mL each	ASTM D2622 & D4294	1	0.25	6	2.5
			2	0.5	7	3
			3	1	8	3.5
			4	1.5	9	4
			5	2	10	5

Sulfur Standards For Astm Method D7039

Catalogue #	SIN-6C	SMO6(H)-H	SMO6(L)-H	SMO6(M)-H
Description	Sulfur in Mineral Oil concentrations of 0, 10, 50, 100, 200 and 500 ppm; 100 mL each	Sulfur in Mineral Oil concentrations of 0, 100, 200, 400, 800 and 1000ppm; 100 mL each	Sulfur in Mineral Oil concentrations of 0, 2, 5, 10, 15 and 20ppm; 100mL each	Sulfur in Mineral Oil concentrations of 0, 5, 10, 25 and 50ppm; 100mL each

Ultra Low Sulfur In Diesel Fuel

Catalogue #	ULSD0-25	ULSD20-100
Description	Sulfur with Ultra Low Diesel Fuel concentrations of 0, 5, 10, 15, 20 and 25ppm; 100mL each	Sulfur with Ultra Low Diesel Fuel concentrations of 20, 40, 60, 80 and 100ppm; 100mL each

Sulfur Standards For Epa Methods 80.580 To 80.585

Catalogue #	SEPA(G)H	SEPA(G)L	SEPA(P)H	SEPA(P)L	SEPA6C
Description	Sulfur in Mineral Oil Gravimetric standard for EPA highlevel requirements. Set of two standards, 150 and 450ppm; 200mL each	Sulfur in Mineral Oil Gravimetric standard for EPA highlevel requirements. Set of two standards, 5 and 15ppm; 200mL each	Sulfur in Diesel Fuel Precision standard for EPA high level requirements. 300ppm; 400mL each	Sulfur in Diesel Fuel Precision standard for EPA low level requirements. 7ppm; 400mL each	This is the complete set of standards for the EPA requirements and includes all of the above Products

Catalogue #	Description	Standard #	Sulfur Wt %	Iron (ppm)	Nickel (ppm)	Vanadium (ppm)
SFNVMO12	Sulfur and Metals in Mineral Oil; S, Fe, Ni, V. For the analysis of fuel and residual oils. Concentration of Fe, Ni and V are independent of the sulfur concentration. Each certified component added independently. Conc. Ranges: S:0.500-5.500 wt% V: 25-500 ppm Ni: 5-100 ppm Fe: 50-500 ppm; 12 standards per set, 100 mL each	1	0	0	0	0
		2	0.5	300	10	500
		3	1	500	100	25
		4	0	100	80	250
		5	2	200	40	100
		6	2.5	400	5	400
		7	3	0	60	300
		8	3.5	500	0	200
		9	0	100	100	0
		10	4.5	300	50	250
		11	5	200	20	500
		12	5.5	50	100	50

Sulfur Standards For Epa Methods 80.580 To 80.585

Catalogue #	Description	Standard #	Sulfur Wt %	Iron (ppm)	Nickel (ppm)	Vanadium (ppm)
SFNVRO12	Sulfur and Metals in Residual Fuel Oil; S, Fe, Ni, V. Same as SFNVMO except that the matrix is Residual Fuel Oil, 12 standards per set: 100 mL each	1	0.185	1	4	13
		2	0.5	300	10	500
		3	1	500	100	25
		4	0	100	80	250
		5	2	200	40	100
		6	2.5	400	5	400
		7	3	1	60	300
		8	3.5	500	4	200
		9	0	100	100	13
		10	4.5	300	50	250
		11	5	200	20	500
		12	5.5	50	100	50

Sulfur Standard Sets In Various Matrices - Formulated Sets

Catalogue #	Description	Standard #	Sulfur Wt %	Nickel (ppm)	Vanadium (ppm)
SFNVRO12	Sulfur and Metals in Residual Fuel Oil; S, Fe, Ni, V. Same as SFNVMO except that the matrix is Residual Fuel Oil, 12 standards per set: 100mL each	1	0	0	0
		2	0.5	10	500
		3	1	100	25
		4	1.5	80	250
		5	2	40	100
		6	2.5	5	400
		7	3	60	300
		8	3.5	0	200
		9	4	100	0
		10	4.5	50	250
		11	5	20	500
		12	5.5	100	50

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Sulfur Standard Sets In Various Matrices - Formulated Sets

Catalogue #	Description	Standard #	Sulfur Wt %	Nickel (ppm)	Vanadium (ppm)
SNVRO12	Sulfur and Metals in Residual Fuel Oil; S, Ni, V. Same as SNVMO except that the matrix is Residual Fuel Oil, 12 standards per set: 100 mL each	1	0.185	4	1
		2	0.5	10	500
		3	1	100	25
		4	1.5	80	250
		5	2	40	100
		6	2.5	5	400
		7	3	60	300
		8	3.5	4	200
		9	4	100	1
		10	4.5	50	250
		11	5	20	500

Chlorine Standards In Waste Oil Formulated Sets

Available individually in 1 L and 100 mL.

Catalogue #	Description	Standard #	Chlorine, Wt %	Standard No.	Chlorine, Wt %
CLWO7	Chlorinated hydrocarbon in waste oil. Conc. Range: 0-1.00 wt%; 7 standards per set, 100 mL each	1	0.05	5	0.6
		2	0.2	6	0.8
		3	0.4	7	1
		4	0.5		

Chlorine And Sulfur Standards In Various Matrices Formulated Sets

Available individually in 1 L and 100 mL.

