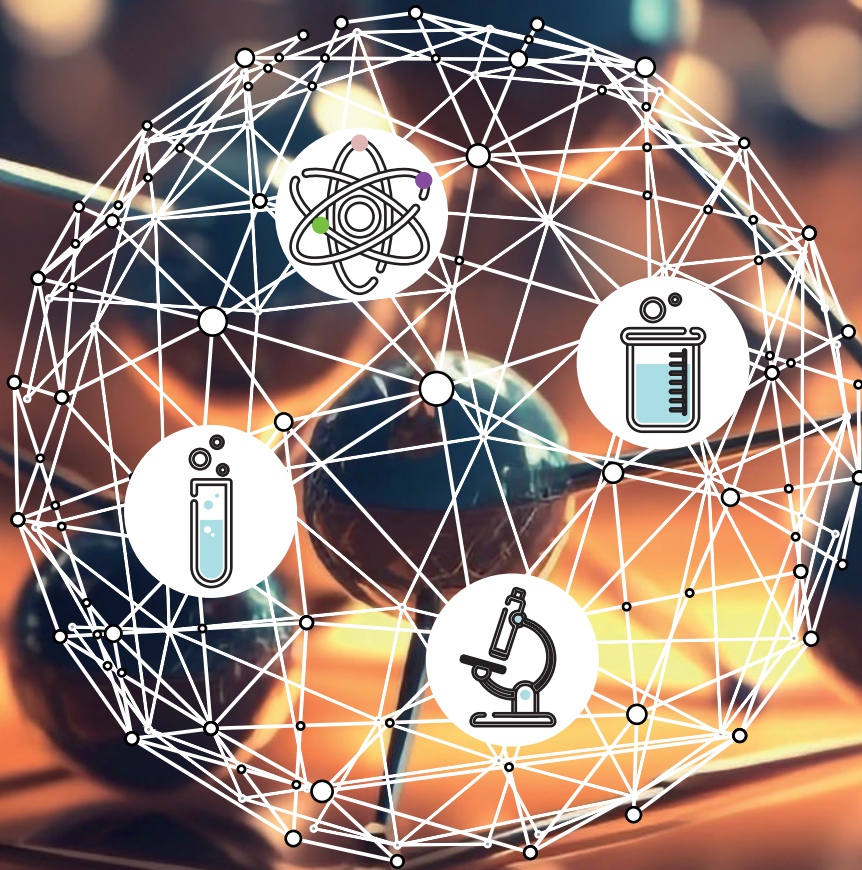


인증표준물질

Certified Reference Materials





중금속분석을 위한 시료전처리장치와 인증표준물질등 소모품 전문기업!



(주) 오디랩은 2008년 8월에 설립된 회사로 중금속분석에 사용되는 흑연블럭 산 분해장비인 에코프리 I, II, III 시리즈와 산 세척장치, 고순도 산 제조 장치, 유리분주기, ICP/ICP MS 소모품, 인증표준물질(CRM), 숙련도 평가물질 (PT) 등 을 제조, 수입판매하고 있습니다.

(주) 오디랩에서 제조 판매하는 흑연블럭 산 분해장비는 열선 가열판이나 마이크로웨이브의 단점을 보완한 제품으로 국내를 비롯하여 세계 7개국에 특허를 획득하였고 현재 해외로도 수출 중 에 있습니다.

또한 실험실에서 분석 데이터의 신뢰성확보를 위한 인증표준물질(CRM)과 표준물질(RM), 국제숙련도 물질을 전세계에서 수입하여 판매하고 있습니다. 인증표준물질은 고객이 찾으시는 제품을 탐색하여 드리고 있으며, 가장 근접한 제품으로 추천드리고 있습니다.

특히 유럽환경규제인 RoHS에 대응한 IEC62321시험법에 나오는 인증표준 물질을 국내 시험평가기관이나 국가기관에 공급하고 있으며, 환경부에서 실시하는 정도관리에 대응하여 LGC사에서 제공하는 환경관련 숙련도 물질을 공급하고 있습니다.

**저희 (주) 오디랩은 화학실험실의 동반자로서
분석의 재현성과 정확성, 신뢰성 확보를 위해
언제나 고객의 노력과 함께 하겠습니다**

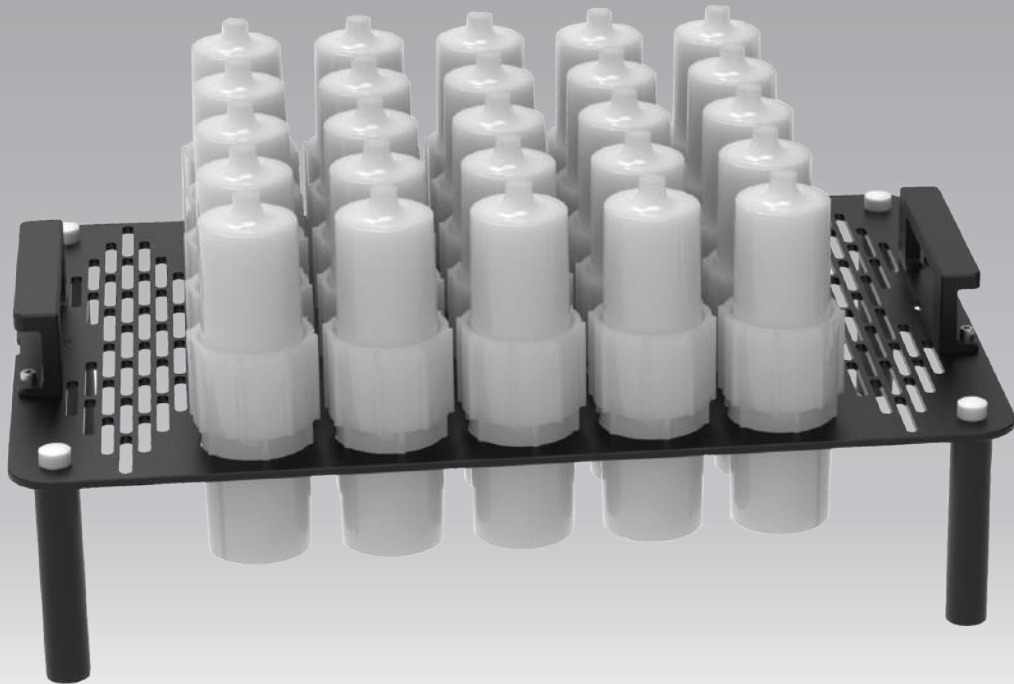
ODLAB

자동 산분해장비

ADS25



견적문의



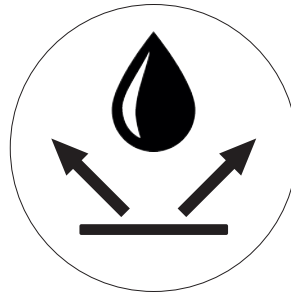
경량화 & 벤틸레이션

경량화 & 벤틸레이션 -



산순환 포집분해용기

산순환 포집분해용기 -



오염방지&내구성

오염방지&내구성 -



앱 연동 조작

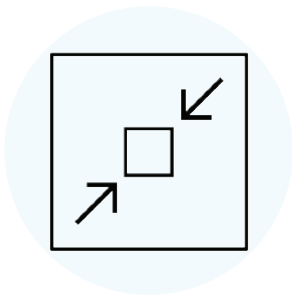
앱 연동 조작 -

이동 및 보관을 위해 플레이트를 타공디자인으로 경량화를 하였습니다 또한 타공을 통하여 원활하게 열기의 순환이 이루어 집니다.

좌우에 있는 리프트 장치로 산 순환 포집분해 용기 내부의 산을 가열 / 냉각 시켜서 사이펀 현상에 의해 리사이클 시켜 시료를 분해할 수 있도록 디자인 하였습니다.

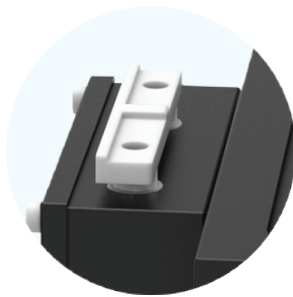
SUS 재질사용 및 테프론 특수코팅을 하여 표면이 쉽게 오염되지 않도록 제작하였습니다. 또한 상부 가열부와 하부 전자제어부는 서로 격리, 밀봉되어 열 또는 산 증기로 인하여 전자제어장치가 손상되지않도록 되어있습니다.

20 Step 으로 가열 / 냉각 으로 분해조건을 프로그래밍 할 수 있으며, 앱을 사용하여 조절가능합니다.



컴팩트한 사이즈

컴팩트한 사이즈 -



오토메틱 리프팅

오토메틱 리프팅 -

메뉴얼 및 프로그래밍 기능으로 반복적인 가열 / 냉각을 할 수 있도록 리프팅 기능이 있습니다.



균일한 온도

균일한 온도 -

흑연 소재를 사용하여 균일한 온도를 제공하고 ($\pm 1^{\circ}\text{C}$ 온도편차를 갖는다) 제어는 0.2°C 로 제어된다.



수동 승강버튼

수동 승강버튼 -

리프트 장치를 수동버튼을 사용하여 상부 랙(Rack)을 상하로 움직여 사용자가 원할 시 용기의 상태를 언제든지 확인 할 수 있습니다.



GLASS EXPANSION
Quality By Design

ICP-OES / ICP-MS

모든 메이커 (애질런트, 씨모, 퍼킨..etc) 전제품



견적문의

Standard

Standard

Code	Product	Unit
NIST-46h	Portland Cement Fineness Standard	10 vials x 5 g
	A unit of SRM 46h contains 10 glass vials of approximately 5 g each of powered cement. Each vial has a plastic snap off cap and is contained in a sealed foil bag.	
	Measurand	Certified value
	Specific Surface Area (Blaine)	364.4 m ² /kg ± 2.68 m ² /kg (3644.0 cm ² /g ± 26.8 cm ² /g)
	Sieve Residue (45 µm residue)	7.43 % ± 0.79 %
NIST-114r	Portland Cement Fineness Standard	20 vials x 5 g
	A unit of SRM 114r consists of 20 glass vials with plastic caps containing powdered cement. Each vial is sealed in a foil bag and contains approximately 5 g of cement.	
	Measurand	Certified value
	Specific Surface Area (Blaine)	3932 cm ² /g ± 17 cm ² /g (393.2 m ² /kg ± 1.7 m ² /kg)
	Sieve Residue (45 µm residue)	5.97 % ± 0.48 %
NIST-1980	Positive Electrophoretic Mobility (+µE) Standard	40 mL
	It is intended for use in the evaluation of equipment, and the validation of methodology used to measure electrophoretic mobility. A unit of SRM 1980 consists of a single 60 cm ³ polyethylene bottle containing 40 cm ³ of suspension, which is to be diluted prior to analysis.	
	Certified value	2.53 µm·cm/V·s ± 0.12 µm·cm/V·s
NIST-1900	Silicon Nitride Powder-Specific Surface Area Standard	4 g
	It is intended for use in the calibration of instruments used to measure specific surface area (SSA) in the range 0.1 m ² /g	
	Measurement Technique	Specific Surface Area
	Multipoint Singlw Point	2.85 m ² /g ± 0.09 m ² /g 2.79 m ² /g ± 0.07 m ² /g
NIST-1917	Mercury Porosimetry Standard	10 g
	This SRM/CRM jointly developed and certified by NIST and BAM is intended for use in calibrating and monitoring the performance of mercury porosimeters. The SRM/CRM unit consists of a single bottle containing approximately 10 g of alumina beads.	
	Property	Certified value
	Specific Pore Volume at 50 MPa	69.4
	Specific Pore Volume at 100 MPa	625.4
	Specific Pore Volume at 195 MPa	637.1
	Specific Pore Volume at 395 MPa	638.6
	Mean Pore Diameter d ₅₀	24.2
	Most Frequent Pore Diameter d _{p,m}	23.9

Standard

Code	Product	Unit
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NIST-1802 Cigarette Ignition Strength Standard 1 carton (200 cigarettes)

A unit of SRM 1082 consists of one (1) carton of cigarettes containing ten (10) packs of twenty (20) cigarettes each.

Measurand Certified value
 Ignition Strength 15.8 % ± 6.0 %
 (on stainless steel plus one layer of filter paper) [4,5]

NIST-1196a Fe (0.5 mm wire) 2 cartons(400 cigarettes)

It is intended for use by laboratories to test the cigarette ignition resistance of soft furnishings and their components, and thermal insulation for resistance to cigarette ignition in accordance with 16 CFR 1632 [1], California Technical Bulletin 117-2013 [2], and 16 CFR 1209 [3].

Measurand Certified value [mg/kg]
 NIST Ignition strength 95.6 % ± 2.0 %
 (on 6.35 mm brass plate plus 2 layers of filter paper)

NIST-185i Potassium Hydrogen Phthalate (pH Standard) 60 g

It is intended for use in preparing solutions for calibrating electrodes for pH measuring systems. SRM 185i Potassium Hydrogen Phthalate ($\text{KHC}_8\text{H}_4\text{O}_4$) was prepared to ensure high purity and uniformity. However, this SRM is certified ONLY as a pH standard [pH(S)] not as a pure substance.

Temperature (°C)	pH(S)	Combined Uncertainty, $u_c(y)$	Coverage Factor, k	Uncertainty, U
5	4.003	0.0050	5	5
10	3.999	0.0050	10	10
15	3.999	0.0050	15	15
20	4.001	0.0050	20	20
25	4.005	0.0050	25	25
30	4.012	0.0051	30	30
35	4.021	0.0051	35	35
37	4.025	0.0051	37	37
40	4.031	0.0051	40	40
45	4.044	0.0051	45	45
50	4.058	0.0051	50	50

NIST-188 Potassium Hydrogen Tartrate (pH Standard) 60 g

It is intended for use in preparing solutions for calibrating electrodes for pH measuring systems. SRM 188 Potassium Hydrogen Phthalate ($\text{KHC}_4\text{H}_4\text{O}_6$) is a material of high purity and uniformity.

Temperature (°C)	pH(S)	Temperature (°C)	pH(S)	Temperature (°C)	pH(S)
25	3.557	45	3.547	70	3.580
30	3.552	50	3.549	80	3.609
35	3.549	55	3.554	90	3.650

Standard

Code	Product	Unit
38	3.548	60
40	3.547	3.560
		95
		3.674

NIST-189c Potassium Tetroxalate Dihydrate (pH Standard) 60 g

It is intended for use in preparing solutions for calibrating electrodes for pH measuring systems.

Temperature (°C)	pH(S)	$u_c(y)$	U
5	1.666	0.0051	0.010
10	1.667	0.0051	0.010
15	1.669	0.0051	0.010
20	1.672	0.0051	0.010
25	1.677	0.0051	0.010
30	1.682	0.0051	0.010
37	1.690	0.0051	0.010
40	1.694	0.0051	0.010
45	1.700	0.0051	0.010
50	1.707	0.0051	0.010

NIST-2185 Potassium Hydrogen Phthalate 60 g

It is intended for use in preparing buffer solutions to calibrate electrodes for pD measuring systems. SRM 2185 Potassium Hydrogen Phthalate ($\text{KHC}_8\text{H}_4\text{O}_4$), was prepared to ensure high purity and uniformity.

Temperature (°C)	pH(S)	Temperature (°C)	pH(S)
5	4.542	30	4.518
10	4.532	35	4.512
15	4.524	40	4.527
20	4.520	45	4.534
25	4.518	50	4.543

NIST-1089 Gasometric Standards Set (SRMs 1095, 1096, 1097, 1098, and 1099) 5 rods

1095, 1096, 1097, 1098, 1099 - 6.4 mm dia and 102 mm long

[1095 : AISI 4340 Steel]		[1096 : AISI 94B17 Steel (Modified)]	
Element	PPM by Weight	Element	PPM by Weight
Oxygen	9	Oxygen	10.7
Nitrogen	(37)	Nitrogen	40.4
Hydrogen	(< 5)	Hydrogen	(< 5)
[1097 : Cr-V Steel (Modified)]		[1098 : High-Carbon Steel (Modified)]	
Element	PPM by Weight	Element	PPM by Weight
Oxygen	6.6	Oxygen	10
Nitrogen	(41)	Nitrogen	32
Hydrogen	(< 5)		

Standard

Code	Product	Unit	
	[1099 : Electrolytic Iron]		
	Element		
	Oxygen 61 ± 3		
	Nitrogen (13)		
	Hydrogen (< 5)		
NIST-68c	Standard Ferromanganese (powder form)	100 g	
	It is intended primarily for use in validation of chemical and instrumental methods of analysis for element contents of ferromanganese and materials of similar matrix. It can be used to validate value assignment of in-house reference materials.		
	Constituent	Mass Fraction [%]	
	Arsenic (As)	0.0212	
	Carbon (C)	6.721	
	Chromium (Cr)	0.0744	
	Iron (Fe)	12.30	
	Constituent	Mass Fraction [%]	
	Manganese (Mn)	80.04	
	Phosphorus (P)	0.192	
	Silicon (Si)	0.2250	
NIST-1138a	Cast Steel Standard (block form)	3.2 cm square and 1.3 cm thick	
	Element	Percent by weight	
	Manganese	0.118	
	Phosphorus	0.035	
	Sulfur	0.056	
	Silicon	0.25	
	Manganese	0.118	
	Element	Percent by weight	
	Copper	0.09	
	Nickel	0.10	
	Chromium	0.13	
	Vanadium	0.020	
	Molybdenum	0.05	
NIST-1159 NIST-1160	Electronic and Magnetic Alloy Standard	3.1 cm dia and 1.9 cm thick	
	Element	[1159]	[1160]
		Percent by weight	
	Carbon	0.007	0.019
	Manganese	0.305	0.550
	Phosphorus	0.003	0.003
	Sulfur	0.003	0.001
	Silicon	0.32	0.37
	Copper	0.038	0.021
	Nickel	48.2	80.3
	Chromium	0.06	0.05
	Molybdenum	0.10	1.35
	Cobalt	0.022	0.054
	Iron	51.0	14.3
NIST-480	Tungsten-20 % Molybdenum Alloy Electron Microprobe Standard (disk form)	1 mm dia and 1 mm thick	

Standard

Code	Product	Unit																				
	<table border="1"> <thead> <tr> <th>Specimen</th> <th>Condition</th> <th>CV-Mo</th> <th>CV-W</th> <th>Determinations</th> </tr> </thead> <tbody> <tr> <td>EMS-72</td> <td>Lightly etched</td> <td>2.47</td> <td>1.24</td> <td>400</td> </tr> <tr> <td>EMS-73</td> <td>Unetched</td> <td>2.37</td> <td>1.55</td> <td>400</td> </tr> <tr> <td>EMS-74</td> <td>Lightly etched</td> <td>2.54</td> <td>1.34</td> <td>500</td> </tr> </tbody> </table>	Specimen	Condition	CV-Mo	CV-W	Determinations	EMS-72	Lightly etched	2.47	1.24	400	EMS-73	Unetched	2.37	1.55	400	EMS-74	Lightly etched	2.54	1.34	500	
Specimen	Condition	CV-Mo	CV-W	Determinations																		
EMS-72	Lightly etched	2.47	1.24	400																		
EMS-73	Unetched	2.37	1.55	400																		
EMS-74	Lightly etched	2.54	1.34	500																		
NIST-3110	Cerium (Ce) Standard Solution	5 x 10 mL																				
	<p>It is intended for use as a primary calibration standard for the quantitative determination of cerium.</p> <p>A unit of SRM 3110 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of cerium.</p> <p>Certified Mass Fraction Value of Cerium : 10.015 mg/g ± 0.023 mg/g</p>																					
NIST-3111a	Cesium (Cs) Standard Solution	5 x 10 mL																				
	<p>It is intended for use as a primary calibration standard for the quantitative determination of cesium.</p> <p>A unit of SRM 3111a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of cesium.</p> <p>Certified Mass Fraction Value of Cerium : 10.006 mg/g ± 0.020 mg/g</p>																					
NIST-3112a	Chromium (Cr) Standard Solution	5 x 10 mL																				
	<p>It is intended for use as a primary calibration standard for the quantitative determination of chromium.</p> <p>One unit of the SRM consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of chromium.</p> <p>Certified Mass Fraction Value of Chromium : 10.009 mg/g ± 0.020 mg/g</p>																					
NIST-3113	Cobalt (Co) Standard Solution	5 x 10 mL																				
	<p>It is intended for use as a primary calibration standard for the quantitative determination of cobalt.</p> <p>One unit of the SRM consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of cobalt.</p> <p>Certified Mass Fraction Value of Cobalt : 10.008 mg/g ± 0.017 mg/g</p>																					
NIST-3114	Copper (Cu) Standard Solution	5 x 10 mL																				
	<p>It is intended for use as a primary calibration standard for the quantitative determination of copper.</p> <p>A unit of SRM 3114 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of copper.</p>																					

Standard

Code	Product	Unit
	Certified Copper Mass Fraction : 10.001 mg/g \pm 0.019 mg/g	
NIST-3115a	Dysprosium (Dy) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of dysprosium. One unit of the SRM consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of dysprosium. Certified Mass Fraction Value of Dysprosium : 9.965 mg/g \pm 0.023 mg/g	5 x 10 mL
NIST-3116a	Erbium (Er) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of erbium. One unit of the SRM consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of erbium. Certified Mass Fraction Value of Erbium : 9.960 mg/g \pm 0.023 mg/g	5 x 10 mL
NIST-3118a	Erbium (Er) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of gadolinium. One unit of SRM 3118a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically from high purity gadolinium oxide to contain a known mass fraction of gadolinium. Certified Mass Fraction Value of Gadolinium : 9.973 mg/g \pm 0.023 mg/g	5 x 10 mL
NIST-3119a	Gallium (Ga) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of gallium. A unit of SRM 3119a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of gallium. Certified Mass Fraction Value of Gallium : 9.996 mg/g \pm 0.018 mg/g	5 x 10 mL
NIST-3120a	Germanium (Ge) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of germanium. A unit of SRM 3120a consists of 50 mL of a single element solution in a high-density polyethylene bottle sealed in an aluminized bag. Certified Value of Germanium : 10.000 mg/g \pm 0.022 mg/g	50 mL

Standard

Code	Product	Unit
NIST-3121	Gold (Au) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of gold. One unit of the SRM consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of gold. Certified Mass Fraction Value of Gold : 10.006 mg/g \pm 0.019 mg/g	5 x 10 mL
NIST-3122	Hafnium (Hf) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of hafnium. A unit of SRM 3122 consists of 50 mL of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of hafnium in a high-density polyethylene bottle sealed in an aluminized bag. Certified Value of Hafnium : 9.999 mg/g \pm 0.021 mg/g	50 mL
NIST-3123a	Holmium (Ho) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of holmium. A unit of SRM 3123a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically from high-purity holmium oxide to contain a known mass fraction of holmium. Certified Value of Holmium : 9.987 mg/g \pm 0.036 mg/g	5 x 10 mL
NIST-3124a	Indium (In) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of indium. A unit of SRM 3124a consists of five 10 mL sealed borosilicate glass ampoules of solution prepared gravimetrically to contain a known mass fraction of indium. Certified Value of Indium : 10.009 mg/g \pm 0.023 mg/g	5 x 10 mL
NIST-3126a	Iron (Fe) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of iron. A unit of SRM 3126a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of iron. Certified Mass Fraction Value of Iron : 10.013 mg/g \pm 0.024 mg/g	5 x 10 mL

