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It's a Matter of Quality!

Analytical Services, Inc. specializes and manufactures calibration standards serving the petroleum, lube and crude oil industry since 1993.

All standards are produced and certified “in-house” and accompanied with a Certificate of Analysis indicating traceability to NIST and ASTM methods, validity term and relative degree of uncertainty.

Analytical Services, Inc. is additionally equipped to accommodate special formulation requests to serve specific needs of individual laboratories.



Analytical Services, Inc.
“STANDARDIZING THE PETROCHEMICAL INDUSTRY”



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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.

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

Product Code	Description
WM11-10	10 ppm
WM11-100	100 ppm
WM11-30	30 ppm
WM11-300	300 ppm
WM11-50	50 ppm
WM11-500	500 ppm
WM11-900	900 ppm

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

Product Code	Description
WM12-10	10 ppm
WM12-100	100 ppm
WM12-30	30 ppm
WM12-300	300 ppm
WM12-50	50 ppm
WM12-500	500 ppm
WM12-750	750 ppm
WM12-900	900 ppm

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

Product Code	Description
WM20-10	10 ppm
WM20-100	100 ppm
WM20-30	30 ppm
WM20-300	300 ppm
WM20-50	50 ppm
WM20-500	500 ppm
WM20-900	900 ppm

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 ppm
WM21-100	100 ppm
WM21-200	200 ppm
WM21-30	30 ppm
WM21-300	300 ppm
WM21-50	50 ppm
WM21-500	500 ppm
WM21-750	750 ppm
WM21-900	900 ppm

A-SERIES of MULTI ELEMENT WEAR METAL STANDARDS FOR ICP, RDE & other TECHNIQUES.

These standards are sulfonated.

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 ppm
A21-30	30 ppm
A21-50	50 ppm
A21-100	100 ppm
A21-300	300 ppm
A21-500	500 ppm
A21-900	900 ppm

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

Product Code	Description
A22-10	10 ppm
A22-30	30 ppm
A22-50	50 ppm
A22-100	100 ppm
A22-300	300 ppm
A22-500	500 ppm
A22-900	900 ppm

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

Product Code	Description
A23-10	10 ppm
A23-30	30 ppm
A23-50	50 ppm
A23-100	100 ppm
A23-300	300 ppm
A23-500	500 ppm
A23-900	900 ppm

REAGENTS

Product Code	Description
DB	Dibenzothiophene, 17.13% Sulfur, (Solid)
DBS	Di - N - Butyl Sulfide Certified Reagent, 21.9 wt%
TNA	Benzothiophene (Thianaphthene), 23.4%

MATRIX OILS

Product Code	Product	Description
GM	GASOLINE MATRIX	Gasoline with low level of sulfur
HVMO75	HIGH VISCOSITY MINERAL OIL	Hydrotreated 350N <1.0 ppm Sulfur
LVMO4.5	LOW VISCOSITY MINERAL OIL	Odorless and water white: flashpoint >200 degrees F Viscosity at 100 degrees F -2.68 cSt: <1ppm Sulfur
MVMO25	MEDIUM VISCOSITY MINERAL OIL	Hydrotreated 100N <1ppm Sulfur -25 cSt
RFO	RESIDUAL FUEL OIL	Asphaltic Residual diluted with 100N; Sulfur concentration about 0.25%
SDFM	SYNTHETIC DIESEL FUEL	Mixture of aromatic solvent and low viscosity mineral oil <1ppm Sulfur
TLM	CERTIFIED TOLUENE MATRIX	Toluene that has been certified for Nitrogen and Sulfur. The values will appear on the Certificate of Analysis

STABILIZATION SOLUTIONS

Product Code	Product	Description
STAB SOLN A	STABILIZATION SOLUTION	For chelating and solubilizing organo-metallic solids and solutions for single element and multi-element standards
STAB SOLN B	STABILIZATION SOLUTION	Used in conjunction with STAB SOLN A
STAB SOLN C	STABILIZATION SOLUTION	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 X-Ray 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.**

Concentration Table: CONCENTRATED LIQUID ORGANO-METALLIC SOLUTIONS (STABILIZED AND READY FOR USE)

Available in sizes: 100 grams 50 grams 25 grams

Element	Product Code	Conc. Wt%
Aluminum	LOMSAI 3.0	3.00
Antimony	LOMSSb 2.0	2.00
Barium	LOMSBa 12.5	12.50
Cadmium	LOMSCd 10.0	10.00
Calcium	LOMSCa 5.0	5.00
Cerium	LOMSCe 5.0	5.00
Chromium	LOMSCr 3.50	3.50
Cobalt	LOMSCo 7.5	7.50
Copper	LOMSCu 6.0	6.00
Iron	LOMSFe 4.0	4.00
Lead	LOMSPb 20.0	20.00
Lithium	LOMSLi 1.5	1.50
Magnesium	LOMSMg 3.0	3.00
Manganese	LOMSMn 6.0	6.00
Molybdenum	LOMSMo 5.0	5.00
Nickel	LOMSNi 5.0	5.00
Phosphorus	LOMSP 5.0	5.00
Potassium	LOMSK 7.5	7.50
Praseodymium	LOMSPr 3.0	3.00
Selenium	LOMSSe 3.5	3.50
Silicon	LOMSSi 7.5	7.50



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Element	Product Code	Conc. Wt%
Sodium	LOMSNa 2.5	2.50
Strontium	LOMSSr 10.0	10.00
Thallium	LOMSTI 5.0	5.00
Tin	LOMSSn 7.5	7.50
Titanium	LOMSTi 5.0	5.00
Vanadium	LOMSV 4.0	4.00
Yttrium	LOMSY 2.5	2.50
Zinc	LOMSZn 6.0	6.00
Zirconium	LOMSZr 5.0	5.00

STABILIZED ORGANO-METALLIC SOLUTIONS

ORGM'S DILUTE SINGLE - ELEMENT ORGANO - METALLIC OIL STANDARDS These standards are sulfur free, unless otherwise noted, organo - metallic standards 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 multi - element standards.

Available in sizes: 100 grams 50 grams

Element	Product Code	Conc. Wt%
Aluminum	ORGM-AI0.1	0.1000
Aluminum	ORGM-AI0.5	0.5000
Antimony	ORGM-Sb0.1	0.1000
Antimony	ORGM-Sb0.5	0.5000
Arsenic	ORGM-As0.1	0.1000
Arsenic	ORGM-As0.5	0.5000
Barium	ORGM-Ba0.1	0.1000
Barium	ORGM-Ba0.5	0.5000
Beryllium	ORGM-Be0.1	0.1000
Beryllium	ORGM-Be0.5	0.5000
Cadmium	ORGM-Cd0.1	0.1000
Cadmium	ORGM-Cd0.5	0.5000
Calcium	ORGM-Ca0.1	0.1000
Calcium	ORGM-Ca0.5	0.5000
Cerium	ORGM-Ce0.1	0.1000
Cerium	ORGM-Ce0.5	0.5000