Catalogue #	Description	Standard #	Sulfur wt%	Chlorine wt%	Standard #	Sulfur wt%	Chlorine wt%
CLSMO10	Chlorinated hydrocarbon and Di-N-butyl sulfide in mineral oil. Conc. Range: Cl: 0-1.00 wt%, S: 0-1.00 wt%; 10 standards per set, 100 mL each	1	0	0	6	0.3	0.6
		2	0.1	0.8	7	0.4	0.1
		3	0.6	0.5	8	0.5	0.4
		4	0.2	0.3	9	0.8	1
		5	0.7	0.2	10	1	0
CLSWO10	Chlorinated hydrocarbon and Di-N-butyl sulfide in waste oil. Conc. Range: Cl: 0-1.00 wt%, S: 0-2.500 wt%; 10 standards per set, 100 mL each	1	0.5	1	6	1.75	0.8
		2	2.5	0.02	7	1.25	0.05
		3	0.5	0.65	8	2	1
		4	1	0.2	9	2.25	0.38
		5	1.5	0.5	10	0.75	0.1

Lead Standards In Various Matrices Formulated Sets

Catalogue #	Description	Method
BIIS	Bismuth Internal Standard, Internal Standard Conc: 0.793g Bi/L	ASTM D5059
PBG12	Lead in Gasoline Flammable UN1203, This set is made up of PBG7A and PBG7C 12 standards per set; 100 mL each	Covers the scope of ASTM D5059 Parts A & C

Catalogue #	Description	Method	Standard #	Lead, Gms/Gal.	Standard #	Lead, Gms/Gal.
CLSMO10	Lead in Gasoline Flammable UN1203, 7 standards per set; 100 mL each	Covers the scope of ASTM D509 Part A	1	0	5	3
			2	0.1	6	4
			3	1	7	5
			4	2		
PBG7C	Lead in Gasoline Flammable UN1203, 7 standards per set; 100 mL each	Covers the scope of ASTM D5059 Part C	1	0	5	0.05
			2	0.001	6	0.1
			3	0.005	7	0.3
			4	0.01		



Lead Standards In Various Matrices Formulated Sets

Catalogue #	Description	Method	Standard #	Lead, Gms/Gal.	Standard #	Lead, Gms/Gal.
PBIO7A	Lead in Isooctane Flammable UN1262, 7 standards per set; 100 mL each	ASTM D5059, PART A	1	0	5	3
			2	0.1	6	4
			3	1	7	5
			4	2		

Catalogue #	Description	Method
PBIO12	Lead in Isooctane Flammable UN1262, This set is made up of PBIO7A and PBIO7C 12 standards per set; 100 mL each	ASTM D5059, PARTS A & C

Catalogue #	Description	Method	Standard #	Lead, Gms/Gal.	Standard #	Lead, Gms/Gal.
PBIO7C	Lead in Isooctane Flammable UN1262, 7 standards per set; 100 mL each	ASTM D5059, PART C	1	0	5	0.05
			2	0.001	6	0.1
			3	0.005	7	0.3
			4	0.01		

Catalogue #	Description	Method
PBT12	Lead in Toluene Flammable UN1294, This set is made up of PBT7A and PBT7C 12 standards per set; 100 mL each	ASTM D5059, PARTS A & C

Catalogue #	Description	Method	Standard #	Lead, Gms/Gal.	Standard #	Lead, Gms/Gal.
PBT7A	Lead in Toluene Flammable UN1294, 7 standards per set; 100 mL each	ASTM D5059, PART A	1	0	5	3
			2	0.1	6	4
			3	1	7	5
			4	2		

PBT7C	LEAD IN TOLUENE FLAMMABLE UN1294, 7 standards per set; 100 mL each	ASTM D5059, PART C	1	0	5	0.05
			2	0.001	6	0.1
			3	0.005	7	0.3
			4	0.01		

Vanadium And Nickel Standards With Manganese Internal Standard In Xylene-Mineral Oil-Formulated Sets

Available individually in 1L and 100 mL

Catalogue #	Description	Method
MNIS-0.05	Manganese Internal Standard, 0.05%, 500 mL	ISO/CD 14596

Catalogue #	Description	Method	Standard #	Wt % Ni	Standard #	Wt % Ni
NiISO7	Nickel Standards with 0.05% Manganese Internal Standard Flammable UN1307, Nickel Reagent and 0.05% Manganese internal standard in xylene-mineral oil. Conc. Range: 0-0.0100wt%; 7 standards per set, 100 mL each	ISO/CD 14596	1	0	5	0.005
			2	0.0005	6	0.007
			3	0.001	7	0.01
			4	0.0025		

Catalogue #	Description	Method	Standard #	Wt% V	Standard #	Wt% V
VISOH7	Vanadium Standard, High Range with 0.05% Manganese Internal Standard Flammable UN1307, Vanadium reagent and 0.05% Manganese internal standard in xylenemineral oil. Conc. Range: 0.03-0.100wt%; 7 standards per set, 100 mL each	ISO/CD 14596	1	0	5	0.06
			2	0.03	6	0.08
			3	0.04	7	0.1
			4	0.05		

Catalogue #	Description	Method	Standard #	Wt% V	Standard #	Wt% V
VISOL9	Vanadium Standard, Low Range with 0.05% Manganese Internal Standard Flammable UN1307, Vanadium reagent and 0.05% Manganese internal standard in xylenemineral oil. Conc. Range: 0.0005-0.0200wt%; 9 standards per set, 100 mL each	ISO/CD 14596	1	0.0005	6	0.0125
			2	0.0025	7	0.015
			3	0.005	8	0.0175
			4	0.0075	9	0.02
			5	0.01		

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Lubricating Oil Standards Formulated Sets

Available individually in 100 mL.