Standard

Code	Product	Unit
NIST-3127a	Lanthanum (La) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of lanthanum. A unit of SRM 3127a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of lanthanum. Certified Mass Fraction Value of Lanthanum : 9.939 mg/g \pm 0.023 mg/g	5 x 10 mL
NIST-3128	Lead (Pb) Standard Solution It consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of lead. The solution contains nitric acid at a concentration of approximately 1.6 mol/L. Certified Value of Lead : 9.995 mg/g \pm 0.014 mg/g	5 x 10 mL
NIST-3129a	Lithium (Li) Standard Solution It consists of five 10 mL sealed borosilicate glass ampoules of solution prepared gravimetrically to contain a known mass fraction of lithium. The solution contains nitric acid at a concentration (molarity) of approximately 0.16 mol/L. Certified Value of Lithium : 9.969 mg/g \pm 0.030 mg/g	5 x 10 mL
NIST-3130a	Lutetium (Lu) Standard Solution It consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically from high-purity lutetium oxide to contain a known mass fraction of lutetium. The solution contains nitric acid at a concentration (molarity) of approximately 1.6 mol/L. Certified Value of Lutetium : 9.979 mg/g \pm 0.030 mg/g	5 x 10 mL
NIST-3131a	Magnesium (Mg) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of magnesium. A unit of SRM 3131a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of magnesium. Certified Value of Magnesium : 9.998 mg/g \pm 0.017 mg/g	5 x 10 mL
NIST-3132	Manganese (Mn) Standard Solution It consists of five 10 mL sealed borosilicate glass ampoules containing 9 mL of an acidified aqueous solution prepared gravimetrically from high purity manganese metal to contain a known mass fraction of manganese. Certified Mass Fraction Value of Manganese : 9.980 mg/g \pm 0.023 mg/g	5 x 9 mL

Standard

Code	Product	Unit
NIST-3133	Mercury (Hg) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of mercury. A unit of SRM 3133 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of mercury. Certified Value of Mercury : 10.004 mg/g \pm 0.040 mg/g	5 x 10 mL
NIST-3134	Molybdenum (Mo) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of molybdenum. A unit of SRM 3134 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of molybdenum. Certified Molybdenum Mass Fraction : 9.999 mg/g \pm 0.022 mg/g	5 x 10 mL
NIST-3135a	Neodymium (Nd) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of neodymium. A unit of SRM 3135a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of neodymium. Certified Value of Neodymium : 8.526 mg/g \pm 0.020 mg/g	5 x 10 mL
NIST-3136	Nickel (Ni) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of nickel. A unit of SRM 3136 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of nickel. Certified Nickel Mass Fraction : 10.003 mg/g \pm 0.026 mg/g	5 x 10 mL
NIST-3137	Niobium (Nb) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of niobium. One unit of SRM 3137 consists of 50 mL of an aqueous solution in a high-density polyethylene bottle sealed in an aluminized bag. Certified Mass Fraction Value of Niobium : 7.733 mg/g \pm 0.014 mg/g	50 mL

Standard

Code	Product	Unit
NIST-3138	Palladium (Pd) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of palladium. One unit of SRM 3138 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of palladium. Certified Mass Fraction Value of Palladium : 10.012 mg/g \pm 0.018 mg/g	5 x 10 mL
NIST-3139a	Phosphorus (P) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of phosphorus. A unit of SRM 3139a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of phosphorus. Certified Value of Phosphorus : 10.016 mg/g \pm 0.033 mg/g	5 x 10 mL
NIST-3140	Platinum (Pt) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of platinum. A unit of SRM 3140 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of platinum. Certified Value of Lithium : 9.969 mg/g \pm 0.030 mg/g	5 x 10 mL
NIST-3141a	Potassium (K) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of potassium. A unit of SRM 3141a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of potassium. Certified Value of Potassium : 10.003 mg/g \pm 0.018 mg/g	5 x 10 mL
NIST-3142a	Praseodymium (Pr) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of praseodymium. One unit of the SRM consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of praseodymium. Certified Mass Fraction Value of Praseodymium : 10.012 mg/g \pm 0.023 mg/g	5 x 10 mL
NIST-3143	Rhenium (Re) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of rhenium. A unit of SRM 3143 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of rhenium. Certified Mass Fraction Value of Rhenium : 10.004 mg/g \pm 0.023 mg/g	5 x 10 mL

Standard

Code	Product	Unit
NIST-3144	Rhodium (Rh) Standard Solution	5 x 10 mL
<p>It is intended for use as a primary calibration standard for the quantitative determination of mercury. A unit of SRM 3133 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of mercury.</p> <p>Certified Value of Mercury : 10.004 mg/g \pm 0.040 mg/g</p>		
NIST-3134	Molybdenum (Mo) Standard Solution	5 x 10 mL
<p>It is intended for use as a primary calibration standard for the quantitative determination of rhodium. One unit of SRM 3144 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared from high-purity ammonium hexachlororhodate (III).</p> <p>Certified Mass Fraction Value of Rhodium : 1.0302 mg/g \pm 0.0044 mg/g</p>		
NIST-3145a	Rubidium (Rb) Standard Solution	5 x 10 mL
<p>It is intended for use as a primary calibration standard for the quantitative determination of rubidium. A unit of SRM 3145a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of rubidium.</p> <p>Certified Value of Rubidium : 9.992 mg/g \pm 0.018 mg/g</p>		
NIST-3147a	Samarium (Sm) Standard Solution	5 x 10 mL
<p>It is intended for use as a primary calibration standard for the quantitative determination of samarium. A unit of SRM 3147a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of samarium.</p> <p>Certified Nickel Mass Fraction : 10.003 mg/g \pm 0.026 mg/g</p>		
NIST-3148a	Scandium (Sc) Standard Solution	5 x 10 mL
<p>It consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically from high-purity scandium oxide to contain a known mass fraction of scandium. The solution contains nitric acid at a concentration (molarity) of approximately 1.6 mol/L.</p> <p>Certified Value of Scandium : 9.969 mg/g \pm 0.030 mg/g</p>		

Standard

Code	Product	Unit
NIST-3149	Selenium (Se) Standard Solution It consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of selenium. Certified Mass Fraction Value of Selenium : 10.042 mg/g \pm 0.051 mg/g	5 x 10 mL
NIST-3150	Silicon (Si) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of silicon. A unit of SRM 3150 consists of 50 mL of solution prepared gravimetrically to contain a known mass fraction of silicon in a high-density polyethylene bottle sealed in an aluminized bag. Certified Value of Silicon : 9.901 mg/g \pm 0.023 mg/g	50 mL
NIST-3151	Silver (Ag) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of silver. A unit of SRM 3151 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of silver. Certified Mass Fraction Value of Silver : 10.007 mg/g \pm 0.019 mg/g	5 x 10 mL
NIST-3152a	Sodium (Na) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of sodium. One unit of SRM 3152a consists of 50 mL of an aqueous solution in a high-density polyethylene bottle sealed in an aluminized bag. Certified Mass Fraction Value of Sodium : 10.005 mg/g \pm 0.019 mg/g	50 mL
NIST-3155	Tantalum (Ta) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of tantalum. One unit of SRM 3155 consists of 50 mL of an aqueous solution in a high-density polyethylene bottle sealed in an aluminized bag. Certified Mass Fraction Value of Tantalum : 9.999 mg/g \pm 0.019 mg/g	50 mL
NIST-3156	Tellurium (Te) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of tellurium. A unit of SRM 3156 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of tellurium. Certified Mass Fraction Value of Tellurium : 10.005 mg/g \pm 0.038 mg/g	5 x 10 mL

Standard

Code	Product	Unit
NIST-3157a	Terbium (Tb) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of terbium. A unit of SRM 3157a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically from high-purity terbium oxide to contain a known mass fraction of terbium. Certified Value of Terbium : 9.961 mg/g \pm 0.030 mg/g	5 x 10 mL
NIST-3158	Thallium (Tl) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of thallium. One unit of SRM 3158 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of thallium. Certified Mass Fraction Value of Thallium : 9.986 mg/g \pm 0.017 mg/g	5 x 10 mL
NIST-3161a	Tin (Sn) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of tin. One unit of SRM 3161a consists of 50 mL of a single element solution in a high density polyethylene bottle sealed in an aluminized bag. Certified Value of Tin : 10.011 mg/g \pm 0.025 mg/g	50 mL
NIST-3165	Vanadium (V) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of vanadium. One unit of the SRM consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of vanadium. Certified Mass Fraction Value of Vanadium : 4.961 mg/g \pm 0.013 mg/g	5 x 10 mL
NIST-3166a	Ytterbium (Yb) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of ytterbium. A unit of SRM 3166a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of ytterbium. Certified Mass Fraction Value of Ytterbium : 8.760 mg/g \pm 0.020 mg/g	5 x 10 mL
NIST-3167a	Yttrium (Y) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of yttrium. One unit of the SRM consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of yttrium. Certified Mass Fraction Value of Yttrium : 9.946 mg/g \pm 0.023 mg/g	5 x 10 mL

Standard

Code	Product	Unit
NIST-3168a	Zinc (Zn) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of zinc. A unit of SRM 3168a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of zinc. Certified Zinc Mass Fraction : 10.007 mg/g ± 0.020 mg/g	5 x 10 mL
NIST-3169	Zirconium (Zr) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of zirconium. A unit of SRM 3169 consists of 50 mL of an aqueous solution in a high-density polyethylene bottle sealed in an aluminized bag. Certified Value of Zirconium (Zr) : 10.000 mg/g ± 0.020 mg/g	50 mL
NIST-3181	Sulfate Anion (SO₄²⁻) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of sulfate using anion ion chromatography (IC) or other methods. Certified Value of Sulfate : 1.0000 mg/g ± 0.0016 mg/g	5 x 10 mL
NIST-3182	Chloride Anion (Cl⁻) Standard Solution It is intended as a primary standard for the quantitative determination of chloride using anion ion chromatography (IC) or other methods. A unit of SRM 3182 consists of five 10 mL sealed borosilicate glass ampoules of solution. Certified Value of Chloride : 1004.0 mg/kg ± 1.9 mg/kg	5 x 10 mL
NIST-3183	Fluoride Anion (F⁻) Standard Solution It is intended as a primary calibration standard for the quantitative determination of fluoride using anion ion chromatography (IC) or other methods. A unit of SRM 3183 consists of 50 mL of solution in a high density polyethylene bottle sealed in an aluminized bag. Certified Value of Fluoride : 0.9968 mg/g ± 0.0031 mg/g	50 mL
NIST-3184	Bromide Anion (Br⁻) Standard Solution It is intended as a primary calibration standard for the quantitative determination of bromide using anion ion chromatography (IC) or other methods. Certified Value of Bromide : 0.9993 mg/g ± 0.0023 mg/g	5 x 10 mL
NIST-3184	Bromide Anion (Br⁻) Standard Solution It is intended as a primary calibration standard for the quantitative determination of bromide using anion ion chromatography (IC) or other methods. Certified Value of Bromide : 0.9993 mg/g ± 0.0023 mg/g	5 x 10 mL

Standard

Code	Product	Unit
NIST-3186	Phosphate Anion (PO₄³⁻) Standard Solution It is intended as a primary calibration standard for the quantitative determination of phosphate using anion ion chromatography (IC) or other methods. Certified Value of Phosphate : 1.0005 mg/g ± 0.0041 mg/g	5 x 10 mL
NIST-3101a	Aluminum (Al) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of aluminum. A unit of SRM 3101a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of aluminum. Certified Value of Aluminum : 10.011 mg/g ± 0.018 mg/g	5 x 10 mL
NIST-3108	Cadmium (Cd) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of cadmium. A unit of SRM 3108 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of cadmium. Certified Cadmium Mass Fraction : 10.007 mg/g ± 0.027 mg/g	5 x 10 mL
NIST-136f	Potassium Dichromate (Oxidimetric Standard) It is certified as a chemical of known assay and is intended for use as a primary oxidimetric standard. A unit of SRM 136f consists of 60 g of highly purified potassium dichromate (K ₂ Cr ₂ O ₇) in a clear glass bottle. ^w K ₂ C _{r2} O ₇ 99.9954 % ± 0.0044 %	60 g
NIST-3105a	Beryllium (Be) Standard Solution It consists of five 10 mL sealed borosilicate glass ampoules of solution prepared gravimetrically to contain a known mass fraction of beryllium. Certified Value of Beryllium : 9.960 mg/g ± 0.034 mg/g	5 x 10 mL
NIST-3104a	Barium (Ba) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of barium. A unit of SRM 3104a consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of barium. Certified Value of Barium : 6.994 mg/g ± 0.017 mg/g	5 x 10 mL

Standard

Code	Product	Unit
NIST-3107	Boron (B) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of boron. One unit of SRM 3107 consists of 50 mL of an aqueous solution in a high-density polyethylene bottle sealed in an aluminized bag. Certified Mass Fraction Value of Boron : 4.994 mg/g ± 0.012 mg/g	50 mL
NIST-84I	Potassium Hydrogen Phthalate $\text{KHC}_8\text{H}_4\text{O}_4$ Acidimetric Primary Standard It is intended for use as an acidimetric primary standard. It consists of highly purified potassium hydrogen phthalate (KHP), $\text{KHC}_8\text{H}_4\text{O}_4$. A unit of SRM 84L is supplied as crystalline material in a 60 g unit. Potassium Hydrogen Phthalate : 99.9934 % ± 0.0076 %	60 g
NIST-981	Common Lead Isotopic Standard It is intended primarily for use as an isotopic standard. Atomic Abundance Ratio, Lead-204 / Lead-206 0.059042 ± 0.000037 Atomic Abundance Ratio, Lead-207 / Lead-206 0.91464 ± 0.00033 Atomic Abundance Ratio, Lead-208 / Lead-206 2.1681 ± 0.0008 Lead-204, atom percent 1.4255 ± 0.0012 Lead-206, atom percent 24.1442 ± 0.0057 Lead-207, atom percent 22.0833 ± 0.0027 Lead-208, atom percent 52.3470 ± 0.0086	1 g wire
NIST-987	Strontium Carbonate (Isotopic Standard) It is certified for use as an isotopic reference material for the calibration of mass spectrometers. The material consists of highly purified strontium carbonate of high homogeneity. A unit of SRM 987 consists of 1 g of powder. Absolute Abundance Ratios $^{88}\text{Sr}/^{88}\text{Sr} = 8.378\ 61 \pm 0.003\ 25$ $^{88}\text{Sr}/^{88}\text{Sr} = 0.710\ 34 \pm 0.000\ 26$ $^{88}\text{Sr}/^{88}\text{Sr} = 0.056\ 55 \pm 0.000\ 14$ that yield atom percents of: $^{88}\text{Sr} = 82.584\ 5 \pm 0.006\ 6$ $^{88}\text{Sr} = 7.001\ 5 \pm 0.002\ 6$ $^{88}\text{Sr} = 9.856\ 6 \pm 0.003\ 4$ $^{88}\text{Sr} = 0.557\ 4 \pm 0.001\ 5$	1 g
NIST-3106	Bismuth (Bi) Standard Solution It is intended for use as a primary calibration standard for the quantitative determination of bismuth. One unit of SRM 3106 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically to contain a known mass fraction of bismuth. Certified Mass Fraction Value of Bismuth : 10.002 mg/g ± 0.018 mg/g	5 x 10 mL

Standard

Code	Product	Unit
NIST-978a	Assay-Isotopic Standard for Silver	0.25 g
	<p>It is certified for use as an assay isotopic standard. It consists 0.25 g of silver nitrate, AgNO₃, made from high purity silver metal and high purity nitric acid.</p>	
	<p>AgNO₃, Silver Assay, weight percent 99.99 ± 0.02 Absolute Isotopic Abundance Ratio, ¹⁰⁷Ag / ¹⁰⁹Ag 1.07638 ± 0.00022 Isotopic Composition ¹⁰⁷Ag, Atom Percent 51.8392 ± 0.0051 ¹⁰⁹Ag, Atom Percent 48.1608 ± 0.00513 Silver Atomic Weight 107.86815 ± 0.00011</p>	
NIST-994	Isotopic Standard for Gallium	0.25 g
	<p>It is intended for use as an isotopic standard. It consists of 0.25 g of a commercial, high-purity gallium metal.</p>	
	<p>Absolute Isotopic Abundance Ratio, ⁶⁹Ga / ⁷¹Ga 1.50676 ± 0.00039 Isotopic Composition ⁶⁹Ga, Atomic Percent 60.1079 ± 0.0062 ⁷¹Ga, Atomic Percent 39.8921 ± 0.0062 Atomic Weight (69.72307 ± 0.00013)</p>	
NIST-983	Radiogenic Lead Isotopic Standard	1 g wire
	<p>It is intended for use as an isotopic standard. SRM 983 consists of 1 g of a wire that was prepared from radiogenic lead. It is chemically pure to at least 99.9 + % purity, and extruded into wire form.</p>	
	<p>Atomic Abundance Ratio, Lead-204/Lead-206 0.000371 ± 0.000020 Atomic Abundance Ratio, Lead-207/Lead-206 0.071201 ± 0.000040 Atomic Abundance Ratio, Lead-208/Lead-206 0.013619 ± 0.000024 Lead-204, atom percent 0.0342 ± 0.0020 Lead-206, atom percent 92.1497 ± 0.0041 Lead-207, atom percent 6.5611 ± 0.0025 Lead-208, atom percent 1.2550 ± 0.0022</p>	
NIST-723e	Tris(hydroxymethyl)aminomethane (HOCH₂)₃CNH₂ Acidimetric Standard	50 g
	<p>It consists of highly purified tris(hydroxymethyl)aminomethane (HOCH₂)₃CNH₂ [2-amino-2-(hydroxymethyl)-1,3-propanediol; "Tris"; "THAM"], hereafter referred to as Tris. SRM 723e is intended primarily for use in acidimetric standardization.</p>	
	<p>Mass Fraction of Tris, wTris 99.9796 % ± 0.0088 % Amount Content of Base, vbase 8.253 56 mol · kg⁻¹ ± 0.000 65 mol · kg⁻¹</p>	
NIST-350c	Benzoic Acid (Acidimetric Standard)	30 g
	<p>It consists of purified benzoic acid (C₆H₅COOH). SRM 350c is intended for use in acidimetric standardization. This material is NOT suitable for use as a standard in quantitative nuclear magnetic resonance spectrometry (qNMR).</p>	
	<p>wC₆H₅COOH 99.959 % ± 0.040 %</p>	

Standard

Code	Product	Unit																				
NIST-999c	Potassium Chloride Primary Standard	30 g																				
	<p>It is intended for use as an analytical standard of known potassium (K) and chloride (Cl⁻) content. This lot of potassium chloride (KCl) was prepared to ensure a material of high purity and homogeneity and has been assayed after drying at 500 °C.</p>																					
	<table border="1"> <thead> <tr> <th>Measurand</th> <th>Mass Fraction (%)</th> <th>uc (%)</th> <th>veff</th> <th>Coverage Factor (k)</th> </tr> </thead> <tbody> <tr> <td>wKCl</td> <td>99.987</td> <td>0.010</td> <td>115</td> <td>1.981</td> </tr> <tr> <td>wK</td> <td>52.443</td> <td>0.0052</td> <td>126</td> <td>1.979</td> </tr> <tr> <td>wCl</td> <td>47.5519</td> <td>0.0039</td> <td>25</td> <td>2.058</td> </tr> </tbody> </table>	Measurand	Mass Fraction (%)	uc (%)	veff	Coverage Factor (k)	wKCl	99.987	0.010	115	1.981	wK	52.443	0.0052	126	1.979	wCl	47.5519	0.0039	25	2.058	
Measurand	Mass Fraction (%)	uc (%)	veff	Coverage Factor (k)																		
wKCl	99.987	0.010	115	1.981																		
wK	52.443	0.0052	126	1.979																		
wCl	47.5519	0.0039	25	2.058																		
NIST-3177	Mercuric Chloride (HgCl₂) Standard Solution	5 x 10 mL																				
	<p>It is intended for use as a primary calibration standard for the quantitative determination of mercury when the chemical form of mercury is high-purity mercuric chloride (mercury (II) chloride). A unit of SRM 3177 consists of five 10 mL sealed borosilicate glass ampoules of an acidified aqueous solution prepared gravimetrically from high-purity mercury (II) chloride to contain a known mass fraction of mercury.</p> <p>Certified Value of Mercury : 0.9981 mg/g ± 0.0044 mg/g</p>																					
NIST-3030	Monomethylarsonic Acid Standard Solution	2 x 5 mL																				
	<p>It is intended for use as a primary calibration standard for the quantitative determination of monomethylarsonic acid (MMA).</p> <p>Certified Mass Fraction Value of MMA (as As) : 17.64 mg/kg ± 0.15 mg/kg</p>																					
NIST-3031	Dimethylarsinic Acid Standard Solution	2 x 5 mL																				
	<p>It is intended for use as a primary calibration standard for the quantitative determination of dimethylarsinic acid (DMA).</p> <p>Certified Mass Fraction Value of DMA (as As) : 20.47 mg/kg ± 0.18 mg/kg</p>																					
NIST-3033	Arsenobetaine Standard Solution	2 x 5 mL																				
	<p>It is intended for use as a primary calibration standard for the quantitative determination of arsenobetaine (AB).</p> <p>Certified Mass Fraction Value of AB (as As) : 19.06 mg/kg ± 0.27 mg/kg</p>																					
NIST-3034	Arsenocholine Standard Solution	2 x 5 mL																				
	<p>It is intended for use as a primary calibration standard for the quantitative determination of arsenocholine (AC).</p> <p>Certified Mass Fraction Value of AC (as As) : 19.77 mg/kg ± 0.27 mg/kg</p>																					