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Element	Product Code	Conc. Wt%
Chromium	ORGM-Cr0.1	0.1000
Chromium	ORGM-Cr0.5	0.5000
Cobalt	ORGM-Co0.1	0.1000
Cobalt	ORGM-Co0.5	0.5000
Copper	ORGM-Cu0.1	0.1000
Copper	ORGM-Cu0.5	0.5000
Gallium	ORGM-Ga0.1	0.1000
Gallium	ORGM-Ga0.5	0.5000
Gold	ORGM-Au0.1	0.1000
Iron	ORGM-Fe0.1	0.1000
Iron	ORGM-Fe0.5	0.5000
Lead	ORGM-Pb0.1	0.1000
Lead	ORGM-Pb0.5	0.5000
Lithium	ORGM-Li0.1	0.1000
Lithium	ORGM-Li0.5	0.5000
Magnesium	ORGM-Mg0.1	0.1000
Magnesium	ORGM-Mg0.5	0.5000
Manganese	ORGM-Mn0.1	0.1000
Manganese	ORGM-Mn0.5	0.5000
Mercury	ORGM-Hg0.1	0.1000
Mercury	ORGM-Hg0.5	0.5000
Molybdenum	ORGM-Mo0.1	0.1000
Molybdenum	ORGM-Mo0.5	0.5000
Nickel	ORGM-Ni0.1	0.1000
Nickel	ORGM-Ni0.5	0.5000
Phosphorous	ORGM-P0.1	0.1000
Phosphorous	ORGM-P0.5	0.5000
Potassium	ORGM-K0.1	0.1000
Potassium	ORGM-K0.5	0.5000
Selenium	ORGM-Se0.1	0.1000
Selenium	ORGM-Se0.5	0.5000
Silicon	ORGM-Si0.1	0.1000
Silicon	ORGM-Si0.5	0.5000

Element	Product Code	Conc. Wt%
Silver	ORGM-Ag0.1	0.1000
Silver	ORGM-Ag0.5	0.5000
Sodium	ORGM-Na0.1	0.1000
Sodium	ORGM-Na0.5	0.5000
Strontium	ORGM-Sr0.1	0.1000
Strontium	ORGM-Sr0.5	0.5000
Thallium	ORGM-Tl0.1	0.1000
Thallium	ORGM-Tl0.5	0.5000
Tin	ORGM-Sn0.1	0.1000
Tin	ORGM-Sn0.5	0.5000
Titanium	ORGM-Ti0.1	0.1000
Titanium	ORGM-Ti0.5	0.5000
Vanadium	ORGM-V0.1	0.1000
Vanadium	ORGM-V0.5	0.5000
Yttrium	ORGM-Y0.1	0.1000
Yttrium	ORGM-Y0.5	0.5000
Zinc	ORGM-Zn0.1	0.1000
Zinc	ORGM-Zn0.5	0.5000
Zirconium	ORGM-Zr0.1	0.1000
Zirconium	ORGM-Zr0.5	0.5000

STABILIZED ORGANO-METALLIC SOLUTIONS INTERNAL STANDARDS

Product Code	Product	Method	Description
BIIS	BISMUTH INTERNAL STANDARD	ASTM D5059	Pb Analysis; Conc. 0.793g Bi/L, 1 per set
KIS	POTASSIUM IONIZATION SUPPRESSANT	ASTM D4628	1% Potassium in Mineral Oil, 1 per set
MNIS	MANGANESE INTERNAL STANDARD	ISO/CD 14596	Ni and V Analysis; Conc. 0.05%, 1 per set
SNIS	TIN INTERNAL STANDARD		6.0%, 1 per set
ZRIS-1	ZIRCONIUM INTERNAL STANDARD, LOW RANGE	ISO/CD 14597	1% Low Range, Sulfur Analysis, 1 per set
ZRIS-16	ZIRCONIUM INTERNAL STANDARD, HIGH RANGE	ISO/CD 14597	16% High Range, Sulfur Analysis, 1 per set

SULFUR STANDARD SETS IN VARIOUS MATRICES FORMULATED SETS

See concentration tables on page 25

Product Code	Product	Method	Description
S(BS)I13	SULFUR IN ISOCTANE FOR GASOLINE AND REFORMULATED GASOLINE ANALYSIS FLAMMABLE UN1262	ASTM D6334 & D2622	Di-N-butyl sulfide in Isooctane. Conc. Range: 0-0.300 wt%; 13 standards per Set, 100 ml each
S(BS)IT10	LOW LEVEL SULFUR STANDARDS FLAMMABLE UN1993	ASTM D6334 & D6445	Di-N-butyl sulfide in Isooctane-Toluene mixture. Conc. Range: 0-0.1000 wt%; 10 standards per set, 100 ml Each
S(T)IT10	LOW LEVEL SULFUR STANDARDS FLAMMABLE UN1993	ASTM D6334 & D6445	Thiophene and Methyl Thiophene Isooctane-Toluene mixture. Conc. Range: 0-0.1000 wt%; 10 standards per set, 100 ml each
SCO10	SULFUR IN CRUDE OIL FLAMMABLE UN1267	ASTM D2622 & D4294	Di-N-butyl sulfide in crude oil. Conc. Range: 0.05-5.0 wt%; 10 standards per set, 100 ml each
SCO7	SULFUR IN CRUDE OIL FLAMMABLE UN1267	ASTM D2622 & 4294	Di-N-butyl sulfide in crude oil. Conc. Range: 0.05-2.0 wt%; 7 standards per set, 100 ml Each
SDF10	SULFUR IN DIESEL FUEL	ASTM D2622 & D4294	Di-N-butyl sulfide in synthetic diesel fuel. Conc. Range :0-5.0 wt%; 10 standards per set, 100 ml each
SDF7	SULFUR IN DIESEL FUEL	ASTM D4294	Di-N-butyl sulfide in synthetic diesel fuel. Conc. Range: 0-0.100 wt%; 7 standards per set, 100 ml each
SG10C	SULFUR IN GASOLINE FLAMMABLE UN1203	ASTM D2622, D6334, D6445 & D4294	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
SG7C	SULFUR IN GASOLINE FLAMMABLE UN1203	ASTM D2622, D6334, D6445 & D4294	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, 100ml each
SHDF5	SULFUR STANDARDS IN HEAVY DIESEL FUEL	ASTM D2622	Di-N-butyl sulfide in synthetic heavy diesel fuel. Conc. Range: 0-.5 wt%; 5 standards per set, 100 ml each
SIO11	SULFUR IN ISOCTANE COMPLETE RANGE FLAMMABLE UN1262	ASTM D5453	Di-N-butyl sulfide in Isooctane. Conc. Range: 0-1000.00 ng/uL; 11 standards per set, 100ml each
SIO3(H)	SULFUR IN ISOCTANE HIGH RANGE FLAMMABLE UN1262	ASTM D5453	Di-N-butyl sulfide in Isooctane. Conc. Range: 100.00-1000.00 ng/uL; 3 standards per set, 100 ml each
SIO4(M)	SULFUR IN ISOCTANE MEDIUM RANGE FLAMMABLE UN1262	ASTM D5453	Di-N-butyl sulfide in Isooctane. Conc. Range: 5.00-100.00 ng/uL; 4 standards per set, 100ml each
SIO6(L)	SULFUR IN ISOCTANE LOW RANGE FLAMMABLE UN1262	ASTM D5453	Di-N-butyl sulfide in Isooctane. Conc. Range: 0.0-10.00 ng/uL; 6 standards per set, 100ml each