Catalogue #	Description	Method	Standard #	Wt% Ca	Wt% P	Wt% S	Wt% Zn
LOA11	Lubricating Oil Additives: Ca, P, S, Zn. Similar to LOE17, but additive package concentration ranges. 11 standards per set, 100mL each	ASTM D6481, 6443, 4927	1	0.5	1	0.5	0.5
			2	2.5	1	2.5	2
			3	2	1.25	1	1.5
			4	5	0	0	0
			5	4	0.5	1.25	0.5
			6	2.512	0.75	4	1
			7	4	0	1.5	1
			8	0.508	2	5	1
			9	1	0.75	2	1.5
			10	2.5	1.2	3	0.5
			11	0	0	0	0

Catalogue #	Description	Method	Standard #	Wt% Ca	Wt% Cl	Wt% Cu	Wt% Mg	Wt% P	Wt% S	Wt% Zn
LOE10	Lubricating Oil Elements: Ca, Cl, Cu, Mg, P, S, Zn. Abbreviated set for ASTM Method, 10 standards per set, 100 mL each	ASTM D6481, 6443, 4927	1	0.02	0.03	0.01	0.2	0.25	1	0.02
			2	0.02	0.02	0.05	0.2	0.02	0.02	0.25
			3	0.02	0.2	0.01	0.04	0.25	0.15	0.25
			4	0.02	0.2	0.05	0.04	0.02	1	0.02
			5	0.4	0.02	0.01	0.04	0.02	1	0.25
			6	0.4	0.02	0.05	0.04	0.25	0.02	0.02
			7	0.4	0.2	0.01	0.2	0.02	0.02	0.05
			8	0.4	0.2	0.05	0.2	0.25	1	0.25
			9	0.2	0.1	0.025	0.08	0.15	0.5	0.1
			10	0	0	0	0	0	0	0



Lubricating Oil Standards Formulated Sets

Catalogue #	Description	Method	Standard #	Wt% Ca	Wt% P	Wt% S	Wt% Zn
LOE17	Lubricating Oil Elements: Ca, P, S, Zn. Engine Oil. 17 standards per set, 100 mL each	ASTM D6481, 6443, 4927	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

Catalogue #	Description	Method	Standard #	Wt% Ca	Wt% Cl	Wt% P	Wt% S	Wt% Zn
LOE17A	Lubricating Oil Elements: Ca, Cl, P, S, Zn. Same as LOE17, but also contains Chlorine. 17 standards per set, 100 mL each	ASTM D6481, 6443, 4927	1	0.6	0.1	0.005	0.175	0.06
			2	0.5	0	0.2	0.05	0.08
			3	0.4	0.01	0.15	0.3	0.18
			4	0.26	0.5	0.25	0.15	0.12
			5	0.005	1	0.005	0.45	0.07
			6	0.4	0.4	0.025	0.5	0.1
			7	0.3	0.1	0.06	0.25	0.12
			8	0.2	0.01	0.1	0.45	0.1
			9	0.06	0.05	0.08	0.3	0.13
			10	0.06	0.2	0.05	0.2	0.05
			11	0.05	0.5	0.12	0.1	0.075
			12	0.025	0.8	0.15	0.2	0.13
			13	0.005	1	0.2	0.4	0.15
			14	0.17	0.6	0.25	0.55	0.11
			15	0.1	0.2	0.1	0.2	0.2
			16	0.01	0.4	0.01	0.6	0.25
			17	0	0	0	0	0

Lubricating Oil Standards Formulated Sets

Catalogue #	Description	Method	Standard #	Wt% Ba	Wt% Ca	Wt% Cl	Wt% P	Wt% S	Wt% Zn
LOE17A/B	Lubricating Oil Elements: Ba, Ca, Cl, P, S, Zn. Same as LOE17, but also contains Barium and Chlorine. 17 standards per set, 100 mL each	ASTM D6481, 6443, 4927	1	0.1	0.6	0.1	0.005	0.175	0.06
			2	0.175	0.5	0	0.2	0.05	0.08
			3	0	0.4	0.01	0.15	0.3	0.18
			4	0.025	0.26	0.5	0.25	0.15	0.12
			5	0.15	0.005	1	0.005	0.45	0.07
			6	0	0.4	0.4	0.025	0.35	0.1
			7	0.2	0.3	0.1	0.06	0.25	0.12
			8	0	0.2	0.01	0.1	0.45	0.1
			9	0.1	0.06	0.05	0.08	0.3	0.13
			10	0.05	0.06	0.2	0.05	0.2	0.05
			11	0.075	0.05	0.5	0.12	0.1	0.075
			12	0.01	0.025	0.8	0.15	0.2	0.13
			13	0.005	0.005	1	0.2	0.4	0.15
			14	0	0.17	0.6	0.25	0.55	0.11
			15	0	0.1	0.2	0.1	0.2	0.2
			16	0.005	0.01	0.4	0.01	0.6	0.25
			17	0	0	0	0	0	0

Catalogue #	Description	Method	Standard #	Wt% Ba	Wt% Ca	Wt% P	Wt% S	Wt% Zn
LOE17B	Lubricating Oil Elements: Ba, Ca, P, S, Zn. Same as LOE17, but also contains Barium. 17 standards per set, 100 mL each	ASTM D6481, 6443, 4927	1	0.1	0.6	0.005	0.175	0.06
			2	0.175	0.5	0.2	0.05	0.08
			3	0	0.4	0.15	0.3	0.18
			4	0.025	0.26	0.25	0.15	0.12
			5	0.15	0.005	0.005	0.45	0.07
			6	0	0.4	0.025	0.35	0.1
			7	0.2	0.3	0.06	0.25	0.12
			8	0	0.2	0.1	0.45	0.1
			9	0	0.06	0.08	0.3	0.13
			10	0.05	0.06	0.05	0.2	0.05
			11	0.075	0.05	0.12	0.1	0.075
			12	0.01	0.025	0.15	0.2	0.13
			13	0.005	0.005	0.2	0.4	0.15
			14	0	0.17	0.25	0.55	0.11
			15	0	0.1	0.1	0.2	0.2
			16	0.005	0.01	0.01	0.6	0.25
			17	0	0	0	0	0