Standard

Code	Product	Unit																																																
NIST-3036	Arsenic Acid (AsV) Standard Solution	2 x 10 mL																																																
	<p>It is intended for use as a primary calibration standard for the quantitative determination of the arsenic species arsenic acid (AsV). This SRM can be used for quality assurance when assigning values to in-house control materials.</p> <p>Certified Mass Fraction Value of AsV : 0.9706 mg/g ± 0.0044 mg/g</p>																																																	
NIST-3037	Arsenous Acid (AsIII) Standard Solution	2 x 10 mL																																																
	<p>It is intended for use as a primary calibration standard for the quantitative determination of the arsenic species arsenous acid (AsIII). This SRM can be used for quality assurance when assigning values to in-house control materials.</p> <p>Certified Mass Fraction Value of AsIII : 1.0442 mg/g ± 0.0020 mg/g</p>																																																	
VHG-PZRN-100	Zirconium Standard: Zr @ 1000 µg/mL in 5% HNO3	100 mL																																																
	<p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001.</p> <p>This CRM was prepared to the certified concentrations shown above by gravimetric methods using high-purity raw materials as indicated in the listed source materia</p>																																																	
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VHG-V21+K-300-100G	V21+K Wear Metals Standard: 300 µg/g Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, Zn in Hydrocarbon Oil	100 g																																																
	<p>This CRM was manufactured and certified under an ISO 9001, ISO/IEC 17025, and ISO 17034 quality management system.</p> <p>This CRM was prepared to the certified concentration(s) shown above by gravimetric methods using single-element concentrate(s) that are traceable to the relevant NIST SRMs.</p>																																																	
	<table> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr> <td>Ag</td> <td>300 ± 3 µg/g</td> <td>Ti</td> <td>300 ± 3 µg/g</td> </tr> <tr> <td>Fe</td> <td>300 ± 3 µg/g</td> <td>Ca</td> <td>300 ± 3 µg/g</td> </tr> <tr> <td>Pb</td> <td>300 ± 3 µg/g</td> <td>Mo</td> <td>300 ± 3 µg/g</td> </tr> <tr> <td>Al</td> <td>300 ± 3 µg/g</td> <td>V</td> <td>300 ± 3 µg/g</td> </tr> <tr> <td>K</td> <td>301 ± 3 µg/g</td> <td>Cd</td> <td>300 ± 3 µg/g</td> </tr> <tr> <td>Si</td> <td>300 ± 3 µg/g</td> <td>Na</td> <td>300 ± 3 µg/g</td> </tr> <tr> <td>B</td> <td>300 ± 3 µg/g</td> <td>Zn</td> <td>300 ± 3 µg/g</td> </tr> <tr> <td>Mg</td> <td>300 ± 3 µg/g</td> <td>Cr</td> <td>300 ± 3 µg/g</td> </tr> <tr> <td>Sn</td> <td>300 ± 3 µg/g</td> <td>Ni</td> <td>300 ± 3 µg/g</td> </tr> <tr> <td>Ba</td> <td>300 ± 3 µg/g</td> <td>Cu</td> <td>300 ± 3 µg/g</td> </tr> <tr> <td>Mn</td> <td>300 ± 3 µg/g</td> <td>P</td> <td>300 ± 3 µg/g</td> </tr> </tbody> </table>	Analyte	Certified Concentration	Analyte	Certified Concentration	Ag	300 ± 3 µg/g	Ti	300 ± 3 µg/g	Fe	300 ± 3 µg/g	Ca	300 ± 3 µg/g	Pb	300 ± 3 µg/g	Mo	300 ± 3 µg/g	Al	300 ± 3 µg/g	V	300 ± 3 µg/g	K	301 ± 3 µg/g	Cd	300 ± 3 µg/g	Si	300 ± 3 µg/g	Na	300 ± 3 µg/g	B	300 ± 3 µg/g	Zn	300 ± 3 µg/g	Mg	300 ± 3 µg/g	Cr	300 ± 3 µg/g	Sn	300 ± 3 µg/g	Ni	300 ± 3 µg/g	Ba	300 ± 3 µg/g	Cu	300 ± 3 µg/g	Mn	300 ± 3 µg/g	P	300 ± 3 µg/g	
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B	300 ± 3 µg/g	Zn	300 ± 3 µg/g																																															
Mg	300 ± 3 µg/g	Cr	300 ± 3 µg/g																																															
Sn	300 ± 3 µg/g	Ni	300 ± 3 µg/g																																															
Ba	300 ± 3 µg/g	Cu	300 ± 3 µg/g																																															
Mn	300 ± 3 µg/g	P	300 ± 3 µg/g																																															

Standard

Code	Product	Unit
VHG-SDSL-5-500	Sulfur - S @ 5ug/g in #2 Diesel Fuel, 500mL This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the nominal concentration by gravimetric methods using the sulfur containing material indicated above. Analyte Certified Concentration S 5.00 ± 0.05 µg/g	500 mL
VHG-PHGN-100	Hg @ 1000 µg/mL in 5% HNO3 This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods using high-purity raw materials as indicated in the listed source material. Analyte Certified Concentration Hg 991.0 ± 5.0 µg/mL (w/v)	100 mL
VHG-AN-3-50G	Acid Number (AN) Standard: 3.0 mg KOH/g in Hydrocarbon Oil CRMs are manufactured and certified under a quality management system that is accredited to ISO 9001, ISO 17034 and ISO/IEC 17025. This CRM was prepared to the nominal value using gravimetric methods. Test Method Performed Certified Value ASTM D664 3.10 ± 0.18 mg KOH/g ASTM D974 3.01 ± 0.12 mg KOH/g	50 g
VHG-SM70B-100	Common Elements Mix 2 Standard: Ag, Al, B, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, P, Pb, Si, Sn, Ti, V, Zn @ 100 µg/mL in 5% HNO3, tr. HF This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited ISO 17034, ISO/IEC 17025 and to ISO 9001. Analyte Certified Concentration Analyte Certified Concentration Ag 100.0 ± 0.5 µg/mL Mn 100.0 ± 0.5 µg/mL Fe 100.0 ± 0.5 µg/mL Ti 100.0 ± 0.5 µg/mL Pb 100.0 ± 0.5 µg/mL Co 100.0 ± 0.5 µg/mL Al 100.0 ± 0.5 µg/mL Na 100.0 ± 0.5 µg/mL K 100.0 ± 0.5 µg/mL V 100.0 ± 0.5 µg/mL Si 100.0 ± 0.5 µg/mL Cr 100.0 ± 0.5 µg/mL B 100.0 ± 0.5 µg/mL Ni 99.99 ± 0.50 µg/mL Mg 100.0 ± 0.5 µg/mL Zn 99.98 ± 0.50 µg/mL Sn 100.0 ± 0.5 µg/mL Cu 100.0 ± 0.5 µg/mL Ca 100.0 ± 0.5 µg/mL P 100.0 ± 0.5 µg/mL	2 x 5 mL

Standard

Code	Product	Unit																																																																																																				
VHG-SM68-1-100	<p>SM68 Standard 1: Al,As,B,Ba,Be,Bi,Ca,Cd,Ce,Co,Cr,Cs,Cu,Dy,Er,Eu,Fe,Ga,Gd,Ho, In,K,La,Li,Lu,Mg,Mn,Na,Nd,Ni,P,Pb,Pr,Rb,Re,Sc,Se,Sm,Sr,Tb,Th, Tl,Tm,U,V,Y,Yb,Zn @ 100 µg/mL in 5% HNO₃</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited ISO 17034, ISO/IEC 17025 and to ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to NIST SRMs (see reverse side).</p> <table border="1"> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr><td>Al</td><td>100.0 ± 0.5 µg/mL</td><td>Ce</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Fe</td><td>100.0 ± 0.5 µg/mL</td><td>Lu</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Pr</td><td>100.0 ± 0.5 µg/mL</td><td>Th</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>As</td><td>100.0 ± 0.5 µg/mL</td><td>Co</td><td>100.1 ± 0.5 µg/mL</td></tr> <tr><td>Ga</td><td>100.0 ± 0.5 µg/mL</td><td>Mg</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Rb</td><td>100.0 ± 0.5 µg/mL</td><td>Tl</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>B</td><td>100.0 ± 0.5 µg/mL</td><td>Cr</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Gd</td><td>100.0 ± 0.5 µg/mL</td><td>Mn</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Re</td><td>100.0 ± 0.5 µg/mL</td><td>Tm</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Ba</td><td>100.0 ± 0.5 µg/mL</td><td>Cs</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Ho</td><td>100.0 ± 0.5 µg/mL</td><td>Na</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Sc</td><td>100.0 ± 0.5 µg/mL</td><td>U</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Be</td><td>100.0 ± 0.5 µg/mL</td><td>Cu</td><td>100.1 ± 0.5 µg/mL</td></tr> <tr><td>In</td><td>100.0 ± 0.5 µg/mL</td><td>Nd</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Se</td><td>99.99 ± 0.50 µg/mL</td><td>V</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Bi</td><td>99.99 ± 0.50 µg/mL</td><td>Dy</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>K</td><td>100.0 ± 0.5 µg/mL</td><td>Ni</td><td>100.1 ± 0.5 µg/mL</td></tr> <tr><td>Sm</td><td>100.0 ± 0.5 µg/mL</td><td>Y</td><td>100.1 ± 0.5 µg/mL</td></tr> <tr><td>Ca</td><td>100.1 ± 0.5 µg/mL</td><td>Er</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>La</td><td>100.0 ± 0.5 µg/mL</td><td>P</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Sr</td><td>100.0 ± 0.5 µg/mL</td><td>Yb</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Cd</td><td>99.99 ± 0.50 µg/mL</td><td>Eu</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Li</td><td>99.99 ± 0.50 µg/mL</td><td>Pb</td><td>100.0 ± 0.5 µg/mL</td></tr> <tr><td>Tb</td><td>100.0 ± 0.5 µg/mL</td><td>Zn</td><td>100.0 ± 0.5 µg/mL</td></tr> </tbody> </table>	Analyte	Certified Concentration	Analyte	Certified Concentration	Al	100.0 ± 0.5 µg/mL	Ce	100.0 ± 0.5 µg/mL	Fe	100.0 ± 0.5 µg/mL	Lu	100.0 ± 0.5 µg/mL	Pr	100.0 ± 0.5 µg/mL	Th	100.0 ± 0.5 µg/mL	As	100.0 ± 0.5 µg/mL	Co	100.1 ± 0.5 µg/mL	Ga	100.0 ± 0.5 µg/mL	Mg	100.0 ± 0.5 µg/mL	Rb	100.0 ± 0.5 µg/mL	Tl	100.0 ± 0.5 µg/mL	B	100.0 ± 0.5 µg/mL	Cr	100.0 ± 0.5 µg/mL	Gd	100.0 ± 0.5 µg/mL	Mn	100.0 ± 0.5 µg/mL	Re	100.0 ± 0.5 µg/mL	Tm	100.0 ± 0.5 µg/mL	Ba	100.0 ± 0.5 µg/mL	Cs	100.0 ± 0.5 µg/mL	Ho	100.0 ± 0.5 µg/mL	Na	100.0 ± 0.5 µg/mL	Sc	100.0 ± 0.5 µg/mL	U	100.0 ± 0.5 µg/mL	Be	100.0 ± 0.5 µg/mL	Cu	100.1 ± 0.5 µg/mL	In	100.0 ± 0.5 µg/mL	Nd	100.0 ± 0.5 µg/mL	Se	99.99 ± 0.50 µg/mL	V	100.0 ± 0.5 µg/mL	Bi	99.99 ± 0.50 µg/mL	Dy	100.0 ± 0.5 µg/mL	K	100.0 ± 0.5 µg/mL	Ni	100.1 ± 0.5 µg/mL	Sm	100.0 ± 0.5 µg/mL	Y	100.1 ± 0.5 µg/mL	Ca	100.1 ± 0.5 µg/mL	Er	100.0 ± 0.5 µg/mL	La	100.0 ± 0.5 µg/mL	P	100.0 ± 0.5 µg/mL	Sr	100.0 ± 0.5 µg/mL	Yb	100.0 ± 0.5 µg/mL	Cd	99.99 ± 0.50 µg/mL	Eu	100.0 ± 0.5 µg/mL	Li	99.99 ± 0.50 µg/mL	Pb	100.0 ± 0.5 µg/mL	Tb	100.0 ± 0.5 µg/mL	Zn	100.0 ± 0.5 µg/mL	100 mL
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Li	99.99 ± 0.50 µg/mL	Pb	100.0 ± 0.5 µg/mL																																																																																																			
Tb	100.0 ± 0.5 µg/mL	Zn	100.0 ± 0.5 µg/mL																																																																																																			

VHG-SM75B-100	<p>Common & Transition Elements Standard: Ag, Al, As, Ba, Be, Bi, Cd, Cr, Co, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Se, Sr, Tl, V, Zn @ 100; Ca, K, Mg, Na @ 1000 µg/mL in 5% HNO₃, 0.2% HF</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited ISO 17034, ISO/IEC 17025 and to ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to NIST SRMs (see reverse side).</p>	100 mL
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Standard

Code	Product	Unit
	Analyte	Certified Concentration
	Ag	100.0 ± 0.5 µg/mL
	Cr	100.0 ± 0.5 µg/mL
	Ni	100.1 ± 0.5 µg/mL
	Al	100.1 ± 0.5 µg/mL
	Cu	99.99 ± 0.50 µg/mL
	Pb	100.0 ± 0.5 µg/mL
	As	99.98 ± 0.50 µg/mL
	Fe	100.0 ± 0.5 µg/mL
	Sb	100.0 ± 0.5 µg/mL
	Ba	100.0 ± 0.5 µg/mL
	K	999.8 ± 5.0 µg/mL
	Se	100.0 ± 0.5 µg/mL
	Be	100.0 ± 0.5 µg/mL
	Analyte	Certified Concentration
	Li	100.0 ± 0.5 µg/mL
	Sr	100.0 ± 0.5 µg/mL
	Bi	100.0 ± 0.5 µg/mL
	Mg	999.9 ± 5.0 µg/mL
	Tl	100.1 ± 0.5 µg/mL
	Ca	1000 ± 5 µg/mL
	Mn	100.0 ± 0.5 µg/mL
	V	100.0 ± 0.5 µg/mL
	Cd	100.0 ± 0.5 µg/mL
	Mo	100.1 ± 0.5 µg/mL
	Zn	100.0 ± 0.5 µg/mL
	Co	100.0 ± 0.5 µg/mL
	Na	1000 ± 5 µg/mL

VHG-SM68-1-500

SM68 Standard 1:

Al, As, B, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Dy, Er, Eu, Fe, Ga, Gd, Ho, In, K, La, Li, Lu, Mg, Mn, Na, Nd, Ni, P, Pb, Pr, Rb, Re, Sc, Se, Sm, Sr, Tb, Th, Tl, Tm, U, V, Y, Yb, Zn
@ 100 µg/mL in 5% HNO₃

50 g

This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited ISO 17034, ISO/IEC 17025 and to ISO 9001.

This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to NIST SRMs (see reverse side).

Analyte	Certified Concentration	Analyte	Certified Concentration
Al	100.0 ± 0.5 µg/mL	Ce	100.0 ± 0.5 µg/mL
Fe	100.0 ± 0.5 µg/mL	Lu	100.0 ± 0.5 µg/mL
Pr	100.0 ± 0.5 µg/mL	Th	100.0 ± 0.5 µg/mL
As	100.0 ± 0.5 µg/mL	Co	100.1 ± 0.5 µg/mL
Ga	100.0 ± 0.5 µg/mL	Mg	100.0 ± 0.5 µg/mL
Rb	100.0 ± 0.5 µg/mL	Tl	100.0 ± 0.5 µg/mL
B	100.0 ± 0.5 µg/mL	Cr	100.0 ± 0.5 µg/mL
Gd	100.0 ± 0.5 µg/mL	Mn	100.0 ± 0.5 µg/mL
Re	100.0 ± 0.5 µg/mL	Tm	100.0 ± 0.5 µg/mL
Ba	100.0 ± 0.5 µg/mL	Cs	100.0 ± 0.5 µg/mL
Ho	100.0 ± 0.5 µg/mL	Na	100.0 ± 0.5 µg/mL
Sc	100.0 ± 0.5 µg/mL	U	100.0 ± 0.5 µg/mL
Be	100.0 ± 0.5 µg/mL	Cu	100.1 ± 0.5 µg/mL
In	100.0 ± 0.5 µg/mL	Nd	100.0 ± 0.5 µg/mL
Se	99.99 ± 0.50 µg/mL	V	100.0 ± 0.5 µg/mL
Bi	99.99 ± 0.50 µg/mL	Dy	100.0 ± 0.5 µg/mL
K	100.0 ± 0.5 µg/mL	Ni	100.1 ± 0.5 µg/mL
Sm	100.0 ± 0.5 µg/mL	Y	100.1 ± 0.5 µg/mL
Ca	100.1 ± 0.5 µg/mL	Er	100.0 ± 0.5 µg/mL
La	100.0 ± 0.5 µg/mL	P	100.0 ± 0.5 µg/mL
Sr	100.0 ± 0.5 µg/mL	Yb	100.0 ± 0.5 µg/mL
Cd	99.99 ± 0.50 µg/mL	Eu	100.0 ± 0.5 µg/mL
Li	99.99 ± 0.50 µg/mL	Pb	100.0 ± 0.5 µg/mL
Tb	100.0 ± 0.5 µg/mL	Zn	100.0 ± 0.5 µg/mL

Standard

Code	Product	Unit																																																
VHG-V21-900-200G	<p>V21 Wear Metals Standard: 900 µg/g Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, Zn in Hydrocarbon Oil</p> <p>This CRM was manufactured and certified under an ISO 9001, ISO/IEC 17025, and ISO 17034 quality management system. This CRM was prepared to the certified concentration(s) shown above by gravimetric methods using single-element concentrate(s) that are traceable to the relevant NIST SRMs.</p> <table border="1"> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr> <td>Ag</td> <td>900 ± 9 µg/g</td> <td>Mn</td> <td>900 ± 9 µg/g</td> </tr> <tr> <td>Cu</td> <td>900 ± 9 µg/g</td> <td>Sn</td> <td>902 ± 9 µg/g</td> </tr> <tr> <td>P</td> <td>900 ± 9 µg/g</td> <td>Ca</td> <td>900 ± 9 µg/g</td> </tr> <tr> <td>Al</td> <td>900 ± 9 µg/g</td> <td>Mo</td> <td>900 ± 9 µg/g</td> </tr> <tr> <td>Fe</td> <td>900 ± 9 µg/g</td> <td>Ti</td> <td>900 ± 9 µg/g</td> </tr> <tr> <td>Pb</td> <td>895 ± 9 µg/g</td> <td>Cd</td> <td>901 ± 9 µg/g</td> </tr> <tr> <td>B</td> <td>900 ± 9 µg/g</td> <td>Na</td> <td>900 ± 9 µg/g</td> </tr> <tr> <td>Mg</td> <td>900 ± 9 µg/g</td> <td>V</td> <td>900 ± 9 µg/g</td> </tr> <tr> <td>Si</td> <td>900 ± 9 µg/g</td> <td>Cr</td> <td>900 ± 9 µg/g</td> </tr> <tr> <td>Ba</td> <td>901 ± 9 µg/g</td> <td>Ni</td> <td>900 ± 9 µg/g</td> </tr> <tr> <td></td> <td></td> <td>Zn</td> <td>900 ± 9 µg/g</td> </tr> </tbody> </table>	Analyte	Certified Concentration	Analyte	Certified Concentration	Ag	900 ± 9 µg/g	Mn	900 ± 9 µg/g	Cu	900 ± 9 µg/g	Sn	902 ± 9 µg/g	P	900 ± 9 µg/g	Ca	900 ± 9 µg/g	Al	900 ± 9 µg/g	Mo	900 ± 9 µg/g	Fe	900 ± 9 µg/g	Ti	900 ± 9 µg/g	Pb	895 ± 9 µg/g	Cd	901 ± 9 µg/g	B	900 ± 9 µg/g	Na	900 ± 9 µg/g	Mg	900 ± 9 µg/g	V	900 ± 9 µg/g	Si	900 ± 9 µg/g	Cr	900 ± 9 µg/g	Ba	901 ± 9 µg/g	Ni	900 ± 9 µg/g			Zn	900 ± 9 µg/g	200 g
Analyte	Certified Concentration	Analyte	Certified Concentration																																															
Ag	900 ± 9 µg/g	Mn	900 ± 9 µg/g																																															
Cu	900 ± 9 µg/g	Sn	902 ± 9 µg/g																																															
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Pb	895 ± 9 µg/g	Cd	901 ± 9 µg/g																																															
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Mg	900 ± 9 µg/g	V	900 ± 9 µg/g																																															
Si	900 ± 9 µg/g	Cr	900 ± 9 µg/g																																															
Ba	901 ± 9 µg/g	Ni	900 ± 9 µg/g																																															
		Zn	900 ± 9 µg/g																																															
VHG-PMNN-100	<p>Manganese Standard: Mn @ 1000 µg/mL in 5% HNO3</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001.</p> <table border="1"> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr> <td>Mn</td> <td>1006 ± 5 µg/mL (w/v)</td> </tr> </tbody> </table>	Analyte	Certified Concentration	Mn	1006 ± 5 µg/mL (w/v)	100 mL																																												
Analyte	Certified Concentration																																																	
Mn	1006 ± 5 µg/mL (w/v)																																																	
VHG-PNIN-100	<p>Nickel Standard: Ni @ 1000 µg/mL in 5% HNO3</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001.</p> <table border="1"> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr> <td>Ni</td> <td>1002 ± 4 µg/mL (w/v)</td> </tr> </tbody> </table>	Analyte	Certified Concentration	Ni	1002 ± 4 µg/mL (w/v)	100 mL																																												
Analyte	Certified Concentration																																																	
Ni	1002 ± 4 µg/mL (w/v)																																																	
VHG-SM70B-500	<p>Common Elements Mix 2 Standard: Ag, Al, B, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, P, Pb, Si, Sn, Ti, V, Zn @ 100 µg/mL in 5% HNO3, tr. HF</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited ISO 17034, ISO/IEC 17025 and to ISO 9001.</p> <table border="1"> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr> <td>Ag</td> <td>100.0 ± 0.5 µg/mL</td> <td>Mn</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Fe</td> <td>100.0 ± 0.5 µg/mL</td> <td>Ti</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Pb</td> <td>100.0 ± 0.5 µg/mL</td> <td>Co</td> <td>100.0 ± 0.5 µg/mL</td> </tr> </tbody> </table>	Analyte	Certified Concentration	Analyte	Certified Concentration	Ag	100.0 ± 0.5 µg/mL	Mn	100.0 ± 0.5 µg/mL	Fe	100.0 ± 0.5 µg/mL	Ti	100.0 ± 0.5 µg/mL	Pb	100.0 ± 0.5 µg/mL	Co	100.0 ± 0.5 µg/mL	500 mL																																
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Standard

Code	Product	Unit
	Al 100.0 ± 0.5 µg/mL	Na 100.0 ± 0.5 µg/mL
	K 100.0 ± 0.5 µg/mL	V 100.0 ± 0.5 µg/mL
	Si 100.0 ± 0.5 µg/mL	Cr 100.0 ± 0.5 µg/mL
	B 100.0 ± 0.5 µg/mL	Ni 99.99 ± 0.50 µg/mL
	Mg 100.0 ± 0.5 µg/mL	Zn 99.98 ± 0.50 µg/mL
	Sn 100.0 ± 0.5 µg/mL	Cu 100.0 ± 0.5 µg/mL
	Ca 100.0 ± 0.5 µg/mL	P 100.0 ± 0.5 µg/mL

VHG-SDSL-BLK-100 Sulfur Blank (0 wt%) in #2 Diesel Fuel 100 mL

This RM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001.
This RM was analyzed for sulfur content by wavelength dispersive x-ray fluorescence spectrometry (WDXRF) with traceability to NIST SRM 2770 and by hydrogenolysis and rateometric colorimetry (ASTM D4045).