Product Code	Product	Method	Description
SISOH7	SULFUR STANDARDS HIGH RANGE, WITH 18% ZIRCONIUM INTERNAL STANDARD	ISO/CD 14596	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
SISOL8	SULFUR STANDARDS LOW RANGE, WITH 1% ZIRCONIUM INTERNAL STANDARD	ISO/CD 14596	Di-N-butyl sulfide and 1% zirconium internal standard in mineral oil. Conc. Range: 0-1000 ppm; 8 standards per set, 100 ml each
SITCS5(H)	SULFUR STANDARDS FOR CANADIAN GENERAL STANDARDS BOARD HIGH RANGE FLAMMABLE UN1993	CAN/GS-3.0 NO. 16.1-98	Di-N-butyl sulfide in Isooctane-Toluene mixture. Conc. Range: 0.020-0.100 wt%; 5 standards per set, 100 ml each
SITCS5(L)	SULFUR STANDARDS FOR CANADIAN GENERAL STANDARDS BOARD LOW RANGE FLAMMABLE UN1993	CAN/GS-3.0 NO. 16.1-98	Di-N-butyl sulfide in Isooctane-Toluene mixture. Conc. Range: 0-0.020 wt%; 5 standards per set, 100 ml each
SITCS9	SULFUR STANDARDS FOR CANADIAN GENERAL STANDARDS BOARD COMPLETE RANGE FLAMMABLE UN1993	CAN/GS-3.0 NO. 16.1-98	Di-N-butyl sulfide in Isooctane-Toluene mixture. Conc. Range: 0-0.1000 wt%; 9 standards per set, 100 ml each
SMO10	SULFUR IN MINERAL OIL	ASTM D2622 & D4294	Di-N-butyl sulfide in mineral oil. Conc. Range: 0-0.100 wt%; 10 standards per set, 100 ml Each
SMO10(HL)	SULFUR IN MINERAL OIL	ASTM D2622 & D4294	Di-N-butyl sulfide in mineral oil. Conc. Range: 0-5.00 wt%; 10 standards per set, 100 ml Each
SMO11	SULFUR IN MINERAL OIL COMPLETE RANGE	ASTM D4294	Di-N-butyl sulfide in mineral oil. Conc. Range: 0-5.00 wt%; 11 standards per set, 100 ml Each
SMO6H	SULFUR IN MINERAL OIL HIGH RANGE	ASTM D4294	Di-N-butyl sulfide in mineral oil. Conc. Range: 0.100-5.000 wt%; 6 standards per set, 100 ml each
SMO7L	SULFUR IN MINERAL OIL LOW RANGE	ASTM D4294	Di-N-butyl sulfide in mineral oil. Conc. Range: 0-0.100 wt%; 7 standards per set, 100 ml each
SMOCS10	SULFUR STANDARDS FOR CANADIAN GENERAL STANDARDS BOARD COMPLETE RANGE	CAN/GS-3.0 NO. 16.1-98	Di-N-butyl sulfide in mineral oil. Conc. Range: 0-0.5000 wt%; 10 standards per set, 100 ml each
SMOCS5(H)	SULFUR STANDARDS FOR CANADIAN GENERAL STANDARDS BOARD HIGH RANGE	CAN/GS-3.0 NO. 16.1-98	Di-N-butyl sulfide in mineral oil. Conc. Range: 0.100-0.500 wt%; 5 standards per set, 100 ml each
SMOCS6(L)	SULFUR STANDARDS FOR CANADIAN STANDARDS BOARD LOW RANGE	CAN/GS-3.0 NO. 16.1-98	Di-N-butyl sulfide in mineral oil. Conc. Range: 0-0.1000 wt%; 6 standards per set, 100 ml each
SRO10	SULFUR IN RESIDUAL OIL	ASTM D2622 & D4294	Di-N-butyl sulfide in residual oil. Conc. Range: 0.25-5.00 wt%; 10 standards per set, 100 ml each

SULFUR STANDARDS

Product Code	Product	Method	Description
SIN-6C	SULFUR IN MINERAL OIL	ASTM D7039	Sulfur in Mineral Oil concentrations of 0, 10, 50, 100, 200 and 500 ppm; 100 ml each
SMO6(H)-H	SULFUR IN MINERAL OIL	ASTM D7039	Sulfur in Mineral Oil concentrations of 0, 100, 200, 400, 800 and 1000ppm; 100 ml each
SMO6(L)-H	SULFUR IN MINERAL OIL	ASTM D7039	Sulfur in Mineral Oil concentrations of 0, 2, 5, 10, 15 and 20ppm; 100ml each
SMO6(M)-H	SULFUR IN MINERAL OIL	ASTM D7039	Sulfur in Mineral Oil concentrations of 0, 5, 10, 25 and 50ppm; 100ml each

ULTRA LOW SULFUR IN DIESEL FUEL

Product Code	Product	Description
ULSD0-25	ULTRA LOW SULFUR IN DIESEL FUEL	Sulfur with Ultra Low Diesel Fuel concentrations of 0, 5, 10, 15, 20 and 25ppm; 100ml each
ULSD20-100	ULTRA LOW SULFUR IN DIESEL FUEL	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

Product Code	Product	Method	Description
SEPA(G)H	SULFUR IN MINERAL OIL	EPA 80.580 TO 80.585	Sulfur in Mineral Oil Gravimetric standard for EPA high-level requirements. Set of two standards, 150 and 450ppm; 200ml each
SEPA(G)L	SULFUR IN MINERAL OIL	EPA 80.580 TO 80.585	Sulfur in Mineral Oil Gravimetric standard for EPA high-level requirements. Set of two standards, 5 and 15ppm; 200ml each
SEPA(P)H	SULFUR IN DIESEL FUEL	EPA 80.580 TO 80.585	Sulfur in Diesel Fuel Precision standard for EPA high level requirements. 300ppm; 400ml each
SEPA(P)L	SULFUR IN DIESEL FUEL	EPA 80.580 TO 80.585	Sulfur in Diesel Fuel Precision standard for EPA low level requirements. 7ppm; 400ml each
SEPA6C	COMPLETE SET	EPA 80.580 TO 80.585	This is the complete set of standards for the EPA requirements and includes all of the above Products



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SULFUR AND METALS IN OIL FORMULATED SETS

See concentration tables on page 28

Product Code	Product	Description
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
SFNVRO12	SULFUR AND METALS IN RESIDUAL FUELOIL; S, Fe, Ni, V	Same as SFNVMO except that the matrix is Residual Fuel Oil, 12 standards per set: 100ml each
SNVMO12	SULFUR AND METALS IN MINERAL OIL; S, Ni, V	For the analysis of fuel and residual oils. Concentration of 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 12 standards per set; 100ml each
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: 100ml each