Lubricating Oil Standards Formulated Sets

Catalogue #	Description	Method	Standard #	Wt% Ba	Wt% Ca	Wt% Mg	Wt% P	Wt% S	Wt% Zn
LOE17B/C	Lubricating Oil Elements: Ba, Ca, Mg, P, S, Zn. Same as LOE17, but also contains Barium and Magnesium. 17 standards per set, 100 mL each	ASTM D6481, 6443, 4927	1	0.025	0.6	0.1	0.005	0.175	0.06
			2	0	0.5	0.15	0.2	0.05	0.08
			3	0.1	0.4	0.35	0.15	0.3	0.18
			4	0.175	0.26	0.225	0.25	0.15	0.12
			5	0.15	0.005	0	0.005	0.45	0.07
			6	0	0.4	0.5	0.025	0.35	0.1
			7	0.1	0.3	0.325	0.06	0.25	0.12
			8	0.2	0.2	0.25	0.1	0.45	0.1
			9	0.05	0.06	0.1	0.08	0.3	0.13
			10	0.075	0.06	0.4	0.05	0.2	0.05
			11	0.01	0.05	0.3	0.12	0.1	0.075
			12	0	0.025	0.2	0.15	0.2	0.13
			13	0.175	0.005	0.375	0.2	0.4	0.15
			14	0.005	0.17	0.175	0.25	0.55	0.11
			15	0	0.1	0.425	0.1	0.2	0.2
			16	0.005	0.01	0.275	0.01	0.6	0.25
			17	0	0	0	0	0	0

Catalogue #	Description	Method	Standard #	Wt% Ca	Wt% Mg	Wt% P	Wt% S	Wt% Zn
LOE17C	Lubricating Oil Elements: Ca, Mg, P, S, Zn. Same as LOE17, but also contains Magnesium. 17 standards per set, 100 mL each	ASTM D6481, 6443, 4927	1	0.6	0.1	0.005	0.175	0.06
			2	0.5	0.15	0.2	0.05	0.08
			3	0.4	0.35	0.15	0.3	0.18
			4	0.26	0.225	0.25	0.15	0.12
			5	0.005	0.45	0.005	0.45	0.07
			6	0.4	0.5	0.025	0.35	0.1
			7	0.3	0.325	0.06	0.25	0.12
			8	0.2	0.25	0.1	0.45	0.1
			9	0.06	0.1	0.08	0.3	0.13
			10	0.06	0.4	0.05	0.2	0.05
			11	0.05	0.3	0.12	0.1	0.075
			12	0.025	0.2	0.15	0.2	0.13
			13	0.005	0.375	0.2	0.4	0.15
			14	0.17	0.175	0.25	0.55	0.11
			15	0.1	0.425	0.1	0.2	0.2
			16	0.01	0.275	0.01	0.6	0.25
			17	0	0	0	0	0

Lubricating Oil Standards Formulated Sets

Catalogue #	Description	Method	Standard #	Wt% Ca	Wt% Cl	Wt% Cu	Wt% Mg	Wt% P	Wt% S	Wt% Zn
LOE22	Lubricating Oil Elements: Ca, Cl, Cu, Mg, P, S, Zn. Complete set for the ASTM method D4927. 22 standards per set, 100 mL each	ASTM D4927	1	0.3	0.08	0.03	0.06	0.06	0.275	0.06
			2	0.25	0.1	0	0.01	0.15	0	0.15
			3	0.5	0	0.035	0.16	0.15	0	0.02
			4	0.35	0.01	0	0.12	0.08	0.2	0
			5	0.11	0	0.015	0.1	0.1	0.3	0.05
			6	0.2	0.1	0	0.2	0.05	0.25	0.15
			7	0	0.05	0.025	0	0	0.45	0.02
			8	0.15	0.03	0	0.1	0.03	0.4	0.04
			9	0.25	0.15	0.01	0.16	0	0.35	0.08
			10	0.11	0.15	0.04	0.005	0.03	0.75	0.15
			11	0.26	0.05	0	0	0	0.75	0
			12	0.2	0	0.005	0.14	0.08	0.5	0.08
			13	0	0	0.005	0.02	0.02	0.02	0.02
			14	0.07	0.15	0.02	0.08	0.14	0.65	0.15
			15	0.05	0	0	0	0.15	0	0
			16	0.4	0	0.001	0.08	0	0.5	0.02
			17	0.18	0.02	0.02	0	0.02	0.6	0.06
			18	0.4	0.01	0.001	0.01	0.02	0.2	0.1
			19	0.01	0.02	0.04	0.01	0.02	0.2	0.1
			20	0.05	0.005	0.05	0	0.008	0	0.12
			21	0.2	0.05	0.02	0.08	0.05	0.275	0.05
			22	0	0	0	0	0	0	0



Lubricating Oil Standards Formulated Sets

Catalogue #	Description	Method	Standard #	Wt% Ba	Wt% Ca	Wt% Cl	Wt% Cu	Wt% Mg	Wt% P	Wt% S	Wt% Zn
LOE23	Lubricating Oil Elements: Ba, Ca, Cl, Cu, Mg, P, S, Zn. Same as LOE22, but contains Barium. 23 standards per set, 100 mL each	ASTM D6481, 6443, 4927	1	0.1	0.3	0.08	0.03	0.06	0.06	0.275	0.06
			2	0.175	0.25	0.1	0	0.01	0.15	0	0.15
			3	0.04	0.5	0	0.035	0.16	0.15	0	0.02
			4	0.02	0.35	0.01	0	0.12	0.08	0.2	0
			5	0.15	0.11	0	0.015	0.1	0.1	0.3	0.05
			6	0	0.2	0.1	0	0.2	0.05	0.25	0.15
			7	0.2	0	0.05	0.025	0	0	0.45	0.02
			8	0	0.15	0.03	0	0.1	0.03	0.4	0.04
			9	0	0.25	0.15	0.01	0.16	0	0.35	0.08
			10	0	0.11	0.15	0.04	0.005	0.03	0.75	0.15
			11	0.1	0.26	0.05	0	0	0	0.75	0
			12	0.05	0.2	0	0.005	0.14	0.08	0.5	0.08
			13	0	0	0	0.005	0.02	0.02	0.2	0.02
			14	0.08	0.07	0.15	0.02	0.08	0.14	0.65	0.15
			15	0.01	0.05	0	0	0	0.15	0	0
			16	0	0.4	0	0.001	0.08	0	0.5	0.02
			17	0	0.18	0.02	0.02	0	0.02	0.6	0.06
			18	0	0.4	0.01	0.001	0.01	0.02	0	0
			19	0.15	0.01	0.02	0.04	0.01	0.02	0.2	0.1
			20	0.005	0.05	0.005	0.05	0	0.008	0	0.12
			21	0.1	0.2	0.05	0.02	0.08	0.05	0.275	0.05
			22	0.12	0.2	0	0	0	0	0.75	0
			23	0	0	0	0	0	0	0	0