Element	Assigned Concentration
S	396 ppb (w/w)

VHG-SDSL-5-100 Sulfur Standard: S @ 5 µg/g (0.0005 wt%) in #2 Diesel Fuel 100 mL

This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001.
This CRM was prepared to the nominal concentration by gravimetric methods using the sulfur containing material indicated above.
The balances used in the preparation of VHG CRMs are calibrated regularly with traceability to NIST.

Analyte	Certified Concentration
S	5.00 ± 0.05 µg/g

VHG-SDSL-10-100 Sulfur Standard: S @ 10 µg/g (0.0010 wt%) in #2 Diesel Fuel 100 mL

This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001.
This CRM was prepared to the nominal concentration by gravimetric methods using the sulfur containing material indicated above.

Analyte	Certified Concentration
S	10.0 ± 0.1 µg/g

VHG-SDSL-25-100 Sulfur Standard: S @ 25 µg/g (0.0025 wt%) in #2 Diesel Fuel 100 mL

This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001.
This CRM was prepared to the nominal concentration by gravimetric methods using the sulfur containing material indicated above.

Standard

Code	Product	Unit
	<p>Analyte Certified Concentration</p> <p>S 25.0 ± 0.3 µg/g</p>	
VHG-SDSL-100-100	<p>Sulfur Standard: S @ 100 µg/g (0.0100 wt%) in #2 Diesel Fuel</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the nominal concentration by gravimetric methods using the sulfur containing material indicated above.</p> <p>Analyte Certified Concentration</p> <p>S 100 ± 1 µg/g</p>	100 mL
VHG-SDSL-200-100	<p>Sulfur Standard: S @ 200 µg/g (0.0200 wt%) in #2 Diesel Fuel</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the nominal concentration by gravimetric methods using the sulfur containing material indicated above.</p> <p>Analyte Certified Concentration</p> <p>S 200 ± 2 µg/g</p>	100 mL
VHG-SDSL-300-100	<p>Sulfur Standard: S @ 300 µg/g (0.0300 wt%) in #2 Diesel Fuel</p> <p>VHG CRMs are manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the nominal concentration by gravimetric methods using the sulfur containing material indicated above.</p> <p>Analyte Certified Concentration</p> <p>S 300 ± 3 µg/g</p>	100 mL
VHG-TCUN-100	<p>Copper Standard: Cu @ 10000 µg/mL in 5% HNO₃</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods using high-purity raw materials as indicated in the listed source material.</p> <p>Analyte Certified Concentration</p> <p>Cu 10,020 ± 33 µg/mL (w/v)</p>	100 mL
VHG-TZNN-100	<p>Zinc Standard: Zn @ 10000 µg/mL in 5% HNO₃</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods using high-purity raw materials as indicated in the listed source material.</p>	100 mL

Standard

Code	Product	Unit
	<p>Analyte Certified Concentration</p> <p>Zn 10,040 ± 36 µg/mL (w/v)</p>	
VHG-PSIW-100	<p>Silicon Standard: Si @ 1000 µg/mL in H₂O, tr. F-</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods using high-purity raw materials as indicated in the listed source material.</p> <p>Analyte Certified Concentration</p> <p>Si 1009 ± 7 µg/mL (w/v)</p>	100 mL
VHG-PMGN-500	<p>Magnesium Standard: Mg @ 1000 µg/mL in 5% HNO₃</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods using high-purity raw materials as indicated in the listed source material.</p> <p>Analyte Certified Concentration</p> <p>Mg 1001 ± 2 µg/mL (w/v)</p>	500 mL
VHG-PASN-500	<p>Arsenic Standard: As @ 1000 µg/mL in 5% HNO₃</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods using high-purity raw materials as indicated in the listed source material.</p> <p>Analyte Certified Concentration</p> <p>As 1002 ± 3 µg/mL (w/v)</p>	500 mL
VHG-PCAN-500	<p>Calcium Standard: Ca @ 1000 µg/mL in 5% HNO₃</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods using high-purity raw materials as indicated in the listed source material.</p> <p>Analyte Certified Concentration</p> <p>Ca 1006 ± 3 µg/mL (w/v)</p>	500 mL
VHG-PFEN-500	<p>Iron Standard: Fe @ 1000 µg/mL in 5% HNO₃</p>	500 mL

Standard

Code	Product	Unit
	<p>Analyte Certified Concentration</p> <p>Au 1001 ± 3 µg/mL (w/v)</p>	
VHG-PPDN-100	<p>Palladium Standard: Pd @ 1000 µg/mL in 5% HNO₃</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods using high-purity raw materials as indicated in the listed source material.</p> <p>Analyte Certified Concentration</p> <p>Pd 999.0 ± 3.0 µg/mL (w/v)</p>	100 mL
VHG-PPTH-100	<p>Platinum Standard: Pt @ 1000 µg/mL in 20% HCl</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods using high-purity raw materials as indicated in the listed source material.</p> <p>Analyte Certified Concentration</p> <p>Pt 1003 ± 4 µg/mL (w/v)</p>	100 mL
VHG-PWNF-500	<p>Tungsten Standard: W @ 1000 µg/mL in 5% HNO₃, tr. HF</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods using high-purity raw materials as indicated in the listed source material.</p> <p>Analyte Certified Concentration</p> <p>W 1007 ± 3 µg/mL (w/v)</p>	500 mL
VHG-PSRN-500	<p>Strontium Standard: Sr @ 1000 µg/mL in 5% HNO₃</p> <p>This CRM was manufactured, processed, and/or certified under a quality management system that is registered/accredited to ISO 17034, ISO/IEC 17025 and ISO 9001. This CRM was prepared to the certified concentrations shown above by gravimetric methods using high-purity raw materials as indicated in the listed source material.</p> <p>Analyte Certified Concentration</p> <p>Sr 997.0 ± 6.0 µg/mL (w/v)</p>	500 mL
VHG-PSEN-500	<p>Selenium Standard: Se @ 1000 µg/mL in 5% HNO₃</p> <p>Analyte Certified Concentration</p> <p>Se 993.0 ± 5.0 µg/mL (w/v)</p>	500 mL

Standard

Code	Product	Unit
VHG-PMONF-500	Molybdenum Standard: Mo @ 1000 µg/mL in 5% HNO ₃ , tr. HF	500 mL
	Analyte	Certified Concentration
	Mo 1005 ± 4 µg/mL (w/v)	
VHG-PCUN-500	Copper Standard: Cu @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Cu 1008 ± 3 µg/mL (w/v)	
VHG-PBW-500	Boron Standard: B @ 1000 µg/mL in H ₂ O	500 mL
	Analyte	Certified Concentration
	B 995.0 ± 3.0 µg/mL (w/v)	
VHG-PNAN-500	Sodium Standard: Na @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Na 996.0 ± 2.0 µg/mL (w/v)	
VHG-PBAN-500	Barium Standard: Ba @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Ba 1004 ± 5 µg/mL (w/v)	
VHG-PBIN-500	Bismuth Standard: Bi @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Bi 998.0 ± 8.0 µg/mL (w/v)	
VHG-PKN-500	Potassium Standard: K @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	K 999.0 ± 5.0 µg/mL (w/v)	
VHG-PCDN-500	Cadmium Standard: Cd @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Cd 999.0 ± 3.0 µg/mL (w/v)	
VHG-PCRN-500	Chromium Standard: Cr @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Cr 1004 ± 3 µg/mL (w/v)	

Standard

Code	Product	Unit
VHG-PVN-500	Vanadium Standard: V @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte Certified Concentration V 1002 ± 3 µg/mL (w/v)	
VHG-TMGN-500	Magnesium Standard: Mg @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte Certified Concentration Pt 1003 ± 4 µg/mL (w/v)	
VHG-PPN-100	Phosphorus Standard: P @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration P 995.0 ± 5.0 µg/mL (w/v)	
VHG-CN-50	Cyanide (CN ⁻) @ 1000 mg/L in 0.1% NaOH	50 mL
	Analyte Assigned Concentration Cyanide (CN) 1000 mg/L	
VHG-PTINF-100	Titanium Standard: Ti @ 1000 µg/mL in 5% HNO ₃ , tr. HF	100 mL
	Analyte Assigned Concentration Ti 1005 ± 5 µg/mL (w/v)	
VHG-PBW-100	Boron Standard: B @ 1000 µg/mL in H ₂ O	100 mL
	Analyte Assigned Concentration B 995.0 ± 3.0 µg/mL (w/v)	
VHG-PKN-100	Potassium Standard: K @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration K 999.0 ± 5.0 µg/mL (w/v)	
VHG-PCAN-100	Calcium Standard: Ca @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration Ca 1006 ± 3 µg/mL (w/v)	
VHG-PNAN-100	Sodium Standard: Na @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration Na 996.0 ± 2.0 µg/mL (w/v)	

Standard

Code	Product	Unit		
VHG-TNAN-500	Sodium Standard: Na @ 10000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Certified Concentration		
	Na	10,050 ± 22 µg/mL (w/v)		
VHG-TZNN-500	Zinc Standard: Zn @ 10000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Certified Concentration		
	Zn	10,040 ± 36 µg/mL (w/v)		
VHG-TSW-500	Sulfur Standard: S @ 10000 µg/mL in H ₂ O	500 mL		
	Analyte	Certified Concentration		
	S	9970 ± 56 µg/mL (w/v)		
VHG-TFEN-500	Iron Standard: Fe @ 10000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Assigned Concentration		
	Fe	9981 ± 39 µg/mL (w/v)		
VHG-TCRH-500	Chromium Standard: Cr @ 10000 µg/mL in 5% HCl	500 mL		
	Analyte	Assigned Concentration		
	Cr	10,027 ± 27 µg/mL (w/v)		
VHG-TNIN-500	Nickel Standard: Ni @ 10000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Assigned Concentration		
	Ni	10,028 ± 42 µg/mL (w/v)		
VHG-SPAS3-100	Arsenic (III) Standard: As ⁺³ @ 100 µg/mL in 2% HCl	100 mL		
	Analyte	Certified Concentration		
	As ⁺³	100.0 ± 0.5 µg/mL		
VHG-SPAS5W-100	Arsenic (V) Standard: As ⁺⁵ @ 100 µg/mL in H ₂ O	100 mL		
	Analyte	Certified Concentration		
	As ⁺⁵	100 µg/mL		
VHG-SM68-2-100	SM68 Standard 2: Ag, Ge, Hf, Mo, Nb, Sb, Si, Sn, Ta, Ti, W, Zr @ 100 µg/mL in 5% HNO ₃ , tr. HF	100 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ag	100.0 ± 0.5 µg/mL	Ge	100.0 ± 0.5 µg/mL
	Nb	100.0 ± 0.5 µg/mL	Sb	100.0 ± 0.5 µg/mL
	Ta	100.0 ± 0.5 µg/mL	Ti	100.0 ± 0.5 µg/mL

Standard

Code	Product	Unit
	Hf 100.0 ± 0.5 µg/mL	Mo 100.0 ± 0.5 µg/mL
	Si 100.0 ± 0.5 µg/mL	Sn 100.0 ± 0.5 µg/mL
	W 100.0 ± 0.5 µg/mL	Zr 100.0 ± 0.5 µg/mL
VHG-SM68-3-100	SM68 Standard 3: Au, Ir, Os, Pd, Pt, Rh, Ru, Te @ 100 µg/mL in 10% HCl	100 mL
	Analyte Certified Concentration	Analyte Certified Concentration
	Au 100.0 ± 0.5 µg/mL	Pt 100.0 ± 0.5 µg/mL
	Pd 100.0 ± 0.5 µg/mL	Te 99.99 ± 0.50 µg/mL
	Ru 100.0 ± 0.5 µg/mL	Os 100.0 ± 0.5 µg/mL
	Ir 100.0 ± 0.5 µg/mL	Rh 100.0 ± 0.5 µg/mL
VHG-MISA5-100	MISA Standard 5: Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Sc, Sm, Tb, Th, Tm, Y, Yb @ 100 µg/mL in 2% HNO₃	100 mL
	Analyte Certified Concentration	Analyte Certified Concentration
	Ce 99.99 ± 0.50 µg/mL	Eu 100.1 ± 0.5 µg/mL
	La 100.3 ± 0.5 µg/mL	Pr 100.1 ± 0.5 µg/mL
	Tb 100.2 ± 0.5 µg/mL	Y 100.1 ± 0.5 µg/mL
	Dy 100.4 ± 0.5 µg/mL	Gd 100.1 ± 0.5 µg/mL
	Lu 100.3 ± 0.5 µg/mL	Sc 100.3 ± 0.5 µg/mL
	Th 99.89 ± 0.50 µg/mL	Yb 99.99 ± 0.50 µg/mL
	Er 100.0 ± 0.5 µg/mL	Ho 100.0 ± 0.5 µg/mL
	Nd 100.5 ± 0.5 µg/mL	Sm 100.2 ± 0.5 µg/mL
	Tm 100.2 ± 0.5 µg/mL	
VHG-PNIN-500	Nickel Standard: Ni @ 1000 µg/mL in 5% HNO₃	500 mL
	Analyte Certified Concentration	
	Ni 998.0 ± 4.0 µg/mL (w/v)	
VHG-PTINF-500	Titanium Standard: Ti @ 1000 µg/mL in 5% HNO₃, tr. HF	500 mL
	Analyte Certified Concentration	
	Ti 1005 ± 5 µg/mL (w/v)	
VHG-PZRH-500	Zirconium Standard: Zr @ 1000 µg/mL in 5% HCl	500 mL
	Analyte Certified Concentration	
	Zr 998.0 ± 4.0 µg/mL (w/v)	
VHG-PHGN-500	Mercury Standard: Hg @ 1000 µg/mL in 5% HNO₃	500 mL
	Analyte Certified Concentration	
	Hg 991.0 ± 5.0 µg/mL (w/v)	

Standard

Code	Product	Unit		
VHG-PHFH-500	Hafnium Standard: Hf @ 1000 µg/mL in 5% HCl	500 mL		
	Analyte	Certified Concentration		
	Hf	998.0 ± 4.0 µg/mL (w/v)		
VHG-PCEN-500	Cerium Standard: Ce @ 1000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Certified Concentration		
	Ce	1000 ± 9 µg/mL (w/v)		
VHG-PSW-500	Sulfur Standard: S @ 1000 µg/mL in H ₂ O	500 mL		
	Analyte	Certified Concentration		
	S	997.0 ± 7.0 µg/mL (w/v)		
VHG-PBEN-500	Beryllium Standard: Be @ 1000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Assigned Concentration		
	Be	995.0 ± 5.0 µg/mL (w/v)		
VHG-PNBF-500	Niobium Standard: Nb @ 1000 µg/mL in 2% HF	500 mL		
	Analyte	Assigned Concentration		
	Nb	993.0 ± 5.0 µg/mL (w/v)		
VHG-V23-100-100G	V23 Wear Metals Standard: 100 µg/g Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Si, Sn, Ti, V, Zn in Hydrocarbon Oil	100 g		
	Analyte	Assigned Concentration	Analyte	Assigned Concentration
	Ag	100 ± 1 µg/g	Sn	100 ± 1 µg/g
	Fe	100 ± 1 µg/g	Ca	100 ± 1 µg/g
	Pb	100 ± 1 µg/g	Mo	100 ± 1 µg/g
	Al	100 ± 1 µg/g	Ti	100 ± 1 µg/g
	K	100 ± 1 µg/g	Cd	100 ± 1 µg/g
	Sb	100 ± 1 µg/g	Na	100 ± 1 µg/g
	B	100 ± 1 µg/g	V	100 ± 1 µg/g
	Mg	100 ± 1 µg/g	Cr	100 ± 1 µg/g
	Si	100 ± 1 µg/g	Ni	100 ± 1 µg/g
	Ba	100 ± 1 µg/g	Zn	100 ± 1 µg/g
	Mn	100 ± 1 µg/g	Cu	100 ± 1 µg/g
			P	100 ± 1 µg/g
VHG-SM23-500	US EPA 23 Metals Standard: Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Tl, V, Zn @ 100 µg/mL in 5% HNO ₃ , tr. Tartaric Acid, tr. HF	500 mL		

Standard

Code	Product	Unit																																																				
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Fe	100.1 ± 0.5 µg/mL	Cd	100.1 ± 0.5 µg/mL																																																			
Sb	100.1 ± 0.5 µg/mL	Mo	99.94 ± 0.50 µg/mL																																																			
Ba	99.97 ± 0.50 µg/mL	Zn	100.2 ± 0.5 µg/mL																																																			
K	99.97 ± 0.50 µg/mL	Co	100.1 ± 0.5 µg/mL																																																			
		Na	100.2 ± 0.5 µg/mL																																																			

VHG-NCH-SET1 Nitrogen Set for ASTM D4629: N @ 0, 1, 2, 10, 20, 50, 100, 200, 500, 1000 ng/µL in Isooctane set (10)

Mixture #	Nitrogen (ng/µL)	Mixture #	Nitrogen (ng/µL)
1	1.00	6	100
2	1.99	7	200
3	10.0	8	500
4	20.0	9	1001
5	50.1	10	Blank

VHG-CFP1-250 Cold Filter Plugging Point, Diesel (Nominal: -16.3°C) 250 mL
 Certified value: -22.8 °C

VHG-PHFH-100 Hafnium Standard: Hf @ 1000 µg/mL in 5% HCl 100 mL

Analyte	Certified Concentration
Hf	998.0 ± 4.0 µg/mL (w/v)

VHG-PSNNF-100 Tin Standard: Sn @ 1000 µg/mL in 5% HNO₃, tr. HF 100 mL

Analyte	Certified Concentration
Sn	1000 ± 3 µg/mL (w/v)

VHG-IACET-100 Acetate Standard: CH₃CO₂⁻ @ 1000 µg/mL in H₂O 100 mL

Analyte	Certified Concentration
CH ₃ CO ₂ ⁻	1000 ± 5 µg/mL

VHG-IFORM-100 Formate Standard: HCO₂⁻ @ 1000 µg/mL in H₂O 100 mL

Analyte	Certified Concentration
HCO ₂ ⁻	1000 ± 5 µg/mL

Standard

Code	Product	Unit		
VHG-PCDN-100	Cadmium Standard: Cd @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Cd	999.0 ± 3.0 µg/mL (w/v)		
VHG-PFEN-100	Iron Standard: Fe @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Fe	998.0 ± 5.0 µg/mL (w/v)		
VHG-PCRN-100	Chromium Standard: Cr @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Cr	1004 ± 3 µg/mL (w/v)		
VHG-PDYN-100	Dysprosium Standard: Dy @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Assigned Concentration		
	Dy	1008 ± 4 µg/mL (w/v)		
VHG-BN-10-50G	Base Number (BN) Standard: 10 mg KOH/g in Hydrocarbon Oil	50 g		
	Analyte	Assigned Concentration		
	ASTM D2896	10.13 ± 0.25 mg KOH/g		
	ASTM D4739	9.99 ± 0.52 mg KOH/g		
VHG-BN-6-50G	Base Number (BN) Standard: 6 mg KOH/g in Hydrocarbon Oil	50 g		
	Analyte	Assigned Concentration		
	ASTM D2896	6.09 ± 0.15 mg KOH/g		
	ASTM D4739	6.11 ± 0.32 mg KOH/g		
VHG-SM23-100	US EPA 23 Metals Standard: Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Tl, V, Zn @ 100 µg/mL in 5% HNO ₃ , tr. Tartaric Acid, tr. HF	100 mL		
	Element	Certified Concentration	Element	Certified Concentration
	Ag	100.0 ± 0.5 µg/mL	Se	100.0 ± 0.5 µg/mL
	Cr	100.0 ± 0.5 µg/mL	Be	100.0 ± 0.5 µg/mL
	Ni	100.0 ± 0.5 µg/mL	Mg	100.0 ± 0.5 µg/mL
	Al	100.0 ± 0.5 µg/mL	Tl	100.0 ± 0.5 µg/mL
	Cu	100.0 ± 0.5 µg/mL	Ca	100.0 ± 0.5 µg/mL
	Pb	100.0 ± 0.5 µg/mL	Mn	100.0 ± 0.5 µg/mL
	As	100.0 ± 0.5 µg/mL	V	100.0 ± 0.5 µg/mL
	Fe	99.98 ± 0.50 µg/mL	Cd	99.99 ± 0.50 µg/mL
	Sb	100.0 ± 0.5 µg/mL	Mo	100.0 ± 0.5 µg/mL
	Ba	100.0 ± 0.5 µg/mL	Zn	99.99 ± 0.50 µg/mL
	K	100.0 ± 0.5 µg/mL	Co	100.0 ± 0.5 µg/mL
			Na	100.0 ± 0.5 µg/mL

Standard

Code	Product	Unit
VHG-TPN-500	Phosphorus Standard: P @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte Certified Concentration	
	P 9976 ± 33 µg/mL (w/v)	
VHG-PPBN-100	Lead Standard: Pb @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration	
	Pb 998.0 ± 4.0 µg/mL (w/v)	
VHG-PALN-100	Aluminum Standard: Al @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration	
	Al 1002 ± 2 µg/mL (w/v)	
VHG-PERN-100	Erbium Standard: Er @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration	
	Er 999.0 ± 4.0 µg/mL (w/v)	
VHG-PEUN-100	Europium Standard: Eu @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration	
	Eu 1003 ± 5 µg/mL (w/v)	
VHG-PGANH-100	Gallium Standard: Ga @ 1000 µg/mL in 5% HNO ₃ , 0.5% HCl	100 mL
	Analyte Certified Concentration	
	Ga 990.0 ± 4.0 µg/mL (w/v)	
VHG-PGDN-100	Gadolinium Standard: Gd @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration	
	Gd 998.0 ± 3.0 µg/mL (w/v)	
VHG-PHON-100	Holmium Standard: Ho @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration	
	Ho 1001 ± 4 µg/mL (w/v)	
VHG-PIRH-100	Iridium Standard: Ir @ 1000 µg/mL in 20% HCl	100 mL
	Analyte Certified Concentration	
	Ir 1010 ± 5 µg/mL (w/v)	