CHLORINE STANDARDS IN WASTE OIL FORMULATED SETS

See concentration tables on page 29

Product Code	Product	Description
CLWO7	CHLORINE IN WASTE OIL	Chlorinated hydrocarbon in waste oil. Conc.Range: 0-1.00wt%; 7 standards per set, 100ml each

CHLORINE AND SULFUR STANDARDS IN VARIOUS MATRICES FORMULATED SETS

See concentration tables on page 29

Product Code	Product	Description
CLSMO10	CHLORINE AND SULFUR IN MINERAL OIL	Chlorinated hydrocarbon and Di-N-butyl sulfide in mineral oil. Conc. Range: Cl: 0-1.00wt%, S: 0-1.00wt%; 10 standards per set, 100ml each
CLSWO10	CHLORINE AND SULFUR IN WASTE OIL	Chlorinated hydrocarbon and Di-N-butyl sulfide in waste oil. Conc. Range: Cl: 0-1.00wt%, S: 0-2.500wt%; 10 standards per set, 100ml each

LEAD STANDARDS IN VARIOUS MATRICES FORMULATED SETS

See concentration tables on page 30

Product Code	Product	Method	Description
BIIS	BISMUTH INTERNAL STANDARD	ASTM D5059	Internal Standard Conc: 0.793g Bi/l
PBG12	LEAD IN GASOLINE FLAMMABLE UN1203	Covers the scope of ASTM D5059 Parts A & C	This set is made up of PBG7A and PBG7C 12 standards per set; 100 ml each
PBG7A	LEAD IN GASOLINE FLAMMABLE UN1203	Covers the scope of ASTM D509 Part A	7 standards per set; 100 ml each
PBG7C	LEAD IN GASOLINE FLAMMABLE UN1203	Covers the scope of ASTM D5059 Part C	7 standards per set; 100 ml each
PBIO7A	LEAD IN ISOCTANE FLAMMABLE UN1262	ASTM D5059, PART A	7 standards per set; 100 ml each
PBIO12	LEAD IN ISOCTANE FLAMMABLE UN1262	ASTM D5059, PARTS A & C	This set is made up of PBIO7A and PBIO7C 12 standards per set; 100 ml each
PBIO7C	LEAD IN ISOCTANE FLAMMABLE UN1262	ASTM D5059, PART C	7 standards per set; 100 ml each
PBT12	LEAD IN TOLUENE FLAMMABLE UN1294	ASTM D5059, PARTS A & C	This set is made up of PBT7A and PBT7C 12 standards per set; 100 ml each
PBT7A	LEAD IN TOLUENE FLAMMABLE UN1294	ASTM D5059, PART A	7 standards per set; 100 ml each
PBT7C	LEAD IN TOLUENE FLAMMABLE UN1294	ASTM D5059, PART C	7 standards per set; 100 ml each

VANADIUM AND NICKEL STANDARDS WITH MANGANESE INTERNAL STANDARD IN XYLENE-MINERAL OIL FORMULATED SETS

See concentration tables on page 31

Product Code	Product	Method	Description
MNIS-0.05	MANGANESE INTERNAL STANDARD, 0.05%	ISO/CD 14596	500ml
NiISO7	NICKEL STANDARDS WITH 0.05% MANGANESE INTERNAL STANDARD FLAMMABLE UN1307	ISO/CD 14596	Nickel Reagent and 0.05% Manganese internal standard in xylene-mineral oil. Conc. Range: 0-0.0100wt%; 7 standards per set, 100ml each
VISOH7	VANADIUM STANDARD, HIGH RANGE WITH 0.05% MANGANESE INTERNAL STANDARD FLAMMABLE UN1307	ISO/CD 14596	Vanadium reagent and 0.05% Manganese internal standard in xylene-mineral oil. Conc. Range: 0.03-0.100wt%; 7 standards per set, 100ml each
VISOL9	VANADIUM STANDARD, LOW RANGE WITH 0.05% MANGANESE INTERNAL STANDARD FLAMMABLE UN1307	ISO/CD 14596	Vanadium reagent and 0.05% Manganese internal standard in xylene-mineral oil. Conc. Range: 0.0005-0.0200wt%; 9 standards per set, 100ml each

LUBRICATING OIL STANDARDS FORMULATED SETS

See concentration tables on page 31

Product Code	Product	Method	Description
LOA11	LUBRICATING OIL ADDITIVES: Ca, P, S, Zn	ASTM D6481, 6443, 4927	Similar to LOE17, but additive package concentration ranges. 11 standards per set, 100ml each
LOE10	LUBRICATING OIL ELEMENTS: Ca, Cl, Cu, Mg, P, S, Zn	ASTM D6481, 6443, 4927	Abbreviated set for ASTM Method, 10 standards per set, 100ml each
LOE17	LUBRICATING OIL ELEMENTS: Ca, P, S, Zn	ASTM D6481, 6443, 4927	Engine Oil. 17 standards per set, 100 ml each
LOE17A	LUBRICATING OIL ELEMENTS: Ca, Cl, P, S, Zn	ASTM D6481, 6443, 4927	Same as LOE17, but also contains Chlorine. 17 standards per set, 100 ml each
LOE17A/B	LUBRICATING OIL ELEMENTS: Ba, Ca, Cl, P, S, Zn	ASTM D6481, 6443, 4927	Same as LOE17, but also contains Barium and Chlorine. 17 standards per set, 100 ml each
LOE17B	LUBRICATING OIL ELEMENTS: Ba, Ca, P, S, Zn	ASTM D6481, 6443, 4927	Same as LOE17, but also contains Barium. 17 standards per set, 100 ml each
LOE17B/C	LUBRICATING OIL ELEMENTS: Ba, Ca, Mg, P, S, Zn	ASTM D6481, 6443, 4927	Same as LOE17, but also contains Barium and Magnesium. 17 standards per set, 100 ml each
LOE17C	LUBRICATING OIL ELEMENTS: Ca, Mg, P, S, Zn	ASTM D6481, 6443, 4927	Same as LOE17, but also contains Magnesium. 17 standards per set, 100 ml Each
LOE22	LUBRICATING OIL ELEMENTS: Ca, Cl, Cu, Mg, P, S, Zn	ASTM D4927	Complete set for the ASTM method D4927. 22 standards per set, 100 ml each
LOE23	LUBRICATING OIL ELEMENTS: Ba, Ca, Cl, Cu, Mg, P, S, Zn	ASTM D6481, 6443, 4927	Same as LOE22, but contains Barium. 23 standards per set, 100 ml each
LOEASTM1	LUBRICATING OIL ELEMENTS: Ca, P, S, Zn	ASTM D6481, 6443, 4927	Same as LOE17, but slightly different concentration ranges. 17 standards per set, 100 ml each
LOEASTM2	LUBRICATING OIL ELEMENTS: Ba, Ca, Cu, Cl, Mg, P, S, Zn	ASTM D6481, 6443, 4927	Same as LOE10, but also contains Barium. 10 standards per set, 100 ml each
LOEASTM4	LUBRICATING OIL ELEMENTS: Ca, Mg, P, S, Zn	ASTM D6481, 6443, 4927	Same as LOEASTM1, but also contains Magnesium. 17 standards per set, 100 ml Each

METAL WORKING FLUIDS STANDARDS FORMULATED SETS

See concentration tables on page 36

Product Code	Product	Description
MWFL13	METAL WORKING FLUIDS LUBRICANT Cl, P, S	For the analysis of Lubricant Base Metal Working Fluids. 13 standards per set, 100ml each

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.