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Lubricating Oil Standards Formulated Sets

Catalogue #	Description	Method	Standard #	Wt% Ca	Wt% P	Wt% S	Wt% Zn
LOEASTM1	Lubricating Oil Elements: Ca, P, S, Zn. Same as LOE17, but slightly different concentration ranges. 17 standards per set, 100 mL each	ASTM D6481, 6443, 4927	1	0.005	0.005	0.05	0.05
			2	0.6	0	0	0
			3	0	0.3	0	0
			4	1	0	1	0
			5	0	0	0	0.3
			6	0.005	0.25	0.8	0.3
			7	0.5	0.15	0.5	0.15
			8	0.01	0.2	0.1	0.25
			9	0.05	0.01	0.4	0.075
			10	0.1	0.15	0.2	0.2
			11	0.2	0.2	0.8	0.1
			12	0.4	0.005	0.8	0.3
			13	0.6	0.1	0.5	0.05
			14	0.8	0.01	0.05	0.1
			15	1	0.3	1	0.15
			16	0.4	0.05	0.6	0.25
			17	0	0	0	0

Catalogue #	Description	Method	Standard #	Wt% Ba	Wt% Ca	Wt% Cl	Wt% Cu	Wt% Mg	Wt% P	Wt% S	Wt% Zn
LOEASTM2	Lubricating Oil Elements: Ba, Ca, Cu, Cl, Mg, P, S, Zn. Same as LOE10, but also contains Barium. 10 standards per set, 100 mL each	ASTM D6481, 6443, 4927	1	0.02	0.02	0.03	0.01	0.2	0.25	1	0.02
			2	0.25	0.02	0.02	0.05	0.2	0.02	0.02	0.25
			3	0.02	0.02	0.2	0.01	0.04	0.25	0.15	0.25
			4	0.25	0.02	0.2	0.05	0.04	0.02	1	0.02
			5	0.02	0.4	0.02	0.01	0.04	0.02	1	0.25
			6	0.25	0.4	0.02	0.05	0.04	0.25	0.02	0.02
			7	0.02	0.4	0.2	0.01	0.2	0.02	0.02	0.05
			8	0.25	0.4	0.2	0.05	0.2	0.25	1	0.25
			9	0.13	0.2	0.1	0.025	0.08	0.15	0.5	0.1
			10	0	0	0	0	0	0	0	0

Lubricating Oil Standards Formulated Sets

Catalogue #	Description	Method	Standard #	Wt% Ca	Wt% P	Wt% S	Wt% Zn	Wt% Mg
LOEASTM4	Lubricating Oil Elements: Ca, Mg, P, S, Zn. Same as LOEASTM1, but also contains Magnesium. 17 standards per set, 100 mL each	ASTM D6481, 6443, 4927	1	0.005	0.005	0.05	0.05	0.1
			2	0.6	0	0	0	0.15
			3	0	0.3	0	0	0.35
			4	1	0	1	0	0.225
			5	0	0	0	0.3	0.45
			6	0.005	0.25	0.8	0.3	0.5
			7	0.5	0.15	0.5	0.15	0.325
			8	0.01	0.2	0.1	0.25	0.25
			9	0.05	0.01	0.4	0.075	0.05
			10	0.1	0.15	0.2	0.2	0.4
			11	0.2	0.2	0.8	0.1	0.3
			12	0.4	0.005	0.8	0.3	0.2
			13	6	0.1	0.5	0.05	0.375
			14	0.8	0.01	0.05	0.1	0.175
			15	1	0.3	1	0.15	0.425
			16	0.4	0.05	0.6	0.25	0.275
			17	0	0	0	0	0

Metal Working Fluids Standards - Formulated Sets

Catalogue #	Description	Standard #	Wt% Cl	Wt% P	Wt% S	Standard #	Wt% Cl	Wt% P	Wt% S
MWFL13	Metal Working Fluids Lubricant Cl, P, S. For the analysis of Lubricant Base Metal Working Fluids. 13 standards per set, 100mL each	1	0	0	0	8	1	0.05	0.1
		2	0.75	0.025	0.5	9	0.5	0.4	0
		3	0.05	0.1	3	10	2	0.2	1.5
		4	1	0.5	2.5	11	0	0.5	1.5
		5	0.1	0.005	2	12	1.25	0.01	0.05
		6	1.5	0.2	1	13	0.05	0.3	0.05
		7	2	0.005	3				

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Nitrogen In Solid Polymer

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.

Catalogue #	Description
NP	Concentration Range: 0-3.0 wt% Nitrogen
NSSP	Concentration Range: 0-1.0 wt% of Nitrogen & Sulfur

Catalogue #	Description	Standard #	Wt% Br	Wt% Cd	Wt% Cr	Wt% Hg	Wt% Pb
PL(PE)3-5E(P)	comes in 25 or 50 grams each	1	0	0	0	0	0
		2	0.025	0.005	0.05	0.05	0.05
		3	0.05	0.01	0.1	0.1	0.1
PL(PE)9-5E(P)	comes in 25 or 50 grams each	1	0	0	0	0	0
		2	0.0025	0.0025	0.005	0.01	0.1
		3	0.04	0.01	0.075	0.0075	0.025
		4	0.01	0.0125	0.125	0.05	0.005
		5	0.025	0.0075	0.1	0.025	0.125
		6	0.05	0.001	0.065	0.08	0.075
		7	0.02	0.0005	0.025	0.1	0.01
		8	0.03	0.005	0.05	0.003	0.05
		9	0.005	0.015	0.01	0.12	0.035
		QC Sample	0.025	0.005	0.05	0.05	0.05
PL(PE)3-5E(D)	31 or 40mm disc	1	0	0	0	0	0
		2	0.025	0.005	0.05	0.05	0.05
		3	0.05	0.01	0.1	0.1	0.1
PL(PE)9-5E(D)	31 or 40mm disc	1	0	0	0	0	0
		2	0.0025	0.0025	0.005	0.01	0.1
		3	0.04	0.01	0.075	0.0075	0.025
		4	0.01	0.0125	0.125	0.05	0.005
		5	0.025	0.0075	0.1	0.025	0.125
		6	0.05	0.001	0.065	0.08	0.075
		7	0.02	0.0005	0.025	0.1	0.01
		8	0.03	0.005	0.05	0.003	0.05
		9	0.005	0.015	0.01	0.12	0.035
		QC Sample	0.025	0.005	0.05	0.05	0.05

Standards For PVC Analysis

RoHS/WEEE compliant polymer standards in powder form for analysis of materials in polyvinylchloride (PVC). PVC's also include some Ca and Cl in each sample. Available in 25 grams or 50 grams. 1 Quality Control Sample comes with the 9 standard sets only.

