

ELEMENTAL ANALYSIS OF PETROLEUM PRODUCTS CRM PRODUCT GUIDE

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| Element | Matrix | Instrument | Industry Method | Related ASI Product Codes |
|--------------------------|---|--|--|---|
| Sulfur | Mineral Oil (25 or 75cst), Diesel Fuel, Crude Oil, Residual Oil, Gasoline, Isooctane, Isooctane/Toluene, Toluene, Kerosene, Fuel Oil, Polysulfide Oil | ED-XRF | ASTM D4294, ISO 8754, ISO 13032, IP336 | Calibration Sets: SMO10, SMO10HL, SMO8, SDF10, SCO10, SRO10 Check Standards: SMO-40, SRO-2.00, SDF-900, SFO-3.50, SRO-5000, SCO-1000, SCO-5000, SMO-500, SMO-1000, SMO-5000 |
| | | WD-XRF | ASTM D2622, ISO 14596, ISO 20884 | |
| | Gasoline, Isooctane, Isooctane/Toluene, Xylenes, Mineral Oil, Kerosene | Monochromatic WD-XRF | ASTM D7039, ASTM D7220, EPA Tier 3 (Part 1090) | Calibration Sets: SG7, SIO11, SIO6-UL, ULSD0-25 |
| | | Combustion/UV Fluorescence | ASTM D5453, EPA Tier 3 (Part 1090) | Check Standards: SIO-10, SIO-250, SG-5, SG-9, SDF-10, SXY-5 |
| Nitrogen | Mineral Oil, Xylenes, Diesel Fuel, Crude Oil, Isooctane, Toluene, Kerosene, Gasoline, Fuel Oil | Syringe Chemiluminescence | ASTM D4629 | Calibration Sets: NSIO6-UL, NST5-L, NIO6-UL, A4629 Check Standards: NT-5, NXY-5, NIO-5, NIO-10, NXY-10, NXY-50 |
| | | Boat Inlet Chemiluminescence | ASTM D5762 | |
| Chlorine | Mineral Oil, Diesel Fuel, Isooctane, Xylenes, Isooctane/Toluene | Microcolometry | ASTM D5808 | Calibration Sets: CISMO10, CISMO8, CIMO6-L Check Standards: CIDF-5, CIDF-10, CIXy-10, CIO-10, CIMO-2, CIMO-8 |
| | Crude Oil, Mineral Oil | WD-XRF | ASTM D4929C | |
| | Xylenes, Gasoline, Isooctane, Toluene, Isooctane/Toluene | Monochromatic WD-XRF | ASTM D7536 | |
| Iron, Nickel, Vanadium | Crude Oil, Residual Oil, Mineral Oil (25 or 75cst) | WD-XRF | ASTM D8252, IP501, EN14597 | Calibration Sets: SFNVMO12, SFNVRO12 Check Standards: SFNVMO-QC, SFNVRO-QC |
| | Hydrocarbon Oil | ICP-OES | ASTM D5708 | |
| Ba, Ca, Mg, Zn | Lubricating Oil | AA | ASTM D4628 | Calibration Sets: LOE23(Contains Ba, Ca, Cl, Cu, Mg, P, S, Zn) LOA11(Contains Ca, P, S, Zn) LOE17A(Ca, Cl, P, S, Zn) LOE17(Ca, P, S, Zn) LOE17AB(Ba, Ca, Cl, P, S, Zn) LOEASTM(Ca, P, S, Zn) Check Standards: D6443-CK |
| Ba, Ca, P, S, Zn | | WD-XRF | ASTM D4927 | |
| Ca, Cl, Cu, Mg, P, S, Zn | | | ASTM D6443 | |
| P, S, Cl, Ca, Zn, Mo | | ED-XRF | ASTM D7751 | |
| P, S, Ca, Zn | | ASTM D6481 | | |
| Ca, Mg, P, Zn | | ICP-OES | ASTM D4951 | |
| Wear Metals | | | ASTM D5185 | |
| Lead, Manganese | | Gasoline, Isooctane, Isooctane/Toluene, Xylenes, Mineral Oil | ED-XRF, WD-XRF | |
| Silicon | Gasoline, Isooctane, Mineral Oil | Monochromatic WD-XRF | ASTM D7757 | Check Standards: SiLO-60, SiLO-300, SIMO-60, SIMO-300 |

| Product Code Abbreviations | Available Volumes |
|---|---|
| Formula = (Element) (Matrix) (Concentration) | 2mL, 5mL, 20mL Ampules |
| MO = Mineral Oil | 50mL, 100mL, 250mL, 500mL, 1L, 1 Gallon Amber Glass Bottles |
| DF = Diesel Fuel | Calibration Sets in 100mL bottles unless otherwise noted |
| CO = Crude Oil | |
| IO = Isooctane | |
| T = Toluene | Refinery Laboratories |
| IT = Isooctane/Toluene Mix | 3rd Party Testing Laboratories |
| Xy = Xylenes | Pipeline Companies |
| RO = Residual Oil | Tank Terminals |
| FO = Fuel Oil | Lubricant Manufacturers |
| G = Gasoline | Blending Facilities |
| HL = High Level(Includes Standard above 1% wt) | Analytical Instrument Manufacturers |
| L = Low(Includes Standard below 1% wt) | |
| UL = Ultra Low(Set includes standard under 1 mg/kg) | |
| ULSD = Ultra Low Sulfur Diesel | |
| NS = Nitrogen and Sulfur combined | |
| ELO = Elements in Lubricating Oil | |
| Number following matrix indicates number of standards | |
| Number that follows a dash indicates check standard with concentration in mg/kg | |
| Number with decimal indicates concentration in weight percent | |



Custom Calibration Sets and Check Standards are available upon request. Element, Matrix, and Concentration can be customized to meet your unique application. All standards listed are covered under ASI Standards ISO 17034 Accreditation. Each standard is gravimetrically prepared using calibrated balances traceable to NIST weights. Every standard is assayed and verified for precision and accuracy at ASI's in house laboratory according to ISO 17025 guidelines. ASI CRMs are traceable to applicable NIST SRMs. Included with each order is a COA and MSDS. ASI Standards guarantees the quality of our products. If you are unsatisfied with your standard it will be replaced at no cost. To place a custom order just provide us with the desired elements, matrix, concentrations with units, number of standards, and volume size.