Standard

Code	Product	Unit
VHG-PINN-100	Indium Standard: In @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration In 998.0 ± 2.0 µg/mL (w/v)	
VHG-PLUN-100	Lutetium Standard: Lu @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration Lu 997.0 ± 4.0 µg/mL (w/v)	
VHG-PPRN-100	Praseodymium Standard: Pr @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration Pr 1003 ± 7 µg/mL (w/v)	
VHG-PREN-100	Rhenium Standard: Re @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Assigned Concentration Re 1003 ± 4 µg/mL (w/v)	
VHG-PRBN-100	Dysprosium Standard: Dy @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Assigned Concentration Rb 1007 ± 4 µg/mL (w/v)	
VHG-PRHH-100	Rhodium Standard: Rh @ 1000 µg/mL in 20% HCl	100 mL
	Analyte Assigned Concentration Rh 997.0 ± 5.0 µg/mL (w/v)	
VHG-PSCN-100	Scandium Standard: Sc @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Assigned Concentration Sc 1002 ± 3 µg/mL (w/v)	
VHG-PSMN-100	Samarium Standard: Sm @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Assigned Concentration Sm 996.0 ± 3.0 µg/mL (w/v)	
VHG-PSBWTN-100	Antimony Standard: Sb @ 1000 µg/mL in 1% HNO ₃ , tr. Tartaric Acid	100 mL
	Analyte Assigned Concentration Sb 995.0 ± 3.0 µg/mL (w/v)	
VHG-PTAF-100	Tantalum Standard: Ta @ 1000 µg/mL in 2% HF	100 mL
	Analyte Assigned Concentration Ta 995.0 ± 3.0 µg/mL (w/v)	

Standard

Code	Product	Unit		
VHG-PTBN-100	Terbium Standard: Tb @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Tb 1007 ± 3 µg/mL (w/v)			
VHG-PTLN-100	Thallium Standard: Tl @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Tl 994.0 ± 6.0 µg/mL (w/v)			
VHG-PTMN-100	Thulium Standard: Tm @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Tm 1001 ± 4 µg/mL (w/v)			
VHG-PTHN-100	Thorium Standard: Th @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Th 1001 ± 5 µg/mL (w/v)			
VHG-VFLUX -318-1KG	90% Lithium tetraborate, 10% Lithium fluoride	1 kg		
	Analyte	Certified Concentration		
	Lithium Tetraborate (Li ₂ B ₄ O ₇) 90% (w/w)			
	Lithium Fluoride (LiF) 10% (w/w)			
	Loss on Fusion 1.93% (w/w)			
	Lithium (Li) 9.82% (w/w)			
	Boron (B) 22.81% (w/w)			
VHG-ISQC20-100	QC Standard 20 (Second Source): Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Th, Tl, U, V, Zn @ 10 µg/mL in 5% HNO ₃ , tr. F-, tr. Tartaric Acid	100 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ag 10.01 ± 0.05 µg/mL		Mo 10.01 ± 0.05 µg/mL	
	Cr 9.991 ± 0.050 µg/mL		U 9.981 ± 0.050 µg/mL	
	Se 10.02 ± 0.05 µg/mL		Be 9.991 ± 0.050 µg/mL	
	Al 9.989 ± 0.050 µg/mL		Ni 10.02 ± 0.05 µg/mL	
	Cu 10.01 ± 0.05 µg/mL		V 9.993 ± 0.050 µg/mL	
	Th 10.00 ± 0.05 µg/mL		Cd 9.998 ± 0.050 µg/mL	
	As 10.03 ± 0.05 µg/mL		Pb 10.01 ± 0.05 µg/mL	
	Mn 9.986 ± 0.050 µg/mL		Zn 10.00 ± 0.05 µg/mL	
	Tl 9.994 ± 0.050 µg/mL		Co 10.02 ± 0.05 µg/mL	
	Ba 10.01 ± 0.05 µg/mL		Sb 10.01 ± 0.05 µg/mL	
VHG-PVN-100	Vanadium Standard: V @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	V 1002 ± 3 µg/mL (w/v)			

Standard

Code	Product	Unit																																																								
VHG-V26-500-100G	Ag, Al, B, Ba, Bi, Ca, Cd, Cr, Cu, Fe, In, Li, K, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Si, Sn, Ti, V, Zn @ 500 µg/g in 75 cSt Hydrocarbon Oil	100 g																																																								
	<table border="0"> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr> <td>Ag</td> <td>500 ± 5 µg/g</td> <td>Mg</td> <td>500 ± 5 µg/g</td> </tr> <tr> <td>Fe</td> <td>500 ± 5 µg/g</td> <td>Sn</td> <td>501 ± 5 µg/g</td> </tr> <tr> <td>P</td> <td>500 ± 5 µg/g</td> <td>Ca</td> <td>500 ± 5 µg/g</td> </tr> <tr> <td>Al</td> <td>500 ± 5 µg/g</td> <td>Mn</td> <td>500 ± 5 µg/g</td> </tr> <tr> <td>In</td> <td>500 ± 5 µg/g</td> <td>Ti</td> <td>500 ± 5 µg/g</td> </tr> <tr> <td>Pb</td> <td>500 ± 5 µg/g</td> <td>Cd</td> <td>500 ± 5 µg/g</td> </tr> <tr> <td>B</td> <td>500 ± 5 µg/g</td> <td>Mo</td> <td>500 ± 5 µg/g</td> </tr> <tr> <td>K</td> <td>500 ± 5 µg/g</td> <td>V</td> <td>500 ± 5 µg/g</td> </tr> <tr> <td>Sb</td> <td>500 ± 5 µg/g</td> <td>Cr</td> <td>500 ± 5 µg/g</td> </tr> <tr> <td>Ba</td> <td>500 ± 5 µg/g</td> <td>Na</td> <td>500 ± 5 µg/g</td> </tr> <tr> <td>Li</td> <td>500 ± 5 µg/g</td> <td>Zn</td> <td>500 ± 5 µg/g</td> </tr> <tr> <td>Si</td> <td>500 ± 5 µg/g</td> <td>Cu</td> <td>500 ± 5 µg/g</td> </tr> <tr> <td>Bi</td> <td>500 ± 5 µg/g</td> <td>Ni</td> <td>500 ± 5 µg/g</td> </tr> </tbody> </table>	Analyte	Certified Concentration	Analyte	Certified Concentration	Ag	500 ± 5 µg/g	Mg	500 ± 5 µg/g	Fe	500 ± 5 µg/g	Sn	501 ± 5 µg/g	P	500 ± 5 µg/g	Ca	500 ± 5 µg/g	Al	500 ± 5 µg/g	Mn	500 ± 5 µg/g	In	500 ± 5 µg/g	Ti	500 ± 5 µg/g	Pb	500 ± 5 µg/g	Cd	500 ± 5 µg/g	B	500 ± 5 µg/g	Mo	500 ± 5 µg/g	K	500 ± 5 µg/g	V	500 ± 5 µg/g	Sb	500 ± 5 µg/g	Cr	500 ± 5 µg/g	Ba	500 ± 5 µg/g	Na	500 ± 5 µg/g	Li	500 ± 5 µg/g	Zn	500 ± 5 µg/g	Si	500 ± 5 µg/g	Cu	500 ± 5 µg/g	Bi	500 ± 5 µg/g	Ni	500 ± 5 µg/g	
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Si	500 ± 5 µg/g	Cu	500 ± 5 µg/g																																																							
Bi	500 ± 5 µg/g	Ni	500 ± 5 µg/g																																																							
VHG-LLIN-100	Lithium Standard: Li @ 10 µg/mL in 2% HNO ₃	100 mL																																																								
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Li	9.997 ± 0.050 µg/mL (w/v)																																																									
VHG-INO3N-100	Nitrate as N @ 1000 µg/mL in H ₂ O	100 mL																																																								
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NO ₃ ⁻ as N	1000 ± 5 µg/mL																																																									
VHG-IPO4P-100	Phosphate as P @ 1000 µg/mL in H ₂ O	100 mL																																																								
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PO ₄ ⁻³ as P	1000 ± 5 µg/mL																																																									
VHG-TOC1K-100	Total Organic Carbon Standard: TOC @ 1000 mg/L in H ₂ O	100 mL																																																								
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VHG-MBAS-100	Methylene Blue Active Substance (MBAS) @ 1000 mg/L in H ₂ O, tr. H ₂ SO ₄	100 mL																																																								
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Methylene Blue Active Substance (MBAS)	1000 mg/L ± 1%																																																									
VHG-PGENF-100	Germanium Standard: Ge @ 1000 µg/mL in 5% HNO ₃ , tr. HF	100 mL																																																								
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Standard

Code	Product	Unit		
VHG-PSEN-100	Selenium Standard: Se @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Se	993.0 ± 5.0 µg/mL (w/v)		
VHG-SM68-2-500	SM68 Standard 2: Ag, Ge, Hf, Mo, Nb, Sb, Si, Sn, Ta, Ti, W, Zr @ 100 µg/mL in 5% HNO ₃ , tr. HF	500 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ag	100.0 ± 0.5 µg/mL	Hf	100.0 ± 0.5 µg/mL
	Nb	100.0 ± 0.5 µg/mL	Si	100.0 ± 0.5 µg/mL
	Ta	100.0 ± 0.5 µg/mL	W	100.0 ± 0.5 µg/mL
	Ge	100.0 ± 0.5 µg/mL	Mo	100.0 ± 0.5 µg/mL
	Sb	100.0 ± 0.5 µg/mL	Sn	100.0 ± 0.5 µg/mL
	Ti	100.0 ± 0.5 µg/mL	Zr	100.0 ± 0.5 µg/mL
VHG-SM68-3-500	SM68 Standard 3: Au, Ir, Os, Pd, Pt, Rh, Ru, Te @ 100 µg/mL in 10% HCl	500 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Au	100.0 ± 0.5 µg/mL	Pt	100.0 ± 0.5 µg/mL
	Pd	100.1 ± 0.5 µg/mL	Te	99.99 ± 0.50 µg/mL
	Ru	100.0 ± 0.5 µg/mL	Os	100.0 ± 0.5 µg/mL
	Ir	100.0 ± 0.5 µg/mL	Rh	100.0 ± 0.5 µg/mL
VHG-ISQC20-100	QC Standard 20 (Second Source): Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Th, Tl, U, V, Zn @ 10 µg/mL in 5% HNO ₃ , tr. F ⁻ , tr. Tartaric Acid	100 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ag	10.01 ± 0.05 µg/mL	Mo	10.01 ± 0.05 µg/mL
	Cr	9.991 ± 0.050 µg/mL	U	9.981 ± 0.050 µg/mL
	Se	10.02 ± 0.05 µg/mL	Be	9.991 ± 0.050 µg/mL
	Al	9.989 ± 0.050 µg/mL	Ni	10.02 ± 0.05 µg/mL
	Cu	10.01 ± 0.05 µg/mL	V	9.993 ± 0.050 µg/mL
	Th	10.00 ± 0.05 µg/mL	Cd	9.998 ± 0.050 µg/mL
	As	10.03 ± 0.05 µg/mL	Pb	10.01 ± 0.05 µg/mL
	Mn	9.986 ± 0.050 µg/mL	Zn	10.00 ± 0.05 µg/mL
	Tl	9.994 ± 0.050 µg/mL	Co	10.02 ± 0.05 µg/mL
	Ba	10.01 ± 0.05 µg/mL	Sb	10.01 ± 0.05 µg/mL
VHG-SDSL-50-100	Sulfur Standard: S @ 50 µg/g (0.0050 wt%) in #2 Diesel Fuel	100 mL		
	Analyte	Certified Concentration		
	S	50.0 ± 0.5 µg/g		

Standard

Code	Product	Unit		
VHG-SDSL-500-100	Sulfur Standard: S @ 500 µg/g (0.0500 wt%) in #2 Diesel Fuel	100 mL		
	Analyte	Certified Concentration		
	S	500 ± 5 µg/g		
VHG-SDSL-750-100	Sulfur Standard: S @ 750 µg/g (0.0750 wt%) in #2 Diesel Fuel	100 mL		
	Analyte	Assigned Concentration		
	S	750 ± 8 µg/g		
VHG-SDSL-1000-100	Sulfur Standard: S @ 1000 µg/g (0.100 wt%) in #2 Diesel Fuel	100 mL		
	Analyte	Assigned Concentration		
	S	1000 ± 10 µg/g		
VHG-SDSL-5000-100	Sulfur Standard: S @ 5000 µg/g (0.500 wt%) in #2 Diesel Fuel	100 mL		
	Analyte	Assigned Concentration		
	S	5000 ± 50 µg/g		
VHG-SDSL-1P-100	Sulfur Standard: S @ 10000 µg/g (1.00 wt%) in #2 Diesel Fuel	100 mL		
	Analyte	Assigned Concentration		
	S	10,000 ± 100 µg/g		
VHG-SDSL-2P-100	Sulfur Standard: S @ 20000 µg/g (2.00 wt%) in #2 Diesel Fuel	100 g		
	Analyte	Assigned Concentration		
	S	20,000 ± 200 µg/g		
VHG-SDSL-3P-100	Sulfur Standard: S @ 30000 µg/g (3.00 wt%) in #2 Diesel Fuel	100 mL		
	Analyte	Assigned Concentration		
	S	30,000 ± 300 µg/g		
VHG-ICM1-500	Multi-Anion Standard 1: F ⁻ , Cl ⁻ , Br ⁻ , NO ₃ ⁻ , PO ₄ ⁽⁻³⁾ , SO ₄ ⁽⁻²⁾ @ 100 µg/mL in H ₂ O	500 mL		
	Analyte	Assigned Concentration	Analyte	Assigned Concentration
	Br ⁻	99.99 ± 0.50 µg/mL	Cl ⁻	100.0 ± 0.5 µg/mL
	F ⁻	99.99 ± 0.50 µg/mL	NO ₃ ⁻	99.50 ± 0.50 µg/mL
	PO ₄ ⁽⁻³⁾	100.0 ± 0.5 µg/mL	SO ₄ ⁽⁻²⁾	99.60 ± 0.50 µg/mL
VHG-SISO-50-100	Sulfur Standard: S @ 50 µg/g (0.0050 wt%) in Isooctane	100 mL		
	Analyte	Assigned Concentration		
	S	50.0 ± 0.5 µg/g		

Standard

Code	Product	Unit		
VHG-SISO-500-100	Sulfur Standard: S @ 500 µg/g (0.0500 wt%) in Isooctane	100 mL		
	Analyte	Certified Concentration		
	S	500 ± 5 µg/g		
VHG-TMONF-100	Molybdenum Standard: Mo @ 10000 µg/mL in 5% HNO ₃ , tr. HF	100 mL		
	Analyte	Certified Concentration		
	Mo	10,031 ± 32 µg/mL (w/v)		
VHG-MISA6-500	MISA Standard 6: Ag, Al, B, Ba, Ca, Cd, Co, Cr, Cs, Cu, Ga, In, Fe, K, Li, Mg, Mn, Na, Ni, P, Pb, Rb, Sr, Tl, U, V, Zn @ 100 µg/mL in 2% HNO ₃	500 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ag	100.0 ± 0.5 µg/mL	K	100.0 ± 0.5 µg/mL
	Cu	100.0 ± 0.5 µg/mL	Cd	100.0 ± 0.5 µg/mL
	Ni	100.0 ± 0.5 µg/mL	Li	100.0 ± 0.5 µg/mL
	Al	100.0 ± 0.5 µg/mL	Tl	100.0 ± 0.5 µg/mL
	Fe	100.0 ± 0.5 µg/mL	Co	100.0 ± 0.5 µg/mL
	P	100.0 ± 0.5 µg/mL	Mg	100.0 ± 0.5 µg/mL
	B	100.0 ± 0.5 µg/mL	U	100.0 ± 0.5 µg/mL
	Ga	100.0 ± 0.5 µg/mL	Cr	100.0 ± 0.5 µg/mL
	Pb	100.0 ± 0.5 µg/mL	Mn	100.0 ± 0.5 µg/mL
	Ba	100.0 ± 0.5 µg/mL	V	100.0 ± 0.5 µg/mL
	In	100.0 ± 0.5 µg/mL	Cs	100.0 ± 0.5 µg/mL
	Rb	100.0 ± 0.5 µg/mL	Na	100.0 ± 0.5 µg/mL
	Ca	100.0 ± 0.5 µg/mL	Zn	100.0 ± 0.5 µg/mL
VHG-PCON-500	Cobalt Standard: Co @ 1000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Certified Concentration		
	Co	991.0 ± 3.0 µg/mL (w/v)		
VHG-LAGTSTK2-100	ICP-MS Tuning Solution 2: Ce, Co, Li, Mg, Tl, Y @ 10 ug/mL in 2% HNO ₃	100 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ce	10.00 ± 0.05 µg/mL	Co	10.00 ± 0.05 µg/mL
	Li	10.00 ± 0.05 µg/mL	Mg	10.00 ± 0.05 µg/mL
	Tl	10.00 ± 0.05 µg/mL	Y	10.00 ± 0.05 µg/mL
VHG-LMSTNG101-500	ICP-MS Tuning Solution: Ce, Co, Li, Mg, Tl, Y @ 1 ug/L in 2% HNO ₃	500 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ce	1.003 ± 0.005 µg/L	Co	0.9977 ± 0.005 µg/L
	Li	0.9976 ± 0.005 µg/L	Mg	0.9987 ± 0.005 µg/L
	Tl	0.9984 ± 0.005 µg/L	Y	1.002 ± 0.005 µg/L

Standard

Code	Product	Unit
VHG-TCUN-500	Copper Standard: Cu @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte Certified Concentration	
	Cu 10,020 ± 33 µg/mL (w/v)	
VHG-SMIN-BLK-100	Sulfur Blank (0 wt%) in 75 cSt Mineral Oil	100 mL
	Analyte Assigned Concentration	
	S 67 ppb (w/w)	
VHG-SMIN-100-100	Sulfur Standard: S @ 100 µg/g (0.0100 wt%) in 75 cSt Mineral Oil	100 mL
	Analyte Assigned Concentration	
	S 100 ± 1 µg/g	
VHG-SMIN-500-100	Sulfur Standard: S @ 500 µg/g (0.0500 wt%) in 75 cSt Mineral Oil	100 mL
	Analyte Assigned Concentration	
	S 500 ± 5 µg/g	
VHG-SMIN-1000-100	Sulfur Standard: S @ 1000 µg/g (0.100 wt%) in 75 cSt Mineral Oil	100 mL
	Analyte Assigned Concentration	
	S 1000 ± 10 µg/g	
VHG-SMIN-3000-100	Sulfur Standard: S @ 3000 µg/g (0.300 wt%) in 75 cSt Mineral Oil	100 mL
	Analyte Assigned Concentration	
	S 3000 ± 30 µg/g	
VHG-SMIN-5000-100	Sulfur Standard: S @ 5000 µg/g (0.500 wt%) in 75 cSt Mineral Oil	100 mL
	Analyte Assigned Concentration	
	S 5000 ± 50 µg/g	
VHG-SMIN-1P-100	Sulfur Standard: S @ 10000 µg/g (1.00 wt%) in 75 cSt Mineral Oil	100 mL
	Analyte Assigned Concentration	
	S 10,000 ± 100 µg/g	
VHG-TVN-500	Vanadium Standard: V @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte Assigned Concentration	
	V 10,100 ± 37 µg/mL (w/v)	
VHG-SM40-100	Noble Metals Standard: Au, Ir, Os, Pd, Pt, Re, Rh, Ru @ 100 µg/mL in 20% HCl	100 mL
	Analyte Assigned Concentration	Analyte Assigned Concentration
	Au 100.0 ± 0.5 µg/mL	Pt 100.0 ± 0.5 µg/mL
	Pd 100.0 ± 0.5 µg/mL	Ru 100.0 ± 0.5 µg/mL

Standard

Code	Product	Unit
	Rh 100.0 ± 0.5 µg/mL	Os 100.0 ± 0.5 µg/mL
	Ir 100.0 ± 0.5 µg/mL	Re 99.98 ± 0.50 µg/mL
VHG-ICM5A-100	Multi-Cation Standard 1: Li+ @ 50; Na+ @ 200; Mg+2, NH4+ @ 250; Ca+2, K+ @ 500 µg/mL in dil. HNO3	100 mL
	Analyte Certified Concentration Analyte Certified Concentration	
	Ca ⁺² 500.1 ± 2.5 µg/mL	K ⁺ 500.0 ± 2.5 µg/mL
	Li ⁺ 50.02 ± 0.25 µg/mL	Mg ⁺² 250.0 ± 1.3 µg/mL
	Na ⁺ 200.0 ± 1.0 µg/mL	NH ₄ ⁺ 250.0 ± 1.3 µg/mL
VHG-D19-900-100G	Spectrometric Oil Reference Standard D19-900: Ag, Al, B, Ba, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Na, Ni, Pb, Si, Sn, Ti, V, Zn @ 900 µg/g in Aviation Reference Oil	100 g
	Analyte Certified Concentration Analyte Certified Concentration	
	Ag 900 ± 9 µg/g	Ba 899 ± 9 µg/g
	Fe 900 ± 9 µg/g	Mo 899 ± 9 µg/g
	Si 906 ± 9 µg/g	V 899 ± 9 µg/g
	Al 901 ± 9 µg/g	Cd 900 ± 9 µg/g
	Mg 900 ± 9 µg/g	Na 903 ± 9 µg/g
	Sn 900 ± 9 µg/g	Zn 899 ± 9 µg/g
	B 899 ± 9 µg/g	Cr 899 ± 9 µg/g
	Mn 899 ± 9 µg/g	Ni 899 ± 9 µg/g
	Ti 899 ± 9 µg/g	Cu 899 ± 9 µg/g
		Pb 900 ± 9 µg/g
VHG-ICM8-100	Multi-Anion Standard 8: Cl-, F-, NO3-, SO4(-2) @ 1000 µg/mL in H2O	100 mL
	Analyte Certified Concentration Analyte Certified Concentration	
	Cl- 1000 ± 5 µg/mL	F- 1000 ± 5 µg/mL
	NO ₃ ⁻ 1000 ± 5 µg/mL	SO ₄ ⁻² 1000 ± 5 µg/mL
VHG-V23-500-100G	V23 Wear Metals Standard: 500 µg/g Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Si, Sn, Ti, V, Zn in Hydrocarbon Oil	100 g
	Analyte Certified Concentration Analyte Certified Concentration	
	Ag 500 ± 5 µg/g	Sn 500 ± 5 µg/g
	Fe 500 ± 5 µg/g	Ca 500 ± 5 µg/g
	Pb 500 ± 5 µg/g	Mo 500 ± 5 µg/g
	Al 500 ± 5 µg/g	Ti 500 ± 5 µg/g
	K 500 ± 5 µg/g	Cd 500 ± 5 µg/g
	Sb 500 ± 5 µg/g	Na 501 ± 5 µg/g
	B 498 ± 5 µg/g	V 500 ± 5 µg/g
	Mg 500 ± 5 µg/g	Cr 500 ± 5 µg/g
	Si 500 ± 5 µg/g	Ni 500 ± 5 µg/g
	Ba 500 ± 5 µg/g	Zn 500 ± 5 µg/g
	Mn 500 ± 5 µg/g	Cu 500 ± 5 µg/g
		P 500 ± 5 µg/g