PVC POWDERS

Catalogue #	Description	Standard #	Wt% Br	Wt% Cd	Wt% Cr	Wt% Hg	Wt% Pb
PL(PVC)3-5E(P)	Available in 25 and 50 grams each	1	0	0	0	0	0
		2	0.025	0.005	0.05	0.05	0.05
		3	0.05	0.01	0.1	0.1	0.1

Catalogue #	Description	Standard #	Wt% Br	Wt% Cd	Wt% Cr	Wt% Hg	Wt% Pb	Wt% Ca	Wt% Cl
PL(PVC)9-5E(P)	Available in 25 and 50 grams each	1	0	0	0	0	0	0	40
		2	0.0025	0.0025	0.005	0.01	0.1	0.5	35
		3	0.04	0.01	0.075	0.0075	0.25	1.5	15
		4	0.01	0.0125	0.125	0.05	0.005	0.25	40
		5	0.025	0.0075	0.1	0.025	0.125	0	35
		6	0.05	0.001	0.065	0.08	0.075	3	10
		7	0.02	0.0005	0.025	0.1	0.01	2	40
		8	0.03	0.005	0.05	0.003	0.05	0	12.5
		9	0.005	0.015	0.01	0.12	0.035	0	35
		QC Sample	0.025	0.005	0.05	0.05	0.05	0	35

Additional QC samples available in 100g, 250g and 500g quantities.

PVC DISCS

RoHS/WEEE compliant polymer standards in disc form for analysis of materials in polyethylene (PE). Available in 40 mm x 10mm or 31 mm x 10 mm disc. 1 Quality Control Sample comes with the 9 standard sets only.

Catalogue #	Description
PL(PVC)3-5E(D)	31mm disc
PL(PVC)3-5E(D)	40mm disc
PL(PVC)9-5E(D)	31mm disc
PL(PVC)9-5E(D)	40mm disc

We also have a PE Additive Package that includes 5 standards with 10 elements each. The elements included are Al, Ca, F, Mg, Na, P, S, Si, Ti and Zn.

Monitor Samples For Xrf Silicate Glasses Single Elements

Optically polished on the analytical surface; size 30 - 40mm in diameter and 5mm in height.

Catalogue #	GL-CL	GL-S(HL)	GL-S(LL)	GL-S(ML)
Description	Chlorine Conc. 0.6 wt%	Sulfur (HL). High Level Sulfur; approx. 0.70 wt%	Sulfur (LL). Low level of Sulfur; approx. 0.005 wt%	Sulfur (ML). Mid level of Sulfur; approx. 0.050 wt%

Monitor Samples For Xrf - Silicate Glasses - Multi Elements

Optically polished on the analytical surface; size 30 - 40 mm in diameter and 5 mm in height.
Individual (40 mm) Individual (Other Sizes)

Catalogue #	Ba	Ca	Cl	Cu	Mg	Mo	P	S	Zn
GL-LOE1	0.004	0.01	0.005	0.001	0.001	0.02	0	0.2	0.02
GL-LOE2	0.185	0.5	0.15	0.05	0.15	0.15	0.15	0.75	0.15
GL-LOE3	0.56	0.5	0.45	0.15	0.45	0.45	0.46	0.75	0.46

Physical Testing Standards

ASTM D97 Pour Point Standards

Pour Points are determined by consensus analysis. Standards are packaged in 250mL bottles.

Catalogue #	PP5	PP10	PP15	PP20	PP40	PP50
Approx. Pour Point	-05 °C	-10 °C	-15 °C	-20 °C	-40 °C	-50 °C

ASTM D2386 Freezing Point Standards

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

Catalogue #	FPZ 45	FPZ 50
Nominal Freeze Point	-45 °C	-50 °C

ASTM D2500 Cloud Point Standards

Cloud Points are determined by consensus analysis. Standards are packaged in 250mL bottles.

Catalogue #	CP5	CP2	CP10	CP15	CP20
Approx. Pour Point	+5 °C	-2 °C	-10 °C	-15 °C	-20 °C

ASTM D445 Viscosity Standards

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

Catalogue #	VIS110	VIS60	VIS10	VIS130	VIS100	VIS30	VIS300	VIS4	VIS520	VIS920
Viscosity @ 40C	110 cSt	54 cSt	9.5 cSt	130 cSt	102 cSt	30 cSt	300 cSt	4 cSt	520 cSt	920 cSt

ASTM D5482/D5191 Vapor Pressure Standards

Analytical Services, Inc. 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 10mL flame sealed ampoules in sets of 10.

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

ASTM D56 Tag Closed Cup Flash Point

Standards are packaged in 150mL amber glass bottles and verified by consensus analysis.

Catalogue #	TCC68
Nominal Flash Point	67 °C

Physical Testing Standards

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 was verified by consensus analysis.

Catalogue #	D864-1	D86-4-2
Description	Distillation Standard 0.25L	Distillation Standard 0.50L

ASTM D86 Synthetic Distillation Standard

The automatic distillation apparatus duplicated 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. Analytical Services, Inc. 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.