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

STANDARDS FOR PE ANALYSIS

RoHS/WEEE compliant polymer standards in powder form for analysis of materials in polyethylene (PE). Available in 25 grams or 50 grams. 1 Quality Control Sample comes with the 9 standard sets only.

See concentration tables on page 38

Product Code	Description
PL(PE)3-5E(P)	25 Grams each
PL(PE)3-5E(P)	50 Grams each
PL(PE)9-5E(P)	25 Grams each
PL(PE)9-5E(P)	50 Grams each

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.

Product Code	Description
PL(PE)3-5E(D)	31 or 40mm disc
PL(PE)9-5E(D)	31 or 40mm disc



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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.

See concentration tables on page 38

Product Code	Description
PL(PVC)3-5E(P)	25 grams each
PL(PVC)3-5E(P)	50 grams each
PL(PVC)9-5E(P)	25 grams each
PL(PVC)9-5E(P)	50 grams each

PVC DISCS

RoHS/WEEE compliant polymer standards in disc form for analysis of materials in polyvinylchloride (PVC). Available in 40mm x 10mm (Chemplex®XRF Sample Cups, Cat. No. 1340) or 31mm x 10mm (Chemplex®XRF Sample Cup, Cat. No. 1330). 1 Quality Control Sample comes with the 9 standard sets only. Discs are supplied with the same concentrations as the PVC Powders.

Product Code	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

Note: 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.

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

MONITOR SAMPLES FOR XRF - SILICATE GLASSES - MULTIELEMENTS

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

See concentration tables on page 39

Product Code
GL-LOE1
GL-LOE2
GL-LOE3

PHYSICAL TESTING STANDARDS

ASTM D97 Pour Point Standards

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

Product Code	Approx. Pour Point
PP5	-05 C
PP10	-10 C
PP15	-15 C
PP20	-20 C
PP40	-40 C
PP50	-50 C

ASTM D2386 Freezing Point Standards

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

Product Code	Nominal Freezing Point
FPZ 45	-45 C
FPZ 50	-50 C

ASTM D2500 Cloud Point Standards

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

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

ASTM D445 Viscosity Standards

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

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

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 D56 Tag Closed Cup Flash Point

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

Product Code	Nominal Flash Point
TCC68	67 C

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.

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

Product Code	Description
D86-1	Synthetic Distillation Std. 0.5L
D86-2	Synthetic Distillation Std. 2 x 0.5L
D86-3	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.

Product Code	Flash Point
FP200	200 C
FP230	230 C

ASTM D93 Pensky Martin Flash Point

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

Product Code	Flash Point
FP60	65 C
FP93	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.

Product Code	Method	Flash Point
FP93	ASTM D93	93 C
FP65	ASTM D93	65 C
FP134	HEX ASTM D93	134 C
FP67UD	ASTM D56	67 C
FP75		75 C



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NITROGEN AND SULFUR AMPUOLES

Product Code	Product	Method	Description
A-NS(H)	NITROGEN AND SULFUR IN PETROLEUM PRODUCTS. SULFUR BY ULTRAVIOLET FLUORESCENCE AND NITROGEN BY CHEMILUMINESCENCE. FLAMMABLE UN1262	N/D5762 & S/D5453	Dibenzothiophene (S) and Pyridine (N) in Isooctane package in 2 ml amber pre-scored ampoules. Concentrations are Blk, 100, 500, 1000 ng/ul
A-NS(L)	NITROGEN AND SULFUR IN PETROLEUM PRODUCTS. SULFUR BY ULTRAVIOLET FLUORESCENCE AND NITROGEN BY CHEMILUMINESCENCE. FLAMMABLE UN1262	N/D5762 & S/D5453	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
A-NS(M)	NITROGEN AND SULFUR IN PETROLEUM PRODUCTS. SULFUR BY ULTRAVIOLET FLUORESCENCE AND NITROGEN BY CHEMILUMINESCENCE. FLAMMABLE UN1262	N/D5762 & S/D5453	Dibenzothiophene (S) and Pyridine (N) in Isooctane packaged in 2 ml amber pre-scored ampoules. Concentrations are Blk, 5.0, 25, 50, 100 ng/ul

Product Code	Product	Method	Description
A4629(1)	NITROGEN IN PETROLEUM PRODUCTS BY SYRINGE-INLET CHEMILUMINESCENCE. FLAMMABLE UN1262	ASTM D4629	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
A4629(2)	NITROGEN IN PETROLEUM PRODUCTS BY SYRINGE-INLET CHEMILUMINESCENCE. FLAMMABLE UN1262	ASTM D4629	Pyridine in Isooctane packaged in 2 ml amber pre-scored ampoules. Concentrations are Blk, 5.0, 25, 50 ,100 mg/kg
A5762	NITROGEN IN PETROLEUM PRODUCTS BY BOAT-INLET CHEMILUMINESCENCE. FLAMMABLE UN1307	ASTM D5762	Acridine in Xylene packaged in 2 ml amber pre-scored ampoules. Concentrations are Blk, 100, 500, 1000mg/kg

NITROGEN AND SULFUR AMPOULES

Product Code	Product	Method	Description
A3120-6	DETERMINATION OF SULFUR IN PETROLEUM HYDROCARBONS BY OXIDATIVE MICROCOULOMETRY. FLAMMABLE UN1262	ASTM D3120	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.
A3246-6	DETERMINATION OF SULFUR IN PETROLEUM HYDROCARBONS BY OXIDATIVE MICROCOULOMETRY. FLAMMABLE UN1262	ASTM D3246	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.
A3961-6	DETERMINATION OF SULFUR IN PETROLEUM HYDROCARBONS BY OXIDATIVE MICROCOULOMETRY. FLAMMABLE UN1262	ASTM D3961	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.
A5453(H)	SULFUR IN LIQUID PETROLEUM HYDROCARBONS BY ULTRAVIOLET FLUORESCENCE. FLAMMABLE UN1262 OR UN1294	ASTM D5453	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.
A5453(L)	SULFUR IN LIQUID PETROLEUM HYDROCARBONS BY ULTRAVIOLET FLUORESCENCE. FLAMMABLE UN1262 OR UN1294	ASTM D5453	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.
A5453(M)	SULFUR IN LIQUID PETROLEUM HYDROCARBONS BY ULTRAVIOLET FLUORESCENCE. FLAMMABLE UN1262 OR UN1294	ASTM D5453	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.
A5453(T)	SULFUR IN LIQUID PETROLEUM HYDROCARBONS BY ULTRAVIOLET FLUORESCENCE. FLAMMABLE UN1262 OR UN1294	ASTM D5453	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.
A5453CK	SULFUR IN LIQUID PETROLEUM HYDROCARBONS BY ULTRAVIOLET FLUORESCENCE. FLAMMABLE UN1262 OR UN1294	ASTM D5453	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
ASOM(CK)	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