Standard

Code	Product	Unit																																														
VHG-OY-5000 -A-400G	Yttrium Standard: Y @ 5000 µg/g in Hydrocarbon Oil	400 g																																														
	<table> <tr> <td>Analyte</td> <td>Certified Concentration</td> </tr> <tr> <td>Y</td> <td>5000 ± 50 µg/g</td> </tr> </table>		Analyte	Certified Concentration	Y	5000 ± 50 µg/g																																										
Analyte	Certified Concentration																																															
Y	5000 ± 50 µg/g																																															
VHG-PBEN-100	Beryllium Standard: Be @ 1000 µg/mL in 5% HNO ₃	100 mL																																														
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Be	995.0 ± 5.0 µg/mL (w/v)																																															
VHG-PASN-100	Arsenic Standard: As @ 1000 µg/mL in 5% HNO ₃	100 mL																																														
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VHG-PSW-100	Sulfur Standard: S @ 1000 µg/mL in H ₂ O	100 mL																																														
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VHG-QC21-100	QC Standard 21 (Primary): As, Be, Ca, Cd, Co, Cr, Cu, Fe, Li, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sr, Ti, Tl, V, Zn @ 100 µg/mL in 5% HNO ₃ , tr. F ⁻ , tr. Tartaric Acid	100 mL																																														
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VHG-ICH-USP -TELF-100	ICH/USP Parenteral Combined-1 Target Elements: Mo @ 1500, Cr @ 1100, Ba @ 700, Sn @ 600, Cu @ 300, Li @ 250, Sb @ 90, Se @ 80, Ag @ 10, Tl @ 8 µg/mL in 5% HNO ₃ , tr. HF	100 mL																																														
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Standard

Code	Product	Unit																																																
VHG-ICH-USP -TELG-100	ICH/USP Parenteral Combined-2 Target Elements: Au @ 100; Ir, Os, Pd, Pt, Rh, Ru @ 10 µg/mL in 15% HCl	100 mL																																																
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VHG-SM60A-100	Rare Earth and 'Geo' Elements Standard: Ba, Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Rb, Sc, Sm, Sr, Tb, Th, Tm, U, Y, Yb @ 100 µg/mL in 5% HNO ₃	100 mL																																																
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VHG-IF1K-100	Fluoride Standard: F ⁻ @ 1000 µg/mL in H ₂ O	100 mL																																																
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F ⁻	1000 ± 5 µg/mL																																																	
VHG-ICL1K-100	Chloride (from KCl) Standard: Cl ⁻ @ 1000 µg/mL in H ₂ O	100 mL																																																
	<table border="0"> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr> <td>Cl⁻</td> <td>999.4 ± 5.0 µg/mL</td> </tr> </tbody> </table>	Analyte	Certified Concentration	Cl ⁻	999.4 ± 5.0 µg/mL																																													
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Cl ⁻	999.4 ± 5.0 µg/mL																																																	
VHG-INO2-100	Nitrite Standard: NO ₂ ⁻ @ 1000 µg/mL in H ₂ O	100 mL																																																
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NO ₂ ⁻	1002 ± 5 µg/mL																																																	
VHG-INO3-100	Nitrate Standard: NO ₃ ⁻ @ 1000 µg/mL in H ₂ O	100 mL																																																
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VHG-ISO41K-100	Sulfate Standard: SO ₄ ⁻² @ 1000 µg/mL in H ₂ O	100 mL																																																
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Standard

Code	Product	Unit
VHG-IPO4-100	Phosphate Standard: PO ₄ (-3) @ 1000 µg/mL in H ₂ O	100 mL
	Analyte Certified Concentration	
	PO ₄ ⁻³ 1000 ± 5 µg/mL	
VHG-IBR-100	Bromide (from KBr) Standard: Br ⁻ @ 1000 µg/mL in H ₂ O	100 mL
	Analyte Assigned Concentration	
	Br ⁻ 1000 ± 5 µg/mL	
VHG-INH41K-100	Ammonium Standard: NH ₄ ⁺ @ 1000 µg/mL in H ₂ O	100 mL
	Analyte Assigned Concentration	
	NH ₄ ⁺ 1000 ± 5 µg/mL	
VHG-TSIW-500	Silicon Standard: Si @ 10000 µg/mL in H ₂ O, tr. F ⁻	500 mL
	Analyte Assigned Concentration	
	Si 9953 ± 64 µg/mL (w/v)	
VHG-PWNF-100	Tungsten Standard: W @ 1000 µg/mL in 5% HNO ₃ , tr. HF	100 mL
	Analyte Assigned Concentration	
	W 1001 ± 4 µg/mL (w/v)	
VHG-PNDN-100	Neodymium Standard: Nd @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Assigned Concentration	
	Nd 1005 ± 6 µg/mL (w/v)	
VHG-SISO-300-100	Sulfur Standard: S @ 300 µg/g (0.0300 wt%) in Isooctane	100 mL
	Analyte Assigned Concentration	
	S 300 ± 3 µg/g	
VHG-V-SOLV-1GAL	V-Solv™ ICP Solvent	1 gallon
	Analyte Trace Concentrations (µg/g)	Analyte Trace Concentrations (µg/g)
	Ag <0.25	Pb <0.25
	Cr <0.25	Tl <0.25
	Mo <0.25	Bi <0.25
	Si <0.25	La <0.25
	Al <0.25	S <1
	Cu <0.25	V <0.25
	Na <0.25	Ca <0.25
	Sn <0.25	Li <0.25
	As <0.25	Sb <0.25
	Fe <0.25	Y <0.25
	Ni <0.25	Cd <0.25

Standard

Code	Product	Unit			
VHG-S20MIN 3P-100	Sulfur Standard: S @ 30000 µg/g (3.00 wt%) in 20 cSt Mineral Oil	100 mL			
	<table> <tr> <td>Element</td> <td>Certified Concentration</td> </tr> <tr> <td>S</td> <td>30,000 ± 300 µg/g</td> </tr> </table>		Element	Certified Concentration	S
Element	Certified Concentration				
S	30,000 ± 300 µg/g				
VHG-S20MIN -4P-100	Sulfur Standard: S @ 40000 µg/g (4.00 wt%) in 20 cSt Mineral Oil	100 mL			
	<table> <tr> <td>Analyte</td> <td>Assigned Concentration</td> </tr> <tr> <td>S</td> <td>40,000 ± 400 µg/g</td> </tr> </table>		Analyte	Assigned Concentration	S
Analyte	Assigned Concentration				
S	40,000 ± 400 µg/g				
VHG-AN-0.5-100G	Acid Number (AN) Standard: 0.5 mg KOH/g in Hydrocarbon Oil	100 g			
	Test Method Performed		Certified Value		
	ASTM D664		0.50 ± 0.07 mg KOH/g		
	ASTM D974	0.48 ± 0.05 mg KOH/g			
VHG-INO2N-100	Nitrite as N @ 1000 µg/mL in H2O	100 mL			
	<table> <tr> <td>Analyte</td> <td>Certified Concentration</td> </tr> <tr> <td>NO₂- as N</td> <td>1000 ± 5 µg/mL</td> </tr> </table>		Analyte	Certified Concentration	NO ₂ - as N
Analyte	Certified Concentration				
NO ₂ - as N	1000 ± 5 µg/mL				
VHG-PYN-100	Yttrium Standard: Y @ 1000 µg/mL in 5% HNO3	100 mL			
	<table> <tr> <td>Analyte</td> <td>Certified Concentration</td> </tr> <tr> <td>Y</td> <td>998.0 ± 3.0 µg/mL (w/v)</td> </tr> </table>		Analyte	Certified Concentration	Y
Analyte	Certified Concentration				
Y	998.0 ± 3.0 µg/mL (w/v)				
VHG-V21+K -100-100G	V21+K Wear Metals Standard: 100 µg/g Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, Zn in Hydrocarbon Oil	100 g			
	Analyte		Certified Concentration	Analyte	Certified Concentration
	Ag		100 ± 1 µg/g	Ti	100 ± 1 µg/g
	Fe		100 ± 1 µg/g	Ca	100 ± 1 µg/g
	Pb		100 ± 1 µg/g	Mo	100 ± 1 µg/g
	Al		100 ± 1 µg/g	V	100 ± 1 µg/g
	K		100 ± 1 µg/g	Cd	100 ± 1 µg/g
	Si		100 ± 1 µg/g	Na	100 ± 1 µg/g
	B		100 ± 1 µg/g	Zn	100 ± 1 µg/g
	Mg		100 ± 1 µg/g	Cr	100 ± 1 µg/g
	Sn		100 ± 1 µg/g	Ni	100 ± 1 µg/g
	Ba		100 ± 1 µg/g	Cu	100 ± 1 µg/g
	Mn		100 ± 1 µg/g	P	100 ± 1 µg/g
	VHG-PAGN-100		Silver Standard: Ag @ 1000 µg/mL in 5% HNO3	100 mL	
<table> <tr> <td>Analyte</td> <td>Certified Concentration</td> </tr> <tr> <td>Ag</td> <td>1006 ± 2 µg/mL (w/v)</td> </tr> </table>		Analyte	Certified Concentration		Ag
Analyte	Certified Concentration				
Ag	1006 ± 2 µg/mL (w/v)				

Standard

Code	Product	Unit		
VHG-PCON-100	Cobalt Standard: Co @ 1000 µg/mL in 5% HNO3	100 mL		
	Analyte	Certified Concentration		
	Co	991.0 ± 3.0 µg/mL (w/v)		
VHG-ONI-1000 -A-50G	Nickel - Ni @ 1000 µg/g in Hydrocarbon Oil	50 g		
	Analyte	Certified Concentration		
	Ni	1000 ± 10 µg/g		
VHG-PMONF-100	Molybdenum Standard: Mo @ 1000 µg/mL in 5% HNO3, tr. HF	100 mL		
	Analyte	Certified Concentration		
	Mo	1001 ± 3 µg/mL (w/v)		
VHG-OP-1000-200G	Phosphorus - P @ 1000 µg/g in Hydrocarbon Oil	200 g		
	Analyte	Certified Concentration		
	P	1000 ± 10 µg/g		
VHG-V23-100-100G	V23 Wear Metals Standard: 100 µg/g Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Si, Sn, Ti, V, Zn in Hydrocarbon Oil	100 g		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ag	100 ± 1 µg/g	Sn	1100 ± 1 µg/g
	Fe	1100 ± 1 µg/g	Ca	1100 ± 1 µg/g
	Pb	1100 ± 1 µg/g	Mo	1100 ± 1 µg/g
	Al	1100 ± 1 µg/g	Ti	1100 ± 1 µg/g
	K	1100 ± 1 µg/g	Cd	1100 ± 1 µg/g
	Sb	1100 ± 1 µg/g	Na	1100 ± 1 µg/g
	B	1100 ± 1 µg/g	V	1100 ± 1 µg/g
	Mg	1100 ± 1 µg/g	Cr	1100 ± 1 µg/g
	Si	1100 ± 1 µg/g	Ni	1100 ± 1 µg/g
	Ba	1100 ± 1 µg/g	Zn	1100 ± 1 µg/g
	Mn	1100 ± 1 µg/g	Cu	1100 ± 1 µg/g
			P	1100 ± 1 µg/g
VHG-PSW-100	Sulfur Standard: S @ 1000 µg/mL in H2O	100 mL		
	Analyte	Certified Concentration		
	S	997.0 ± 7.0 µg/mL (w/v)		
VHG-PASN-100	Arsenic Standard: As @ 1000 µg/mL in 5% HNO3	100 mL		
	Analyte	Certified Concentration		
	As	1002 ± 3 µg/mL (w/v)		

Standard

Code	Product	Unit
VHG-PAUH-100	Gold Standard: Au @ 1000 µg/mL in 20% HCl	100 mL
	Analyte	Certified Concentration
	Au 1001 ± 3 µg/mL (w/v)	
VHG-PALN-100	Aluminum Standard: Al @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte	Certified Concentration
	Al 1002 ± 2 µg/mL (w/v)	
VHG-PBW-100	Boron Standard: B @ 1000 µg/mL in H ₂ O	100 g
	Analyte	Certified Concentration
	B 995.0 ± 3.0 µg/mL (w/v)	
VHG-PCAN-100	Calcium Standard: Ca @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte	Certified Concentration
	Ca 1006 ± 3 µg/mL (w/v)	
VHG-PCDN-100	Cadmium Standard: Cd @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte	Certified Concentration
	Cd 998.0 ± 3.0 µg/mL (w/v)	
VHG-PCRN-100	Chromium Standard: Cr @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte	Certified Concentration
	Cr 1004 ± 3 µg/mL (w/v)	
VHG-PFEN-100	Iron Standard: Fe @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte	Certified Concentration
	Fe 998.0 ± 5.0 µg/mL (w/v)	
VHG-PKN-100	Potassium Standard: K @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte	Certified Concentration
	K 999.0 ± 5.0 µg/mL (w/v)	
VHG-PMGN-100	Magnesium Standard: Mg @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte	Certified Concentration
	Mg 1001 ± 2 µg/mL (w/v)	
VHG-PMNN-100	Manganese Standard: Mn @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte	Certified Concentration
	Mn 1006 ± 5 µg/mL (w/v)	

Standard

Code	Product	Unit		
VHG-PNAN-100	Sodium Standard: Na @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Na 996.0 ± 2.0 µg/mL (w/v)			
VHG-PSBWTN-100	Antimony Standard: Sb @ 1000 µg/mL in 1% HNO ₃ , tr. Tartaric Acid	100 mL		
	Analyte	Certified Concentration		
	Sb 995.0 ± 3.0 µg/mL (w/v)			
VHG-PSNNF-100	Tin Standard: Sn @ 1000 µg/mL in 5% HNO ₃ , tr. HF	100 mL		
	Analyte	Certified Concentration		
	Sn 1000 ± 3 µg/mL (w/v)			
VHG-PTINF-100	Titanium Standard: Ti @ 1000 µg/mL in 5% HNO ₃ , tr. HF	100 mL		
	Analyte	Certified Concentration		
	Ti 1005 ± 5 µg/mL (w/v)			
VHG-PZNN-100	Zinc Standard: Zn @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Zn 1010 ± 6 µg/mL (w/v)			
VHG-PCUN-100	Copper Standard: Cu @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Cu 1008 ± 3 µg/mL (w/v)			
VHG-PPBN-100	Lead Standard: Pb @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Pb 998.0 ± 4.0 µg/mL (w/v)			
VHG-PPN-100	Phosphorus Standard: P @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	P 995.0 ± 5.0 µg/mL (w/v)			
VHG-SM68-1-100	SM68 Standard 1: Al,As,B,Ba,Be,Bi,Ca,Cd,Ce,Co,Cr,Cs,Cu,Dy,Er,Eu,Fe,Ga,Gd,Ho, In,K,La,Li,Lu,Mg,Mn,Na,Nd,Ni,P,Pb,Pr,Rb,Re,Sc,Se,Sm,Sr,Tb,Th, Tl,Tm,U,V,Y,Yb,Zn @ 100 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Al 100.0 ± 0.5 µg/mL		Ce 100.0 ± 0.5 µg/mL	

Standard

Code	Product	Unit																																																																																												
	<table border="0"> <tr> <td>Fe</td> <td>100.0 ± 0.5 µg/mL</td> <td>Lu</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Pr</td> <td>100.0 ± 0.5 µg/mL</td> <td>Th</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>As</td> <td>100.0 ± 0.5 µg/mL</td> <td>Co</td> <td>100.1 ± 0.5 µg/mL</td> </tr> <tr> <td>Ga</td> <td>100.0 ± 0.5 µg/mL</td> <td>Mg</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Rb</td> <td>100.0 ± 0.5 µg/mL</td> <td>Tl</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>B</td> <td>100.0 ± 0.5 µg/mL</td> <td>Cr</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Gd</td> <td>100.0 ± 0.5 µg/mL</td> <td>Mn</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Re</td> <td>100.0 ± 0.5 µg/mL</td> <td>Tm</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Ba</td> <td>100.0 ± 0.5 µg/mL</td> <td>Cs</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Ho</td> <td>100.0 ± 0.5 µg/mL</td> <td>Na</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Sc</td> <td>100.0 ± 0.5 µg/mL</td> <td>U</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Be</td> <td>100.0 ± 0.5 µg/mL</td> <td>Cu</td> <td>100.1 ± 0.5 µg/mL</td> </tr> <tr> <td>In</td> <td>100.0 ± 0.5 µg/mL</td> <td>Nd</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Se</td> <td>99.99 ± 0.50 µg/mL</td> <td>V</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Bi</td> <td>99.99 ± 0.50 µg/mL</td> <td>Dy</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>K</td> <td>100.0 ± 0.5 µg/mL</td> <td>Ni</td> <td>100.1 ± 0.5 µg/mL</td> </tr> <tr> <td>Sm</td> <td>100.0 ± 0.5 µg/mL</td> <td>Y</td> <td>100.1 ± 0.5 µg/mL</td> </tr> <tr> <td>Ca</td> <td>100.1 ± 0.5 µg/mL</td> <td>Er</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>La</td> <td>100.0 ± 0.5 µg/mL</td> <td>P</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Sr</td> <td>100.0 ± 0.5 µg/mL</td> <td>Yb</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Cd</td> <td>99.99 ± 0.50 µg/mL</td> <td>Eu</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Li</td> <td>99.99 ± 0.50 µg/mL</td> <td>Pb</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Tb</td> <td>100.0 ± 0.5 µg/mL</td> <td>Zn</td> <td>100.0 ± 0.5 µg/mL</td> </tr> </table>	Fe	100.0 ± 0.5 µg/mL	Lu	100.0 ± 0.5 µg/mL	Pr	100.0 ± 0.5 µg/mL	Th	100.0 ± 0.5 µg/mL	As	100.0 ± 0.5 µg/mL	Co	100.1 ± 0.5 µg/mL	Ga	100.0 ± 0.5 µg/mL	Mg	100.0 ± 0.5 µg/mL	Rb	100.0 ± 0.5 µg/mL	Tl	100.0 ± 0.5 µg/mL	B	100.0 ± 0.5 µg/mL	Cr	100.0 ± 0.5 µg/mL	Gd	100.0 ± 0.5 µg/mL	Mn	100.0 ± 0.5 µg/mL	Re	100.0 ± 0.5 µg/mL	Tm	100.0 ± 0.5 µg/mL	Ba	100.0 ± 0.5 µg/mL	Cs	100.0 ± 0.5 µg/mL	Ho	100.0 ± 0.5 µg/mL	Na	100.0 ± 0.5 µg/mL	Sc	100.0 ± 0.5 µg/mL	U	100.0 ± 0.5 µg/mL	Be	100.0 ± 0.5 µg/mL	Cu	100.1 ± 0.5 µg/mL	In	100.0 ± 0.5 µg/mL	Nd	100.0 ± 0.5 µg/mL	Se	99.99 ± 0.50 µg/mL	V	100.0 ± 0.5 µg/mL	Bi	99.99 ± 0.50 µg/mL	Dy	100.0 ± 0.5 µg/mL	K	100.0 ± 0.5 µg/mL	Ni	100.1 ± 0.5 µg/mL	Sm	100.0 ± 0.5 µg/mL	Y	100.1 ± 0.5 µg/mL	Ca	100.1 ± 0.5 µg/mL	Er	100.0 ± 0.5 µg/mL	La	100.0 ± 0.5 µg/mL	P	100.0 ± 0.5 µg/mL	Sr	100.0 ± 0.5 µg/mL	Yb	100.0 ± 0.5 µg/mL	Cd	99.99 ± 0.50 µg/mL	Eu	100.0 ± 0.5 µg/mL	Li	99.99 ± 0.50 µg/mL	Pb	100.0 ± 0.5 µg/mL	Tb	100.0 ± 0.5 µg/mL	Zn	100.0 ± 0.5 µg/mL	
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VHG-SM68-2-100	SM68 Standard 2: Ag, Ge, Hf, Mo, Nb, Sb, Si, Sn, Ta, Ti, W, Zr @ 100 µg/mL in 5% HNO₃, tr. HF	100 mL																																																																																												
	<table border="0"> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr> <td>Ag</td> <td>100.0 ± 0.5 µg/mL</td> <td>Hf</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Nb</td> <td>100.0 ± 0.5 µg/mL</td> <td>Si</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Ta</td> <td>100.0 ± 0.5 µg/mL</td> <td>W</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Ge</td> <td>100.0 ± 0.5 µg/mL</td> <td>Mo</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Sb</td> <td>100.0 ± 0.5 µg/mL</td> <td>Sn</td> <td>100.0 ± 0.5 µg/mL</td> </tr> <tr> <td>Ti</td> <td>100.0 ± 0.5 µg/mL</td> <td>Zr</td> <td>100.0 ± 0.5 µg/mL</td> </tr> </tbody> </table>	Analyte	Certified Concentration	Analyte	Certified Concentration	Ag	100.0 ± 0.5 µg/mL	Hf	100.0 ± 0.5 µg/mL	Nb	100.0 ± 0.5 µg/mL	Si	100.0 ± 0.5 µg/mL	Ta	100.0 ± 0.5 µg/mL	W	100.0 ± 0.5 µg/mL	Ge	100.0 ± 0.5 µg/mL	Mo	100.0 ± 0.5 µg/mL	Sb	100.0 ± 0.5 µg/mL	Sn	100.0 ± 0.5 µg/mL	Ti	100.0 ± 0.5 µg/mL	Zr	100.0 ± 0.5 µg/mL																																																																	
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VHG-IPO4P-100	Phosphate as P @ 1000 µg/mL in H₂O	100 mL																																																																																												
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PO ₄ ⁻³ as P	1000 ± 5 µg/mL																																																																																													
VHG-TZNN-500	Zinc Standard: Zn @ 10000 µg/mL in 5% HNO₃	500 mL																																																																																												
	<table border="0"> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr> <td>Zn</td> <td>10,040 ± 36 µg/mL (w/v)</td> </tr> </tbody> </table>	Analyte	Certified Concentration	Zn	10,040 ± 36 µg/mL (w/v)																																																																																									
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Standard

Code	Product	Unit
VHG-PZNN-500	Zinc Standard: Zn @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte Certified Concentration	
	Zn 1010 ± 6 µg/mL (w/v)	
VHG-TFEN-500	Iron Standard: Fe @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte Certified Concentration	
	Fe 9981 ± 39 µg/mL (w/v)	
VHG-PFEN-500	Iron Standard: Fe @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte Certified Concentration	
	Fe 998.0 ± 5.0 µg/mL (w/v)	
VHG-PSBWTN-500	Antimony Standard: Sb @ 1000 µg/mL in 1% HNO ₃ , tr. Tartaric Acid	500 mL
	Analyte Certified Concentration	
	Sb 1006 ± 5 µg/mL (w/v)	
VHG-PVN-500	Vanadium Standard: V @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte Certified Concentration	
	V 1002 ± 3 µg/mL (w/v)	
VHG-PNAN-500	Sodium Standard: Na @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte Certified Concentration	
	Na 996.0 ± 2.0 µg/mL (w/v)	
VHG-PCRN-500	Chromium Standard: Cr @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte Certified Concentration	
	Cr 1004 ± 3 µg/mL (w/v)	
VHG-PCUN-500	Copper Standard: Cu @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte Certified Concentration	
	Cu 1008 ± 3 µg/mL (w/v)	
VHG-SM23-100	US EPA 23 Metals Standard: Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Tl, V, Zn @ 100 µg/mL in 5% HNO ₃ , tr. Tartaric Acid, tr. HF	100 mL
	Analyte Certified Concentration Analyte Certified Concentration	
	Ag 100.0 ± 0.5 µg/mL Be 100.0 ± 0.5 µg/mL	
	Cr 100.0 ± 0.5 µg/mL Mg 100.0 ± 0.5 µg/mL	