Catalogue #	D86-1	D86-2	D86-3
Description	Synthetic Distillation Std. 0.5L	Synthetic Distillation Std. 2 x 0.5L	Synthetic Distillation Std 4 x 0.5L

ASTM D92 Cleveland Open Cup Flash Point

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

Catalogue #	FP200	FP230
Flash Point	200 °C	230 °C

ASTM D93 Pensky Martin Flash Point

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

Catalogue #	FP60	FP93
Flash Point	65 °C	93 °C

Certified Flash Point Standards

These reference materials are stable, pure hydrocarbon with a method specific flash point determined by an inter-laboratory study. Standards are packaged in 250mL bottles.

Catalogue #	FP93	FP65	FP134	FP67UD	FP75
Method	ASTM D93	ASTM D93	HEX ASTM D93	ASTM D56	
Flash Point	93 °C	65 °C	134 °C	67 °C	75 °C

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Nitrogen And Sulfur Ampoules

Nitrogen and Sulfur in Petroleum Products

Catalogue #	A-NS(H)	A-NS(L)	A-NS(M)
Description	Nitrogen and Sulfur in Petroleum Products. Sulfur by Ultraviolet Fluorescence and Nitrogen By Chemiluminescence. Flammable UN1262. Dibenzothiophene (S) and Pyridine (N) in Isooctane package in 2 mL amber pre-scored ampoules. Concentrations are Blk, 100, 500, 1000 ng/μL	Nitrogen and Sulfur in Petroleum Products. Sulfur by Ultraviolet Fluorescence and Nitrogen by Chemiluminescence. Flammable UN1262. 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/μL	Nitrogen and Sulfur in Petroleum Products. Sulfur by Ultraviolet Fluorescence and Nitrogen by Chemiluminescence. Flammable UN1262. Dibenzothiophene (S) and Pyridine (N) in Isooctane packaged in 2 mL amber pre-scored ampoules. Concentrations are Blk, 5.0, 25, 50, 100 ng/μL
Method	N/D5762 & S/D5453	N/D5762 & S/D5453	N/D5762 & S/D5453

Nitrogen in Petroleum Products

Catalogue #	A4629(1)	A4629(2)	A5762
Description	Nitrogen in Petroleum Products by Syringe-Inlet Chemiluminescence. Flammable UN1262. 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	Nitrogen in Petroleum Products by Syringe-Inlet Chemiluminescence. Flammable UN1262. Pyridine in Isooctane packaged in 2 mL amber pre-scored ampoules. Concentrations are Blk, 5.0, 25, 50, 100 mg/kg	Nitrogen in Petroleum Products by Boat-Inlet Chemiluminescence. Flammable UN1307. Acridine in Xylene packaged in 2 mL amber pre-scored ampoules. Concentrations are Blk, 100, 500, 1000mg/kg
Method	ASTM D4629	ASTM D4629	ASTM D5762

Sulfur in Petroleum Products

Catalogue #	A3120-6	A3246-6	A3961-6
Description	Determination of Sulfur in Petroleum Hydrocarbons by Oxidative Microcoulometry. Flammable UN1262. Di-N-butyl sulfide in Isooctane matrix packaged in 2 mL amber pre-scored ampoules. Concentrations are Blk, 1, 10, 25, 50, 100 mg/kg.	Determination of Sulfur in Petroleum Hydrocarbons by Oxidative Microcoulometry. Flammable UN1262. Di-N-butyl sulfide in Isooctane matrix packaged in 2 mL amber pre-scored ampoules. Concentrations are Blk, 1, 10, 25, 50, 100 mg/kg.	Determination of Sulfur in Petroleum Hydrocarbons by Oxidative Microcoulometry. Flammable UN1262. Di-N-butyl sulfide in Toluene matrix packaged in 2 mL amber pre-scored ampoules. Concentrations are Blk, 1, 10, 25, 50, 100 mg/kg.
Method	ASTM D3120	ASTM D3246	ASTM D3961

Catalogue #	A5453(H)	A5453(L)	A5453(M)
Description	Nitrogen in Petroleum Products by Syringe-Sulfur In Liquid Petroleum Hydrocarbons By Ultraviolet Fluorescence. Flammable UN1262 OR UN1294. Di-N-butyl sulfide in Toluene or Isooctane matrix packaged in 2 mL amber pre-scored ampoules. Concentrations are Blk, 100, 250, 500, 750, 1000ng/uL. Please specify matrix.	Sulfur in Liquid Petroleum Hydrocarbons by Ultraviolet Fluorescence. Flammable UN1262 OR UN1294. 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, 10ng/uL. Please specify matrix.	Sulfur in Liquid Petroleum Hydrocarbons by Ultraviolet Fluorescence. Flammable UN1262 OR UN1294. Di-N-butyl sulfide in Toluene or Isooctane matrix packaged in 2 mL amber pre-scored ampoules. Concentrations are Blk, 5, 25, 50, 100, 200ng/uL. Please specify matrix.
Method	ASTM D5453	ASTM D5453	ASTM D5453

Catalogue #	A5453(T)	A5453CK	ASOM(CK)
Description	Sulfur in Liquid Petroleum Hydrocarbons by Ultraviolet Fluorescence. Flammable UN1262 OR UN1294. Di-N-butyl sulfide in Toluene or Isooctane matrix packaged in 2 mL amber pre-scored ampoules. Concentrations are from the M, L, and H ranges. Please specify matrix.	Sulfur in Liquid Petroleum Hydrocarbons By Ultraviolet Fluorescence. Flammable UN1262 OR UN1294. 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	Determination of Sulfur in Petroleum Hydrocarbons by Oxidative Microcoulometry. Flammable UN1262 OR UN1294. 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
Method	ASTM D5453	ASTM D5453	

Hydrogen Sulfide And Mercaptan Standards Ampoules For Titration Analysis

20ppm H₂S and 40ppm Mercaptan

Catalogue #	H2SRSH-20	H2SRSH-2
Size	20 mL	2 mL

Titration Standards

Bromine Index For Astm D2710

Catalogue #	Description	Standard #	Bromine Index
BRI3	Bromine Index Standard Flammable UN 1294. Bromine Index in Toluene; 3 per set, 200 mL each	1	10
		2	100
		3	1000