HYDROGEN SULFIDE AND MERCAPTAN STANDARDS
AMPOULES FOR TITRATION ANALYSIS
 20ppm H₂S and 40ppm Mercaptan

Product Code	Description
H2SRSH-20	20ml
H2SRSH-2	2ml

TITRATION STANDARDS

See concentration tables on page 39

BROMINE INDEX FOR ASTM D2710

Product Code	Product	Description
BRI3	BROMINE INDEX STANDARD FLAMMABLE UN 1294	Bromine Index in Toluene; 3 per set, 200ml each

BROMINE NUMBER FOR ASTM D1159

Product Code	Product	Description
BrNo2	BROMINE NUMBER STANDARDS FLAMMABLE UN1294	Bromine number in Toluene: 2 per set, 200ml each

TOTAL ACID NUMBER FOR ASTM D664

Product Code	Product	Description
TAN2	TOTAL ACID NUMBER STANDARDS	TAN in Mineral Oil, 2 per set; 500ml each

BASE NUMBER FOR ASTM D2896 & D5984

Product Code	Product	Description
BNo3	TOTAL BASE NUMBER STANDARD	Total Base Number in Mineral Oil, 500ml each

NITROGEN BASES IN HYDROCARBONS

Product Code	Product	Method	Description
N-UOP269	Organic Nitrogen in Petroleum Distillates	UOP269-90	Organic Nitrogen in Petroleum Distillates, Conc: .01, .05, 0.10, 1.0wt%; 4 standards per set, 200ml each

LEAD STANDARDS IN PAINT COATINGS ON POLYESTER FILM

Product Code	Product	Description
Pb-2mPEF7	Lead (Pb) in Alkyd paint coating on Polyester Film	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 .
Pb-2mPEF6	Lead (Pb) in Alkyd paint coating on Polyester Film	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.
Pb-2mPEFQC	Lead (Pb) in Alkyd paint coating on Polyester Film	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 2mil thickness polyester substrate with a paint coating thickness of approximately 1.6mil (40 microns).

BIODIESEL TESTING STANDARDS

SULFUR IN BIODIESEL

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

FREE AND TOTAL GLYCERIN

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

BIODIESEL TESTING STANDARDS

Sodium & Potassium UOP 319 or DIN EN14538

Product Code	Product	Method	Description
UOP391	Calibration Standard	UOP391 or DIN EN14538	Na and K at 100ppm each in 100ml amber bottle
UOP389	Calibration Standard	UOP391 or DIN EN14538	Ca and Mg at 100ppm each in 100ml amber bottle
EN14538	Calibration Standard	UOP391 or DIN EN14538	Multi Elements standard containing Ca, Mg, K and Na at 500ppm each in 100mls amber bottle
EN14538-2C	Calibration Standard	UOP391 or DIN EN14538	Multi Elements standard containing Ca, Mg, K, P and Na at 20ppm and 100ppm, 2 standards per set: each in 100mls amber bottle

Simulated Distillation

Product Code	Product	Method	Description
D2887	Diesel Reference Fuel	ASTM D2887	6x2ml ampoules per set

Methanol in FAME

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

Fatty acid methyl esters (FAME) Analysis

Product Code	Product	Method	Description
EN14103	Fatty acid methyl esters (FAME) Analysis	DIN EN14103	3 x 2ml ampoules
EN14103-IS	Fatty acid methyl esters (FAME) Analysis	DIN EN14103	Methylheptadecanoate in Heptanes, 1 per set, 100ml each

Iodine Value

Product Code	Product	Method	Description
EN14214	Iodine Value	DIN EN14214	Iodine Number 50 and 200, 500ml each

Hexane Residue in Fats and Oil

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

CONCENTRATION TABLES

SULFUR STANDARDS - FORMULATED SETS

Concentration Table: S(BS)I13	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.0010
3	0.0020
4	0.0030
5	0.0050
6	0.0100
7	0.0200
8	0.0300
9	0.0400
10	0.0600
11	0.1000
12	0.2000
13	0.3000

Concentration Table: S(BS)IT10	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.0005
3	0.0010
4	0.0030
5	0.0050
6	0.0075
7	0.0100
8	0.0300
9	0.0500
10	0.1000

Concentration Table: S(T)IT10	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.0005
3	0.0010
4	0.0030
5	0.0050
6	0.0075
7	0.0100
8	0.0300
9	0.0500
10	0.1000

Concentration Table: SCO10	
Standard No.	Sulfur, Wt %
1	0.0800
2	0.1000
3	0.2500
4	0.5000
5	1.0000
6	1.5000
7	2.0000
8	3.0000
9	4.0000
10	5.0000

Concentration Table: SCO7	
Standard No.	Sulfur, Wt %
1	0.0800
2	0.1000
3	0.2500
4	0.5000
5	1.0000
6	1.5000
7	2.0000

Concentration Table: SDF10	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.1000
3	0.2500
4	0.5000
5	1.0000
6	1.5000
7	2.0000
8	3.0000
9	4.0000
10	5.0000

Concentration Table: SDF7	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.0200
3	0.0400
4	0.0500
5	0.0600
6	0.0800
7	0.1000

Concentration Table: SIO11	
Standard No.	Sulfur, ng/uL
1	0.0000
2	0.5000
3	1.0000
4	2.5000
5	5.0000
6	10.000
7	25.000
8	50.000
9	100.00
10	500.00
11	1000.0

Concentration Table: SIO3(H)	
Standard No.	Sulfur, ng/uL
1	100.00
2	500.00
3	1000.0

Concentration Table: SIO4(M)	
Standard No.	Sulfur, ng/uL
1	5.00
2	25.00
3	50.00
4	100.00

Concentration Table: SIO6(L)	
Standard No.	Sulfur, ng/uL
1	0.0000
2	0.5000
3	1.0000
4	2.5000
5	5.0000
6	10.000

Concentration Table: SISOH7	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.4000
3	0.7000
4	1.0000
5	1.5000
6	2.0000
7	2.5000

Concentration Table: SISOL8	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.0010
3	0.0050
4	0.0100
5	0.0250
6	0.0500
7	0.0750
8	0.1000

Concentration Table: SITCS5(H)	
Standard No.	Sulfur, Wt %
1	0.0200
2	0.0350
3	0.0500
4	0.0750
5	0.1000

Concentration Table: SITCS5(L)	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.0010
3	0.0050
4	0.0100
5	0.0200

Concentration Table: SITCS9	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.0010
3	0.0050
4	0.0100
5	0.0200
6	0.0350
7	0.0500
8	0.0750
9	0.1000

Concentration Table: SMO10	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.0025
3	0.0050
4	0.0100
5	0.0200
6	0.0400
7	0.0500
8	0.0600
9	0.0800
10	0.1000

Concentration Table: SMO10(HL)	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.1000
3	0.2000
4	0.5000
5	0.7500
6	1.0000
7	2.0000
8	3.0000
9	4.0000
10	5.0000