Standard

Code	Product	Unit
	Ni 100.0 ± 0.5 µg/mL Tl 100.0 ± 0.5 µg/mL Al 100.0 ± 0.5 µg/mL Ca 100.0 ± 0.5 µg/mL Cu 100.0 ± 0.5 µg/mL Mn 100.0 ± 0.5 µg/mL Pb 100.0 ± 0.5 µg/mL V 100.0 ± 0.5 µg/mL As 100.0 ± 0.5 µg/mL Cd 99.99 ± 0.50 µg/mL Fe 99.98 ± 0.50 µg/mL Mo 100.0 ± 0.5 µg/mL Sb 100.0 ± 0.5 µg/mL Zn 99.99 ± 0.50 µg/mL Ba 100.0 ± 0.5 µg/mL Co 100.0 ± 0.5 µg/mL K 100.0 ± 0.5 µg/mL Na 100.0 ± 0.5 µg/mL Se 100.0 ± 0.5 µg/mL	
VHG-PCEN-500	Cerium Standard: Ce @ 1000 µg/mL in 5% HNO ₃ Analyte Certified Concentration Ce 1000 ± 9 µg/mL (w/v)	500 mL
VHG-PZRH-500	Zirconium Standard: Zr @ 1000 µg/mL in 5% HCl Analyte Certified Concentration Zr 998.0 ± 4.0 µg/mL (w/v)	500 mL
VHG-PHFH-500	Hafnium Standard: Hf @ 1000 µg/mL in 5% HCl Analyte Certified Concentration Hf 998.0 ± 4.0 µg/mL (w/v)	500 mL
VHG-PBEN-500	Beryllium Standard: Be @ 1000 µg/mL in 5% HNO ₃ Analyte Certified Concentration Be 995.0 ± 5.0 µg/mL (w/v)	500 mL
VHG-PNBF-500	Niobium Standard: Nb @ 1000 µg/mL in 2% HF Analyte Certified Concentration Nb 993.0 ± 5.0 µg/mL (w/v)	500 mL
VHG-PSW-500	Sulfur Standard: S @ 1000 µg/mL in H ₂ O Analyte Certified Concentration S 997.0 ± 7.0 µg/mL (w/v)	500 mL
VHG-PSIW-500	Silicon Standard: Si @ 1000 µg/mL in H ₂ O, tr. F- Analyte Certified Concentration Si 1009 ± 7 µg/mL (w/v)	500 mL

Standard

Code	Product	Unit
VHG-PSNH-500	Tin Standard: Sn @ 1000 µg/mL in 20% HCl	500 mL
	Analyte	Certified Concentration
	Sn 997.0 ± 3.0 µg/mL (w/v)	
VHG-PTINF-500	Titanium Standard: Ti @ 1000 µg/mL in 5% HNO ₃ , tr. HF	500 mL
	Analyte	Certified Concentration
	Ti 1005 ± 5 µg/mL (w/v)	
VHG-PWNF-500	Tungsten Standard: W @ 1000 µg/mL in 5% HNO ₃ , tr. HF	500 mL
	Analyte	Certified Concentration
	W 1007 ± 3 µg/mL (w/v)	
VHG-PALN-500	Aluminum Standard: Al @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Al 1002 ± 2 µg/mL (w/v)	
VHG-PASN-500	Arsenic Standard: As @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	As 1002 ± 3 µg/mL (w/v)	
VHG-PBW-500	Boron Standard: B @ 1000 µg/mL in H ₂ O	500 mL
	Analyte	Certified Concentration
	B 995.0 ± 3.0 µg/mL (w/v)	
VHG-PBIN-500	Bismuth Standard: Bi @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Bi 998.0 ± 8.0 µg/mL (w/v)	
VHG-PCAN-500	Calcium Standard: Ca @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Ca 1006 ± 3 µg/mL (w/v)	
VHG-PCDN-500	Cadmium Standard: Cd @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Cd 999.0 ± 3.0 µg/mL (w/v)	

Standard

Code	Product	Unit		
VHG-PCON-500	Cobalt Standard: Co @ 1000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Certified Concentration		
	Co	991.0 ± 3.0 µg/mL (w/v)		
VHG-PMGN-500	Magnesium Standard: Mg @ 1000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Certified Concentration		
	Mg	1001 ± 2 µg/mL (w/v)		
VHG-PMONF-500	Molybdenum Standard: Mo @ 1000 µg/mL in 5% HNO ₃ , tr. HF	500 mL		
	Analyte	Certified Concentration		
	Mo	1005 ± 4 µg/mL (w/v)		
VHG-PNIN-500	Nickel Standard: Ni @ 1000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Certified Concentration		
	Ni	998.0 ± 4.0 µg/mL (w/v)		
VHG-PPN-500	Phosphorus Standard: P @ 1000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Certified Concentration		
	P	995.0 ± 5.0 µg/mL (w/v)		
VHG-PBAN-500	Barium Standard: Ba @ 1000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Certified Concentration		
	Ba	1004 ± 5 µg/mL (w/v)		
VHG-SM70B-100	Common Elements Mix 2 Standard: Ag, Al, B, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, P, Pb, Si, Sn, Ti, V, Zn @ 100 µg/mL in 5% HNO ₃ , tr. HF	100 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ag	100.0 ± 0.5 µg/mL	Mn	100.0 ± 0.5 µg/mL
	Fe	100.0 ± 0.5 µg/mL	Ti	100.0 ± 0.5 µg/mL
	Pb	100.0 ± 0.5 µg/mL	Co	100.0 ± 0.5 µg/mL
	Al	100.0 ± 0.5 µg/mL	Na	100.0 ± 0.5 µg/mL
	K	100.0 ± 0.5 µg/mL	V	100.0 ± 0.5 µg/mL
	Si	100.0 ± 0.5 µg/mL	Cr	100.0 ± 0.5 µg/mL
	B	100.0 ± 0.5 µg/mL	Ni	99.99 ± 0.50 µg/mL
	Mg	100.0 ± 0.5 µg/mL	Zn	99.98 ± 0.50 µg/mL
	Sn	100.0 ± 0.5 µg/mL	Cu	100.0 ± 0.5 µg/mL
	Ca	100.0 ± 0.5 µg/mL	P	100.0 ± 0.5 µg/mL

Standard

Code	Product	Unit																
VHG-SUVF-SET1	Sulfur Set for ASTM D5453: S @ 0, 1.0, 2.5, 5, 7.5, 10 ng/μL in Isooctane	6x2mL ampoules																
	<table border="0"> <tr> <td>Lot #</td> <td>Total Sulfur</td> <td>Lot #</td> <td>Total Sulfur</td> </tr> <tr> <td>RN021422AA</td> <td>1.00 ng/μL</td> <td>RN021422DD</td> <td>7.50 ng/μL</td> </tr> <tr> <td>RN021422BB</td> <td>2.50 ng/μL</td> <td>RN021422EE</td> <td>10.0 ng/μL</td> </tr> <tr> <td>RN021422CC</td> <td>5.00 ng/μL</td> <td>21CPI8P01</td> <td>Blank</td> </tr> </table>	Lot #	Total Sulfur	Lot #	Total Sulfur	RN021422AA	1.00 ng/μL	RN021422DD	7.50 ng/μL	RN021422BB	2.50 ng/μL	RN021422EE	10.0 ng/μL	RN021422CC	5.00 ng/μL	21CPI8P01	Blank	
Lot #	Total Sulfur	Lot #	Total Sulfur															
RN021422AA	1.00 ng/μL	RN021422DD	7.50 ng/μL															
RN021422BB	2.50 ng/μL	RN021422EE	10.0 ng/μL															
RN021422CC	5.00 ng/μL	21CPI8P01	Blank															
VHG-SUVF-SET2	Sulfur Set for ASTM D5453: S @ 0, 5, 25, 50, 100, 200 ng/μL in Isooctane	6x2mL ampoules																
	<table border="0"> <tr> <td>Lot #</td> <td>Total Sulfur</td> <td>Lot #</td> <td>Total Sulfur</td> </tr> <tr> <td>J112921AA</td> <td>5.00 ng/μL</td> <td>J112921DD</td> <td>100 ng/μL</td> </tr> <tr> <td>J112921BB</td> <td>25.0 ng/μL</td> <td>J112921EE</td> <td>200 ng/μL</td> </tr> <tr> <td>J112921CC</td> <td>50.1 ng/μL</td> <td>21CP18P01</td> <td>Blank</td> </tr> </table>	Lot #	Total Sulfur	Lot #	Total Sulfur	J112921AA	5.00 ng/μL	J112921DD	100 ng/μL	J112921BB	25.0 ng/μL	J112921EE	200 ng/μL	J112921CC	50.1 ng/μL	21CP18P01	Blank	
Lot #	Total Sulfur	Lot #	Total Sulfur															
J112921AA	5.00 ng/μL	J112921DD	100 ng/μL															
J112921BB	25.0 ng/μL	J112921EE	200 ng/μL															
J112921CC	50.1 ng/μL	21CP18P01	Blank															
VHG-SUVF-SET3	Sulfur Set for ASTM D5453: S @ 0, 100, 250, 500, 750, 1000 ng/μL in Isooctane	6x2mL ampoules																
	<table border="0"> <tr> <td>Lot #</td> <td>Total Sulfur</td> <td>Lot #</td> <td>Total Sulfur</td> </tr> <tr> <td>BG070622AA</td> <td>100 ng/μL</td> <td>BG070622DD</td> <td>750 ng/μL</td> </tr> <tr> <td>BG070622BB</td> <td>250 ng/μL</td> <td>BG070622EE</td> <td>1000 ng/μL</td> </tr> <tr> <td>BG070622CC</td> <td>500 ng/μL</td> <td>20020088</td> <td>Blank</td> </tr> </table>	Lot #	Total Sulfur	Lot #	Total Sulfur	BG070622AA	100 ng/μL	BG070622DD	750 ng/μL	BG070622BB	250 ng/μL	BG070622EE	1000 ng/μL	BG070622CC	500 ng/μL	20020088	Blank	
Lot #	Total Sulfur	Lot #	Total Sulfur															
BG070622AA	100 ng/μL	BG070622DD	750 ng/μL															
BG070622BB	250 ng/μL	BG070622EE	1000 ng/μL															
BG070622CC	500 ng/μL	20020088	Blank															
VHG-IF1K-100	Fluoride Standard: F ⁻ @ 1000 μg/mL in H ₂ O	100 mL																
	<table border="0"> <tr> <td>Analyte</td> <td>Certified Concentration</td> </tr> <tr> <td>F⁻</td> <td>1000 ± 5 μg/mL</td> </tr> </table>	Analyte	Certified Concentration	F ⁻	1000 ± 5 μg/mL													
Analyte	Certified Concentration																	
F ⁻	1000 ± 5 μg/mL																	
VHG-ICL1K-100	Chloride (from KCl) Standard: Cl ⁻ @ 1000 μg/mL in H ₂ O	100 mL																
	<table border="0"> <tr> <td>Analyte</td> <td>Certified Concentration</td> </tr> <tr> <td>Cl⁻</td> <td>999.4 ± 5.0 μg/mL</td> </tr> </table>	Analyte	Certified Concentration	Cl ⁻	999.4 ± 5.0 μg/mL													
Analyte	Certified Concentration																	
Cl ⁻	999.4 ± 5.0 μg/mL																	
VHG-IBR-100	Bromide (from KBr) Standard: Br ⁻ @ 1000 μg/mL in H ₂ O	100 mL																
	<table border="0"> <tr> <td>Analyte</td> <td>Certified Concentration</td> </tr> <tr> <td>Br⁻</td> <td>1000 ± 5 μg/mL</td> </tr> </table>	Analyte	Certified Concentration	Br ⁻	1000 ± 5 μg/mL													
Analyte	Certified Concentration																	
Br ⁻	1000 ± 5 μg/mL																	
VHG-INO3-100	Nitrate Standard: NO ₃ ⁻ @ 1000 μg/mL in H ₂ O	100 mL																
	<table border="0"> <tr> <td>Analyte</td> <td>Certified Concentration</td> </tr> <tr> <td>NO₃⁻</td> <td>1000 ± 5 μg/mL</td> </tr> </table>	Analyte	Certified Concentration	NO ₃ ⁻	1000 ± 5 μg/mL													
Analyte	Certified Concentration																	
NO ₃ ⁻	1000 ± 5 μg/mL																	
VHG-IPO4-100	Phosphate Standard: PO ₄ (-3) @ 1000 μg/mL in H ₂ O	100 mL																
	<table border="0"> <tr> <td>Analyte</td> <td>Certified Concentration</td> </tr> <tr> <td>PO₄⁻³</td> <td>1000 ± 5 μg/mL</td> </tr> </table>	Analyte	Certified Concentration	PO ₄ ⁻³	1000 ± 5 μg/mL													
Analyte	Certified Concentration																	
PO ₄ ⁻³	1000 ± 5 μg/mL																	

Standard

Code	Product	Unit		
VHG-ISO41K-100	Sulfate Standard: SO ₄ (-2) @ 1000 µg/mL in H ₂ O	100 mL		
	Analyte	Certified Concentration		
	SO ₄ ⁻²	1000 ± 5 µg/mL		
VHG-SM68-2-500	SM68 Standard 2: Ag, Ge, Hf, Mo, Nb, Sb, Si, Sn, Ta, Ti, W, Zr @ 100 µg/mL in 5% HNO ₃ , tr. HF	500 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ag	100.0 ± 0.5 µg/mL	Hf	100.0 ± 0.5 µg/mL
	Nb	100.0 ± 0.5 µg/mL	Si	100.0 ± 0.5 µg/mL
	Ta	100.0 ± 0.5 µg/mL	W	100.0 ± 0.5 µg/mL
	Ge	100.0 ± 0.5 µg/mL	Mo	100.0 ± 0.5 µg/mL
	Sb	100.0 ± 0.5 µg/mL	Sn	100.0 ± 0.5 µg/mL
	Ti	100.0 ± 0.5 µg/mL	Zr	100.0 ± 0.5 µg/mL
VHG-SM68-3-100	SM68 Standard 3: Au, Ir, Os, Pd, Pt, Rh, Ru, Te @ 100 µg/mL in 10% HCl	100 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Au	100.0 ± 0.5 µg/mL	Pt	100.0 ± 0.5 µg/mL
	Pd	100.1 ± 0.5 µg/mL	Te	99.99 ± 0.50 µg/mL
	Ru	100.0 ± 0.5 µg/mL	Os	100.0 ± 0.5 µg/mL
	Ir	100.0 ± 0.5 µg/mL	Rh	100.0 ± 0.5 µg/mL
VHG-CN-50	Cyanide (CN ⁻) @ 1000 mg/L in 0.1% NaOH	50 mL		
	Analyte	Certified Concentration		
	Cyanide (CN)	1000 mg/L		
VHG-TALN-500	Aluminum Standard: Al @ 10000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Certified Concentration		
	Al	10,010 ± 38 µg/mL (w/v)		
VHG-PALH-100	Aluminum Standard: Al @ 1000 µg/mL in 5% HCl	100 mL		
	Analyte	Certified Concentration		
	Al	1000 ± 5 µg/mL (w/v)		
VHG-PKN-500	Potassium Standard: K @ 1000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Certified Concentration		
	K	999.0 ± 5.0 µg/mL (w/v)		

Standard

Code	Product	Unit
VHG-PMNN-500	Manganese Standard: Mn @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Mn 1006 ± 5 µg/mL (w/v)	
VHG-AN-3-50G	Acid Number (AN) Standard: 3.0 mg KOH/g in Hydrocarbon Oil	50 g
	Test Method Performed	Certified Concentration
	ASTM D664 3.10 ± 0.18 mg KOH/g	
	ASTM D974 3.01 ± 0.12 mg KOH/g	
VHG-INO3N-100	Nitrate as N @ 1000 µg/mL in H ₂ O	100 mL
	Analyte	Certified Concentration
	NO ₃ -as N 1000 ± 5 µg/mL	
VHG-TOC1K-100	Total Organic Carbon Standard: TOC @ 1000 mg/L in H ₂ O	100 mL
	Analyte	Certified Concentration
	Total Organic Carbon (TOC) 999.9 mg/L	
VHG-SDSL-BLK-100	Sulfur Blank (0 wt%) in #2 Diesel Fuel	100 mL
	Analyte	Certified Concentration
	S 396 ppb (w/w)	
VHG-SDSL-5-100	Sulfur Standard: S @ 5 µg/g (0.0005 wt%) in #2 Diesel Fuel	100 mL
	Analyte	Certified Concentration
	S 5.00 ± 0.05 µg/g	
VHG-SDSL-10-100	Sulfur Standard: S @ 10 µg/g (0.0010 wt%) in #2 Diesel Fuel	100 mL
	Analyte	Certified Concentration
	S 10.0 ± 0.1 µg/g	
VHG-SDSL-25-100	Sulfur Standard: S @ 25 µg/g (0.0025 wt%) in #2 Diesel Fuel	100 mL
	Analyte	Certified Concentration
	S 25.0 ± 0.3 µg/g	
VHG-SDSL-100-100	Sulfur Standard: S @ 100 µg/g (0.0100 wt%) in #2 Diesel Fuel	100 mL
	Analyte	Certified Concentration
	S 100 ± 1 µg/g	

Standard

Code	Product	Unit		
VHG-PPTH-100	Platinum Standard: Pt @ 1000 µg/mL in 20% HCl	100 mL		
	Analyte	Certified Concentration		
	Pt	1003 ± 4 µg/mL (w/v)		
VHG-PAGN-100	Silver Standard: Ag @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Ag	1006 ± 2 µg/mL (w/v)		
VHG-SM75B-100	Common & Transition Elements Standard: Ag, Al, As, Ba, Be, Bi, Cd, Cr, Co, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Se, Sr, Tl, V, Zn @ 100; Ca, K, Mg, Na @ 1000 µg/mL in 5% HNO ₃ , 0.2% HF	100 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ag	100.0 ± 0.5 µg/mL	Li	100.0 ± 0.5 µg/mL
	Cr	100.0 ± 0.5 µg/mL	Sr	100.0 ± 0.5 µg/mL
	Ni	100.1 ± 0.5 µg/mL	Bi	100.0 ± 0.5 µg/mL
	Al	100.1 ± 0.5 µg/mL	Mg	999.9 ± 5.0 µg/mL
	Cu	99.99 ± 0.50 µg/mL	Tl	100.1 ± 0.5 µg/mL
	Pb	100.0 ± 0.5 µg/mL	Ca	1000 ± 5 µg/mL
	As	99.98 ± 0.50 µg/mL	Mn	100.0 ± 0.5 µg/mL
	Fe	100.0 ± 0.5 µg/mL	V	100.0 ± 0.5 µg/mL
	Sb	100.0 ± 0.5 µg/mL	Cd	100.0 ± 0.5 µg/mL
	Ba	100.0 ± 0.5 µg/mL	Mo	100.1 ± 0.5 µg/mL
	K	999.8 ± 5.0 µg/mL	Zn	100.0 ± 0.5 µg/mL
	Se	100.0 ± 0.5 µg/mL	Co	100.0 ± 0.5 µg/mL
	Be	100.0 ± 0.5 µg/mL	Na	1000 ± 5 µg/mL
VHG-PPDN-100	Palladium Standard: Pd @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Pd	999.0 ± 3.0 µg/mL (w/v)		
VHG-PSEN-100	Selenium Standard: Se @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Se	993.0 ± 5.0 µg/mL (w/v)		
VHG-PAGN-500	Silver Standard: Ag @ 1000 µg/mL in 5% HNO ₃	500 mL		
	Analyte	Certified Concentration		
	Ag	1006 ± 2 µg/mL (w/v)		

Standard

Code	Product	Unit
VHG-PCSN-50	Cesium - Cs @ 1000 µg/mL in 5% HNO ₃	50 mL
	Analyte	Certified Concentration
	Cs 1000 ± 5 µg/mL (w/v)	
VHG-PYN-100	Yttrium Standard: Y @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte	Certified Concentration
	Y 998.0 ± 3.0 µg/mL (w/v)	
VHG-PWNF-100	Tungsten Standard: W @ 1000 µg/mL in 5% HNO ₃ , tr. HF	100 mL
	Analyte	Certified Concentration
	W 1001 ± 4 µg/mL (w/v)	
VHG-PHGN-100	Mercury Standard: Hg @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte	Certified Concentration
	Hg 991.0 ± 5.0 µg/mL (w/v)	
VHG-SISO-5-100	Sulfur Standard: S @ 5 µg/g (0.0005 wt%) in Isooctane	100 mL
	Analyte	Certified Concentration
	S 5.00 ± 0.05 µg/g	
VHG-SISO-50-100	Sulfur Standard: S @ 50 µg/g (0.0050 wt%) in Isooctane	100 mL
	Analyte	Certified Concentration
	S 50.0 ± 0.5 µg/g	
VHG-SDSL-500-100	Sulfur Standard: S @ 500 µg/g (0.0500 wt%) in #2 Diesel Fuel	100 mL
	Analyte	Certified Concentration
	S 500 ± 5 µg/g	
VHG-SDSL-50-100	Sulfur Standard: S @ 50 µg/g (0.0050 wt%) in #2 Diesel Fuel	100 mL
	Analyte	Certified Concentration
	S 50.0 ± 0.5 µg/g	
VHG-SDSL-300-100	Sulfur Standard: S @ 300 µg/g (0.0300 wt%) in #2 Diesel Fuel	100 mL
	Analyte	Certified Concentration
	S 300 ± 3 µg/g	