Bromine Number For ASTM D1159

Catalogue #	Description	Standard #	Bromine #
BrNo2	Bromine Number Standards Flammable UN1294. Bromine number in Toluene: 2 per set, 200 mL each	1	2
		2	10

Total Acid Number For ASTM D664

Catalogue #	Description	Standard #	Acid Number
TAN2	Total Acid Number Standards, Tan in Mineral Oil, 2 per set; 500 mL each	1	2
		2	5

Base Number For ASTM D2896 & D5984

Catalogue #	Description	Standard #	Base Number
BNo3	Total Base Number Standard, Total Base Number in Mineral Oil, 500 mL each	1	2
		2	5
		3	10

Nitrogen Bases In Hydrocarbons

Catalogue #	Description	Method
N-UOP269	Organic Nitrogen in Petroleum Distillates, Organic Nitrogen in Petroleum Distillates, Conc: .01, .05, 0.10, 1.0 wt%, 4 standards per set, 200 mL each	UOP269 90

Lead Standards In Paint Coatings On Polyester Film

Lead (Pb) in Alkyd paint coating on Polyester Film

Catalogue #	Pb-2mPEF7	Pb-2mPEF6	Pb-2mPEFQC
Description	7 standards cut as squares per set, Conc: 0.00, 0.375, 0.75, 2.00, 5.50, 12.00µg/cm ² QC standard, Conc. 0.80µg/cm ² .	Calibration set only - 6 standards cut as squares per set, Conc: 0.00, 0.375, 0.75, 2.00, 5.50, 12.00µg/cm ² . NO QC standard.	QC Standard ONLY - one standard Conc. 0.80µg/cm ²

These standards were developed for ASTMWK21957 “Standard Test Method for Identification and quantification of lead in paint and similar coating materials using energy dispersive X-ray spectrometry (EDXRF)” and WK24178 “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”. Each standard is an easy to handle square of 2 mil thickness polyester substrate with a paint coating thickness of approximately 1.6 mil (40 microns).

Biodiesel Testing Standards

Sulfur in Biodiesel

Catalogue #	Description	Method
S(BIO)6L	Low Range: 6 standards per set, 100 mL each - Conc. 0, 5, 10, 15, 20 and 25 ppm	ASTM D5453
S(BIO)6H	High Range: 6 standards per set, 100 mL each - Conc. 0, 200, 400, 600, 800 and 1000 ppm	ASTM D5453

Free and Total Glycerin

Catalogue #	D6584-MIX	D6584-SS	D6584-50kit
Description	Kit Contains: 4 standards containing the 4 glycerin components in pyridine -5 mL ampoule each - 1 standard of butanetriol internal standard at 1000ng/µL in pyridine - 5mL ampoule - 1 standard of tricaprins internal standard at 8000ng/µL in pyridine-5mL ampoule - 1 vial of MSTFA silyating reagent - 5 mL vial with cap - 1 bottle of heptane in 250 mL	Kit Contains: 1 standard of glycerin in pyridine at 500ng/µL, 1 standard of monoolein in pyridine at 5000ng/µL, 1 standard of dialen in pyridine at 500ng/µL, 1 standard of 1,2,3 {Tri{cisooctadecanoyl}} in pyridine at 5000ng/µL, 1 standard of butanetriol internal standard at 1000ng/µL in pyridine, 1 standard of tricaprins internal standard at 8000ng/µL in pyridine, 1 vial of MSTFA all in 5 mL ampoules or vial and 1 bottle of heptane at 250 mL	Enough for 50 GC runs, Internal Standard #1 and 2 and MSTFA all in 5 mL ampoules
Method	ASTM D6584 or DIN EN14105	ASTM D6584 or DIN EN14105	ASTM D6584 or DIN EN14105
Catalogue #	D6584-100kit	D6584- 250kit	D6584-500kit
Description	Enough for 100 GC runs, Internal Standard #1 and 2 and MSTFA all in 10mL ampoules	Enough for 250 GC runs, Internal Standard #1 and 2 and MSTFA all in 25 mL ampoules	Enough for 500 GC runs, Internal Standard #1 and 2 and MSTFA all in 50 mL amber bottles
Method	ASTM D6584 or DIN EN14105	ASTM D6584 or DIN EN14105	ASTM D6584 or DIN EN14105

Sodium and Potassium UOP 391 or DIN EN14538

Calibration Standards

Catalogue #	Description	Method
UOP391	Na and K at 100 ppm each in 100 mL amber bottle	UOP391 or DIN EN14538
UOP389	Ca and Mg at 100 ppm each in 100 mL amber bottle	UOP391 or DIN EN14538
EN14538	Multi Elements standard containing Ca, Mg, K and Na at 500 ppm each in 100 mL amber bottle	UOP391 or DIN EN14538
EN14538-2C	Multi Elements standard containing Ca, Mg, K, P and Na at 20 ppm and 100 ppm, 2 standards per set: each in 100 mL amber bottle	UOP391 or DIN EN14538

Diesel Reference Fuel - Simulated Distillation

Catalogue #	Description	Method
D2887	6 x 2 mL ampoules per set	ASTM D2887

Methanol in FAME

Catalogue #	Description	Method
EN14110	3 standards per set and 20 mL ampoule of 2-propanol	DIN EN14110

Fatty Acid Methyl Esters (FAME) Analysis

Catalogue #	Description	Method
EN14103	3 x 2 mL ampoules	DIN EN14103
EN14103-IS	Methylheptadecanoate in Heptanes, 1 per set, 100 mL each	DIN EN14103

Iodine Value

Catalogue #	Description	Method
EN14214	Iodine Number 50 and 200, 500 mL each	DIN EN14214

Hexane Residue in Fats and Oil

Catalogue #	Description	Method
HexMe05	Six standards of Hexane in Methyloleate: Conc. Blk, 10, 100, 500 and 1,500 mg/kg in 20 ml ampoules and a 20 mL ampoule of Heptane (internal standard)	ACOS method CA 36-87