Concentration Table: SMO11	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.0020
3	0.0050
4	0.0100
5	0.0300
6	0.0600
7	0.1000
8	0.5000
9	1.0000
10	2.5000
11	5.0000

Concentration Table: SMO6H	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.1000
3	0.5000
4	1.0000
5	2.5000
6	5.0000

Concentration Table: SMO7L	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.0020
3	0.0050
4	0.0100
5	0.0300
6	0.0600
7	0.1000

Concentration Table: SMOCS10	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.0100
3	0.0300
4	0.0500
5	0.0700
6	0.1000
7	0.2000
8	0.3000
9	0.4000
10	0.5000

Concentration Table: SMOCS5(H)	
Standard No.	Sulfur, Wt %
1	0.1000
2	0.2000
3	0.3000
4	0.4000
5	0.5000

Concentration Table: SMOCS6(L)	
Standard No.	Sulfur, Wt %
1	0.0000
2	0.0100
3	0.0300
4	0.0500
5	0.0700
6	0.1000

Concentration Table: SRO10	
Standard No.	Sulfur, Wt %
1	0.2500
2	0.5000
3	1.0000
4	1.5000
5	2.0000
6	2.5000
7	3.0000
8	3.5000
9	4.0000
10	5.0000

SULFUR AND METALS IN OIL - FORMULATED SETS

Concentration Table: SFNVMO12				
Standard No.	Sulfur	Iron	Nickel	Vanadium
	Wt %	(ppm)	(ppm)	(ppm)
1	0.0000	0	0	0
2	0.5000	300	10	500
3	1.0000	500	100	25
4	0.0000	100	80	250
5	2.0000	200	40	100
6	2.5000	400	5	400
7	3.0000	0	60	300
8	3.5000	500	0	200
9	0.0000	100	100	0
10	4.5000	300	50	250
11	5.0000	200	20	500
12	5.5000	50	100	50

Concentration Table: SFNVRO12				
Standard No.	Sulfur	Iron	Nickel	Vanadium
	Wt %	(ppm)	(ppm)	(ppm)
1	0.1850	1	4	13
2	0.5000	300	10	500
3	1.0000	500	100	25
4	0.0000	100	80	250
5	2.0000	200	40	100
6	2.5000	400	5	400
7	3.0000	1	60	300
8	3.5000	500	4	200
9	0.0000	100	100	13
10	4.5000	300	50	250
11	5.0000	200	20	500
12	5.5000	50	100	50

Concentration Table: SNVMO12			
Standard No.	Sulfur	Nickel	Vanadium
	Wt %	(ppm)	(ppm)
1	0.0000	0	0
2	0.5000	10	500
3	1.0000	100	25
4	1.5000	80	250
5	2.0000	40	100
6	2.5000	5	400
7	3.0000	60	300
8	3.5000	0	200
9	4.0000	100	0
10	4.5000	50	250
11	5.0000	20	500
12	5.5000	100	50

Concentration Table: SNVRO12			
Standard No.	Sulfur	Nickel	Vanadium
	Wt %	(ppm)	(ppm)
1	0.1850	4	1
2	0.5000	10	500
3	1.0000	100	25
4	1.5000	80	250
5	2.0000	40	100
6	2.5000	5	400
7	3.0000	60	300
8	3.5000	4	200
9	4.0000	100	1
10	4.5000	50	250
11	5.0000	20	500
12	5.5000	100	50

CHLORINE STANDARDS IN WASTE OIL FORM ULATED SETS	
Concentration Table: CLWO7	
Standard No.	Chlorine, Wt %
1	0.0500
2	0.2000
3	0.4000
4	0.5000
5	0.6000
6	0.8000
7	1.0000

CHLORINE AND SULFUR STANDARDS IN M INERAL OILFORM ULATED SETS		
Concentration Table: CLSMO10		
Standard No.	Sulfur wt%	Chlorine wt%
1	0.0000	0.0000
2	0.1000	0.8000
3	0.6000	0.5000
4	0.2000	0.3000
5	0.7000	0.2000
6	0.3000	0.6000
7	0.4000	0.1000
8	0.5000	0.4000
9	0.8000	1.0000
10	1.0000	0.0000

Concentration Table: CLSWO10		
Standard No.	Sulfur wt%	Chlorine wt%
1	0.5000	1.0000
2	2.5000	0.0200
3	0.5000	0.6500
4	1.0000	0.2000
5	1.5000	0.5000
6	1.7500	0.8000
7	1.2500	0.0500
8	2.0000	1.0000
9	2.2500	0.3800
10	0.7500	0.1000

Concentration Table: PBIO7A	
Standard No.	Lead, Gms/Gal.
1	0.000
2	0.100
3	1.000
4	2.000
5	3.000
6	4.000
7	5.000

Concentration Table: PBIO7C	
Standard No.	Lead, Gms/Gal.
1	0.000
2	0.001
3	0.005
4	0.010
5	0.050
6	0.100
7	0.300

LEAD STANDARDS IN VARIOUS MATRICES - FORMULATED SETS	
Concentration Table: PBG7A	
Standard No.	Lead, Gms/Gal.
1	0.000
2	0.100
3	1.000
4	2.000
5	3.000
6	4.000
7	5.000

Concentration Table: PBT7A	
Standard No.	Lead, Gms/Gal.
1	0.000
2	0.100
3	1.000
4	2.000
5	3.000
6	4.000
7	5.000

Concentration Table: PBG7C	
Standard No.	Lead, Gms/Gal.
1	0.000
2	0.001
3	0.005
4	0.010
5	0.050
6	0.100
7	0.300

Concentration Table: PBT7C	
Standard No.	Lead, Gms/Gal.
1	0.000
2	0.001
3	0.005
4	0.010
5	0.050
6	0.100
7	0.300

NICKEL STANDARDS WITH MANGANESE INTERNAL STANDARD FORMULATED SETS

Concentration Table: NiISO7	
Standard No.	Wt % Ni
1	0.0000
2	0.0005
3	0.0010
4	0.0025
5	0.0050
6	0.0070
7	0.0100

Concentration Table: VISOH7	
Standard No.	Wt% V
1	0.0000
2	0.0300
3	0.0400
4	0.0500
5	0.0600
6	0.0800
7	0.1000

Concentration Table: VISOL9	
Standard No.	Wt% V
1	0.0005
2	0.0025
3	0.0050
4	0.0075
5	0.0100
6	0.0125
7	0.0150
8	0.0175
9	0.0200

LUBRICATING OIL STANDARDS - FORMULATED SETS

Concentration Table: LOA11				
Standard No.	Wt% Ca	Wt% P	Wt% S	Wt% Zn
1	0.5000	1.0000	0.5000	0.5000
2	2.5000	1.0000	2.5000	2.0000
3	2.0000	1.2500	1.0000	1.5000
4	5.0000	0.0000	0.0000	0.0000
5	4.0000	0.5000	1.2500	0.5000
6	2.5120	0.7500	4.0000	1.0000
7	4.0000	0.0000	1.5000	1.0000
8	0.5080	2.0000	5.0000	1.0000
9	1.0000	0.7500	2.0000	1.5000
10	2.5000	1.2000	3.0000	0.5000
11	0.0000	0.0000	0.0000	0.0000

Concentration Table: LOE10							
Standard No.	Wt% Ca	Wt% Cl	Wt% Cu	Wt% Mg	Wt% P	Wt% S	Wt% Zn
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

Concentration Table: LOE17				
Standard No.	Wt% Ca	Wt% P	Wt% S	Wt% Zn
1	0.6000	0.0050	0.1750	0.0600
2	0.5000	0.2000	0.0500	0.0800
3	0.4000	0.1500	0.3000	0.1800
4	0.2600	0.2500	0.1500	0.1200
5	0.0050	0.0050	0.4500	0.0700
6	0.4000	0.0250	0.3500	0.1000
7	0.3000	0.0600	0.2500	0.1200
8	0.2000	0.1000	0.4500	0.1000
9	0.0600	0.0800	0.3000	0.1300
10	0.0600	0.0500	0.2000	0.0500
11	0.0500	0.1200	0.1000	0.0750
12	0.0250	0.1500	0.2000	0.1300
13	0.0050	0.2000	0.4000	0.1500
14	0.1700	0.2500	0.5500	0.1100
15	0.1000	0.1000	0.2000	0.2000
16	0.0100	0.0100	0.6000	0.2500
17	0.0000	0.0000	0.0000	0.0000

Concentration Table: LOE17A					
Std. No.	Wt% Ca	Wt% Cl	Wt% P	Wt% S	Wt% Zn
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	0.5000	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

Concentration Table: LOE17A/B						
Std. No.	Wt% Ba	Wt% Ca	Wt% Cl	Wt% P	Wt% S	Wt% Zn
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

Concentration Table: LOE17B					
Standard No.	Wt% Ba	Wt% Ca	Wt% P	Wt% S	Wt% Zn
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	0.0000	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

Concentration Table: LOE17B/C

Standard No.	Wt% Ba	Wt% Ca	Wt% Mg	Wt% P	Wt% S	Wt% Zn
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

Concentration Table: LOE17C

Standard No.	Wt% Ca	Wt% Mg	Wt% P	Wt% S	Wt% Zn
1	0.6000	0.1000	0.0050	0.1750	0.0600
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	0.0000	0.0000	0.0000	0.0000	0.0000

Concentration Table: LOE22

Standard No.	Wt% Ca	Wt% Cl	Wt% Cu	Wt% Mg	Wt% P	Wt% S	Wt% Zn
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	0.0200	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	0.2000	0.1000
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

Concentration Table: LOE23

Standard No.	Wt% Ba	Wt% Ca	Wt% Cl	Wt% Cu	Wt% Mg	Wt% P	Wt% S	Wt% Zn
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

Concentration Table: LOEASTM1

Standard No.	Wt% Ca	Wt% P	Wt% S	Wt% Zn
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

Concentration Table: LOEASTM2

Standard No.	Wt% Ba	Wt% Ca	Wt% Cl	Wt% Cu	Wt% Mg	Wt% P	Wt% S	Wt% Zn
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

Concentration Table: LOEASTM4

Standard No.	Wt% Ca	Wt% P	Wt% S	Wt% Zn	Wt% Mg
1	0.0050	0.0050	0.0500	0.0500	0.1000
2	0.6000	0.0000	0.0000	0.0000	0.1500
3	0.0000	0.3000	0.0000	0.0000	0.3500
4	1.0000	0.0000	1.0000	0.0000	0.2250
5	0.0000	0.0000	0.0000	0.3000	0.4500
6	0.0050	0.2500	0.8000	0.3000	0.5000
7	0.5000	0.1500	0.5000	0.1500	0.3250
8	0.0100	0.2000	0.1000	0.2500	0.2500
9	0.0500	0.0100	0.4000	0.0750	0.0500
10	0.1000	0.1500	0.2000	0.2000	0.4000
11	0.2000	0.2000	0.8000	0.1000	0.3000
12	0.4000	0.0050	0.8000	0.3000	0.2000
13	6.0000	0.1000	0.5000	0.0500	0.3750
14	0.8000	0.0100	0.0500	0.1000	0.1750
15	1.0000	0.3000	1.0000	0.1500	0.4250
16	0.4000	0.0500	0.6000	0.2500	0.2750
17	0.0000	0.0000	0.0000	0.0000	0.0000

METAL WORKING FLUIDS STANDARDS - FORMULATED SETS

Concentration Table: MWFL13

Standard No.	Wt% Cl	Wt% P	Wt% S
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

STANDARDS FOR PE ANALYSIS

Table: PL(PE)3-5E(P)

Standard No.	Wt% Br	Wt% Cd	Wt% Cr	Wt% Hg	Wt% Pb
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

Table: PL(PE)9-5E(P)

Standard No.	Wt% Br	Wt% Cd	Wt% Cr	Wt% Hg	Wt% Pb
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
QC Sample	0.0250	0.0050	0.0500	0.0500	0.0500

STANDARDS FOR PVC ANALYSIS

Table: PL(PVC)3-5E(P)

Standard No.	Wt% Br	Wt% Cd	Wt% Cr	Wt% Hg	Wt% Pb
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

Table: PL(PVC)9-5E(P)

Standard No.	Wt% Br	Wt% Cd	Wt% Cr	Wt% Hg	Wt% Pb	Wt% Ca	Wt% Cl
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	40.00
2	0.0025	0.0025	0.0050	0.0100	0.1000	0.5000	35.00
3	0.0400	0.0100	0.0750	0.0075	0.2500	1.5000	15.00
4	0.0100	0.0125	0.1250	0.0500	0.0050	0.2500	40.00
5	0.0250	0.0075	0.1000	0.0250	0.1250	0.0000	35.00
6	0.0500	0.0010	0.0650	0.0800	0.0750	3.0000	10.00
7	0.0200	0.0005	0.0250	0.1000	0.0100	2.0000	40.00
8	0.0300	0.0050	0.0500	0.0030	0.0500	0.0000	12.50
9	0.0050	0.0150	0.0100	0.1200	0.0350	0.0000	35.00
QC Sample	0.0250	0.0050	0.0500	0.0500	0.0500	0.0000	35.00

MONITOR SAMPLES FOR XRF - SILICATE GLASSES

Table: Multi-Elements			
Element	GL-LOE1	GL-LOE2	GL-LOE3
Ba	0.0040	0.1850	0.5600
Ca	0.0100	0.5000	0.5000
Cl	0.0050	0.1500	0.4500
Cu	0.0010	0.0500	0.1500
Mg	0.0010	0.1500	0.4500
Mo	0.0200	0.1500	0.4500
P	0.0000	0.1500	0.4600
S	0.2000	0.7500	0.7500
Zn	0.0200	0.1500	0.4600

TITRATION STANDARDS

Table: BRI3	
Standard No.	Bromine Index
1	10
2	100
3	1000

Table: BrNo2

Standard No.	Bromine #
1	2
2	10

Table: TAN2

Standard No.	Acid Number
1	2
2	5

Table: BNo3

Standard No.	Base Number
1	2
2	5
3	10