Standard

Code	Product	Unit
VHG-PLAN-100	Lanthanum Standard: La @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration La 1000 ± 2 µg/mL (w/v)	
VHG-PBAN-100	Barium Standard: Ba @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration Ba 1004 ± 5 µg/mL (w/v)	
VHG-PCR6W-100	Chromium (VI) Standard: Cr ⁺⁶ @ 1000 µg/mL in H ₂ O	100 mL
	Analyte Certified Concentration Cr ⁺⁶ 999.6 ± 5.0 µg/mL	
VHG-PNIN-100	Nickel Standard: Ni @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration Ni 1002 ± 4 µg/mL (w/v)	
VHG-LMSTNG101-500	ICP-MS Tuning Solution: Ce, Co, Li, Mg, Tl, Y @ 1 µg/L in 2% HNO ₃	500 mL
	Analyte Certified Concentration Analyte Certified Concentration Ce 1.003 ± 0.005 µg/L Co 0.9977 ± 0.005 µg/L Li 0.9976 ± 0.005 µg/L Mg 0.9987 ± 0.005 µg/L Tl 0.9984 ± 0.005 µg/L Y 1.002 ± 0.005 µg/L	
VHG-PCON-100	Cobalt Standard: Co @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration Co 991.0 ± 3.0 µg/mL (w/v)	
VHG-PBEN-100	Beryllium Standard: Be @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration Be 995.0 ± 5.0 µg/mL (w/v)	
VHG-PSIW-100	Silicon Standard: Si @ 1000 µg/mL in H ₂ O, tr. F-	100 mL
	Analyte Certified Concentration Si 1009 ± 7 µg/mL (w/v)	
VHG-PGDN-100	Gadolinium Standard: Gd @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration Gd 998.0 ± 3.0 µg/mL (w/v)	

Standard

Code	Product	Unit		
VHG-PHON-100	Holmium Standard: Ho @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Ho	1001 ± 4 µg/mL (w/v)		
VHG-QC21-100	QC Standard 21 (Primary): As, Be, Ca, Cd, Co, Cr, Cu, Fe, Li, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sr, Ti, Tl, V, Zn @ 100 µg/mL in 5% HNO ₃ , tr. F ⁻ , tr. Tartaric Acid	100 mL		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	As	100.0 ± 0.5 µg/mL	Mn	100.0 ± 0.5 µg/mL
	Fe	100.0 ± 0.5 µg/mL	Ti	100.0 ± 0.5 µg/mL
	Sb	100.0 ± 0.5 µg/mL	Co	100.0 ± 0.5 µg/mL
	Be	100.0 ± 0.5 µg/mL	Mo	100.0 ± 0.5 µg/mL
	Li	100.0 ± 0.5 µg/mL	Tl	100.0 ± 0.5 µg/mL
	Se	100.0 ± 0.5 µg/mL	Cr	100.0 ± 0.5 µg/mL
	Ca	100.0 ± 0.5 µg/mL	Ni	100.0 ± 0.5 µg/mL
	Mg	100.0 ± 0.5 µg/mL	V	100.0 ± 0.5 µg/mL
	Sr	100.0 ± 0.5 µg/mL	Cu	99.99 ± 0.50 µg/mL
	Cd	100.0 ± 0.5 µg/mL	Pb	100.0 ± 0.5 µg/mL
			Zn	100.0 ± 0.5 µg/mL
VHG-LIRH-100	Iridium Standard: Ir @ 10 µg/mL in 2% HCl	100 mL		
	Analyte	Certified Concentration		
	Ir	10.01 ± 0.05 µg/mL (w/v)		
VHG-PRUH-100	Ruthenium Standard: Ru @ 1000 µg/mL in 20% HCl	100 mL		
	Analyte	Certified Concentration		
	Ru	1001 ± 5 µg/mL (w/v)		
VHG-INAW1K-100	Sodium Standard: Na ⁺ @ 1000 µg/mL in H ₂ O	100 mL		
	Analyte	Certified Concentration		
	Na ⁺	999.9 ± 5.0 µg/mL		
VHG-IMGW1K-100	Magnesium Standard: Mg ⁺² @ 1000 µg/mL in H ₂ O	100 mL		
	Analyte	Certified Concentration		
	Mg ⁺²	1000 ± 5 µg/mL		
VHG-ICAW1K-100	Calcium Standard: Ca ⁺² @ 1000 µg/mL in H ₂ O	100 mL		
	Analyte	Certified Concentration		
	Ca ⁺²	999.7 ± 5.0 µg/mL		

Standard

Code	Product	Unit
VHG-IKW1K-100	Potassium Standard: K+ @ 1000 µg/mL in H2O Analyte K+ 1000 ± 5 µg/mL	100 mL
VHG-IFORM-100	Formate Standard: HCO2- @ 1000 µg/mL in H2O Analyte HCO ₂ ⁻ 1000 ± 5 µg/mL	100 mL
VHG-IACET-100	Acetate Standard: CH3CO2- @ 1000 µg/mL in H2O Analyte CH ₃ CO ₂ ⁻ 1000 ± 5 µg/mL	100 mL
VHG-PNDN-100	Neodymium Standard: Nd @ 1000 µg/mL in 5% HNO3 Analyte Nd 1005 ± 6 µg/mL (w/v)	100 mL
VHG-SDSL-200-100	Sulfur Standard: S @ 200 µg/g (0.0200 wt%) in #2 Diesel Fuel Analyte S 200 ± 2 µg/g	100 mL
VHG-SDSL-1000-100	Sulfur Standard: S @ 1000 µg/g (0.100 wt%) in #2 Diesel Fuel Analyte S 1000 ± 10 µg/g	100 mL
VHG-TUN-500	Uranium Standard: U @ 10000 µg/mL in 5% HNO3 Analyte U 10,019 ± 50 µg/mL (w/v)	500 mL
VHG-PZRN-100	Zirconium Standard: Zr @ 1000 µg/mL in 5% HNO3 Analyte Zr 994.0 ± 5.0 µg/mL (w/v)	100 mL
VHG-SM70B-500	Common Elements Mix 2 Standard: Ag, Al, B, Ca, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, P, Pb, Si, Sn, Ti, V, Zn @ 100 µg/mL in 5% HNO3, tr. HF Analyte Certified Concentration Analyte Certified Concentration Ag 100.0 ± 0.5 µg/mL Mn 100.0 ± 0.5 µg/mL	500 mL

Standard

Code	Product	Unit
	Fe 100.0 ± 0.5 µg/mL	
	Pb 100.0 ± 0.5 µg/mL	
	Al 100.0 ± 0.5 µg/mL	
	K 100.0 ± 0.5 µg/mL	
	Si 100.0 ± 0.5 µg/mL	
	B 100.0 ± 0.5 µg/mL	
	Mg 100.0 ± 0.5 µg/mL	
	Sn 100.0 ± 0.5 µg/mL	
	Ca 100.0 ± 0.5 µg/mL	
	Ti 100.0 ± 0.5 µg/mL	
	Co 100.0 ± 0.5 µg/mL	
	Na 100.0 ± 0.5 µg/mL	
	V 100.0 ± 0.5 µg/mL	
	Cr 100.0 ± 0.5 µg/mL	
	Ni 99.99 ± 0.50 µg/mL	
	Zn 99.98 ± 0.50 µg/mL	
	Cu 100.0 ± 0.5 µg/mL	
	P 100.0 ± 0.5 µg/mL	

VHG-SM68-1-500	SM68 Standard 1: Al,As,B,Ba,Be,Bi,Ca,Cd,Ce,Co,Cr,Cs,Cu,Dy,Er,Eu,Fe,Ga,Gd,Ho,In, K,La,Li,Lu,Mg,Mn,Na,Nd,Ni,P,Pb,Pr,Rb,Re,Sc,Se,Sm,Sr,Tb,Th,Tl,Tm,U,V,Y,Yb,Zn @ 100 µg/mL in 5% HNO ₃	500 mL
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Analyte	Certified Concentration	Analyte	Certified Concentration
Al 100.0 ± 0.5 µg/mL		Ce 100.0 ± 0.5 µg/mL	
Fe 100.0 ± 0.5 µg/mL		Lu 100.0 ± 0.5 µg/mL	
Pr 100.0 ± 0.5 µg/mL		Th 100.0 ± 0.5 µg/mL	
As 100.0 ± 0.5 µg/mL		Co 100.1 ± 0.5 µg/mL	
Ga 100.0 ± 0.5 µg/mL		Mg 100.0 ± 0.5 µg/mL	
Rb 100.0 ± 0.5 µg/mL		Tl 100.0 ± 0.5 µg/mL	
B 100.0 ± 0.5 µg/mL		Cr 100.0 ± 0.5 µg/mL	
Gd 100.0 ± 0.5 µg/mL		Mn 100.0 ± 0.5 µg/mL	
Re 100.0 ± 0.5 µg/mL		Tm 100.0 ± 0.5 µg/mL	
Ba 100.0 ± 0.5 µg/mL		Cs 100.0 ± 0.5 µg/mL	
Ho 100.0 ± 0.5 µg/mL		Na 100.0 ± 0.5 µg/mL	
Sc 100.0 ± 0.5 µg/mL		U 100.0 ± 0.5 µg/mL	
Be 100.0 ± 0.5 µg/mL		Cu 100.1 ± 0.5 µg/mL	
In 100.0 ± 0.5 µg/mL		Nd 100.0 ± 0.5 µg/mL	
Se 99.99 ± 0.50 µg/mL		V 100.0 ± 0.5 µg/mL	
Bi 99.99 ± 0.50 µg/mL		Dy 100.0 ± 0.5 µg/mL	
K 100.0 ± 0.5 µg/mL		Ni 100.1 ± 0.5 µg/mL	
Sm 100.0 ± 0.5 µg/mL		Y 100.1 ± 0.5 µg/mL	
Ca 100.1 ± 0.5 µg/mL		Er 100.0 ± 0.5 µg/mL	
La 100.0 ± 0.5 µg/mL		P 100.0 ± 0.5 µg/mL	
Sr 100.0 ± 0.5 µg/mL		Yb 100.0 ± 0.5 µg/mL	
Cd 99.99 ± 0.50 µg/mL		Eu 100.0 ± 0.5 µg/mL	
Li 99.99 ± 0.50 µg/mL		Pb 100.0 ± 0.5 µg/mL	
Tb 100.0 ± 0.5 µg/mL		Zn 100.0 ± 0.5 µg/mL	

VHG-SISO-500-100	Sulfur Standard: S @ 500 µg/g (0.0500 wt%) in Isooctane	100 mL
	Analyte	Certified Concentration
	S 500 ± 5 µg/g	

Standard

Code	Product	Unit																																																								
VHG-V26-500-100G	Ag, Al, B, Ba, Bi, Ca, Cd, Cr, Cu, Fe, In, Li, K, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Si, Sn, Ti, V, Zn @ 500 µg/g in 75 cSt Hydrocarbon Oil	100 g																																																								
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VHG-INO2-100	Nitrite Standard: NO ₂ ⁻ @ 1000 µg/mL in H ₂ O	100 mL																																																								
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VHG-INH41K-100	Ammonium Standard: NH ₄ ⁺ @ 1000 µg/mL in H ₂ O	100 mL																																																								
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VHG-ISQC20-100	QC Standard 20 (Second Source): Ag, Al, As, Ba, Be, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, Th, Tl, U, V, Zn @ 10 µg/mL in 5% HNO ₃ , tr. F ⁻ , tr. Tartaric Acid	100 mL																																																								
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Standard

Code	Product	Unit																																																																												
VHG-V-SOLV-1GAL	V-Solv™ ICP Solvent	1 gallon																																																																												
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Ba	<0.25	Mn	<0.25																																																																											
		Se	< 0.25																																																																											
VHG-AN-0.5-100G	Acid Number (AN) Standard: 0.5 mg KOH/g in Hydrocarbon Oil	100 g																																																																												
	<table border="0"> <thead> <tr> <th>Test Method Performed</th> <th>Certified Value</th> </tr> </thead> <tbody> <tr> <td>ASTM D664</td> <td>0.50 ± 0.07 mg KOH/g</td> </tr> <tr> <td>ASTM D974</td> <td>0.48 ± 0.05 mg KOH/g</td> </tr> </tbody> </table>	Test Method Performed	Certified Value	ASTM D664	0.50 ± 0.07 mg KOH/g	ASTM D974	0.48 ± 0.05 mg KOH/g																																																																							
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VHG-TMGN-500	Magnesium Standard: Mg @ 10000 µg/mL in 5% HNO3	500 mL																																																																												
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VHG-TNIN-500	Nickel Standard: Ni @ 10000 µg/mL in 5% HNO3	500 mL																																																																												
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VHG-PBIN-100	Bismuth Standard: Bi @ 1000 µg/mL in 5% HNO3	100 mL																																																																												
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VHG-PCSN-100	Cesium Standard: Cs @ 1000 µg/mL in 5% HNO3	100 mL																																																																												
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Standard

Code	Product	Unit
VHG-PGENF-100	Germanium Standard: Ge @ 1000 µg/mL in 5% HNO ₃ , tr. HF	100 mL
	Analyte Certified Concentration Ge 1000 ± 5 µg/mL (w/v)	
VHG-PLAN-100	Lanthanum Standard: La @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration La 1008 ± 3 µg/mL (w/v)	
VHG-PLIN-100	Lithium Standard: Li @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration Li 1010 ± 3 µg/mL (w/v)	
VHG-PNBF-100	Niobium Standard: Nb @ 1000 µg/mL in 2% HF	100 mL
	Analyte Certified Concentration Nb 1005 ± 2 µg/mL (w/v)	
VHG-POSH-100	Osmium Standard: Os @ 1000 µg/mL in 20% HCl	100 mL
	Analyte Certified Concentration Os 1000 ± 5 µg/mL (w/v)	
VHG-PSRN-100	Strontium Standard: Sr @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration Sr 996.0 ± 5.0 µg/mL (w/v)	
VHG-PTEN-100	Tellurium Standard: Te @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration Te 1002 ± 5 µg/mL	
VHG-PVN-100	Vanadium Standard: V @ 1000 µg/mL in 5% HNO ₃	100 mL
	Analyte Certified Concentration V 1002 ± 3 µg/mL (w/v)	
VHG-SDSL-5-500	Sulfur - S @ 5ug/g in #2 Diesel Fuel, 500mL	500 mL
	Analyte Certified Concentration S 5.00 ± 0.05 µg/g	

Standard

Code	Product	Unit
VHG-OAS-1000-50G	Arsenic Standard: As @ 1000 µg/g in Hydrocarbon Oil	50 g
	Analyte	Certified Concentration
	As	1000 ± 10 µg/g
VHG-OPB-1000-50G	Lead Standard: Pb @ 1000 µg/g in Hydrocarbon Oil	50 g
	Analyte	Certified Concentration
	Pb	1000 ± 10 µg/g
VHG-ICL1K-500	Chloride (from KCl) Standard: Cl ⁻ @ 1000 µg/mL in H ₂ O	500 mL
	Analyte	Certified Concentration
	Cl ⁻	999.4 ± 5.0 µg/mL
VHG-PTAF-500	Tantalum Standard: Ta @ 1000 µg/mL in 2% HF	500 mL
	Analyte	Certified Concentration
	Ta	998.0 ± 3.0 µg/mL (w/v)
VHG-PTIW-500	Titanium Standard: Ti @ 1000 µg/mL in H ₂ O, tr. F ⁻	500 mL
	Analyte	Certified Concentration
	Ti	999.0 ± 5.0 µg/mL (w/v)
VHG-TWNF-500	Tungsten Standard: W @ 10000 µg/mL in 5% HNO ₃ , tr. HF	500 mL
	Analyte	Certified Concentration
	W	10,000 ± 39 µg/mL (w/v)
VHG-PZRN-500	Zirconium Standard: Zr @ 1000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Zr	1003 ± 4 µg/mL (w/v)
VHG-SDSL-5P-100	Sulfur Standard: S @ 50000 µg/g (5.00 wt%) in #2 Diesel Fuel	100 mL
	Analyte	Certified Concentration
	S	50,000 ± 500 µg/g
VHG-SDSL-4P-100	Sulfur Standard: S @ 40000 µg/g (4.00 wt%) in #2 Diesel Fuel	100 mL
	Analyte	Certified Concentration
	S	40,000 ± 400 µg/g

Standard

Code	Product	Unit		
VHG-UOP163 -30-6X20	Mercaptan Sulfur Set for UOP 163 and ASTM D3227: S @ 30 µg/g in 80% Isooctane/20% Toluene	set		
	Analyte	Certified Concentration		
	S	30.1 PPM WT. +/- 2% relative		
VHG-OY-5000 -A-50G	Yttrium Standard: Y @ 5000 µg/g in Hydrocarbon Oil	50 g		
	Analyte	Certified Concentration		
	Y	5000 ± 50 µg/g		
VHG-V21-900-200G	V21 Wear Metals Standard: 900 µg/g Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, Zn in Hydrocarbon Oil	200 g		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ag	900 ± 9 µg/g	Sn	902 ± 9 µg/g
	Cu	900 ± 9 µg/g	Ca	900 ± 9 µg/g
	P	900 ± 9 µg/g	Mo	900 ± 9 µg/g
	Al	900 ± 9 µg/g	Ti	900 ± 9 µg/g
	Fe	900 ± 9 µg/g	Cd	901 ± 9 µg/g
	Pb	895 ± 9 µg/g	Na	900 ± 9 µg/g
	B	900 ± 9 µg/g	V	900 ± 9 µg/g
	Mg	900 ± 9 µg/g	Cr	900 ± 9 µg/g
	Si	900 ± 9 µg/g	Ni	900 ± 9 µg/g
	Ba	901 ± 9 µg/g	Zn	900 ± 9 µg/g
	Mn	900 ± 9 µg/g		
VHG-TSW-500	Sulfur Standard: S @ 10000 µg/mL in H2O	500 mL		
	Analyte	Certified Concentration		
	S	9970 ± 56 µg/mL (w/v)		
VHG-TCAN-500	Calcium Standard: Ca @ 10000 µg/mL in 5% HNO3	500 mL		
	Analyte	Certified Concentration		
	Ca	10,050 ± 35 µg/mL (w/v)		
VHG-SDSL-1P-500	Sulfur - S @ 1.00wt% in #2 Diesel Fuel, 500mL	500 mL		
	Analyte	Certified Concentration		
	S	10,000 ± 100 µg/g		

Standard

Code	Product	Unit			
VHG-SDSL-3P-500	Sulfur - S @ 3.00 wt% in #2 Diesel, 500mL	500 mL			
	Analyte	Certified Concentration			
	S	30,000 ± 300 µg/g			
VHG-SDSL-300-500	Sulfur - S @ 300 µg/g in #2 Diesel Fuel, 500mL	500 mL			
	Analyte	Certified Concentration			
	S	300 ± 3 µg/g			
VHG-SDSL-15-100	Sulfur Standard: S @ 15 µg/g (0.0015 wt%) in #2 Diesel Fuel	100 mL			
	Analyte	Certified Concentration			
	S	15.0 ± 0.2 µg/g			
VHG-IP501M100-100	IP501 + Common metals, 100ppm: Al, Ca, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, P, Pb, Si, V, Zn @ 100 µg/mL in 5% HNO3/tr HF.	100 mL			
	Analyte	Certified Concentration	Analyte	Certified Concentration	
	Al	99.99 ± 0.50 µg/mL	Si	99.98 ± 0.50 µg/mL	
	K	100.0 ± 0.5 µg/mL	Cu	100.0 ± 0.5 µg/mL	
	P	100.0 ± 0.5 µg/mL	Na	99.98 ± 0.50 µg/mL	
	Ca	100.0 ± 0.5 µg/mL	V	100.0 ± 0.5 µg/mL	
	Mg	100.0 ± 0.5 µg/mL	Fe	100.0 ± 0.5 µg/mL	
	Pb	99.98 ± 0.50 µg/mL	Ni	100.0 ± 0.5 µg/mL	
	Cr	99.99 ± 0.50 µg/mL	Zn	100.0 ± 0.5 µg/mL	
	Mn	100.0 ± 0.5 µg/mL			
VHG-AN-1-100G	Acid Number (AN) Standard: 1.0 mg KOH/g in Hydrocarbon Oil	100 g			
	Test Method Performed	Certified Value			
	ASTM D664	1.16 ± 0.10 mg KOH/g			
	ASTM D974	1.08 ± 0.09 mg KOH/g			
VHG-ROHS -PE-SET4D	XRF Calibration Set for PE Analysis	set			
	Certified Concentrations (wt.%)				
Standard #	Br	Cd	Cr	Hg	Pb
1	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0050	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	0.0501	0.0050
5	0.0250	0.0075	0.0999	0.0251	0.1250
6	0.0501	0.0010	0.0650	0.0800	0.0750
7	0.0201	0.0005	0.0250	0.1000	0.0101
8	0.0300	0.0050	0.0500	0.0030	0.0500
9	0.0050	0.0150	0.0100	0.1201	0.0350
QC	0.0250	0.0050	0.0500	0.0500	0.0500

Standard

Code	Product	Unit		
VHG-PBAN-100	Barium Standard: Ba @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Ba	1004 ± 5 µg/mL (w/v)		
VHG-SPCR3-100	Chromium (III) Standard: Cr ⁺³ @ 100 µg/mL in 2% HNO ₃	100 mL		
	Species	Assigned Concentration		
	Cr ⁺³	99.97 ± 0.50 µg/mL		
VHG-SUVF -SET1-TOL	Total Sulfur by UV Fluorescence Set for ASTM D5453 - S @ 0, 1, 2.5, 5, 7.5, 10 ng/µL. Set of 6x2mL ampoules in toluene.	6 x 2 mL		
	Mixture #	Lot #	Total Sulfur	
	1	T062122AA	1.00 ng/µL	
	2	T062122BB	2.50 ng/µL	
	3	T062122CC	5.00 ng/µL	
	4	T062122DD	7.51 ng/µL	
	5	T062122EE	0.0 ng/µL	
	6	C21G06DRM-0000TOL	Blank	
VHG-V21+K -500-200G	V21+K Wear Metals Standard: 500 µg/g Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, Zn in Hydrocarbon Oil	200 g		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ag	500 ± 5 µg/g	Ti	500 ± 5 µg/g
	Fe	500 ± 5 µg/g	Ca	500 ± 5 µg/g
	Pb	500 ± 5 µg/g	Mo	500 ± 5 µg/g
	Al	500 ± 5 µg/g	V	500 ± 5 µg/g
	K	500 ± 5 µg/g	Cd	500 ± 5 µg/g
	Si	500 ± 5 µg/g	Na	501 ± 5 µg/g
	B	500 ± 5 µg/g	Zn	500 ± 5 µg/g
	Mg	500 ± 5 µg/g	Cr	500 ± 5 µg/g
	Sn	500 ± 5 µg/g	Ni	500 ± 5 µg/g
	Ba	500 ± 5 µg/g	Cu	500 ± 5 µg/g
	Mn	500 ± 5 µg/g	P	500 ± 5 µg/g
VHG-OY-5000 -A-50G	Yttrium Standard: Y @ 5000 µg/g in Hydrocarbon Oil	50 g		
	Analyte	Certified Concentration		
	Y	5000 ± 50 µg/g		

Standard

Code	Product	Unit																																																				
VHG-V23-100-200G	V23 Wear Metals Standard: 100 µg/g Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Si, Sn, Ti, V, Zn in Hydrocarbon Oil	200 g																																																				
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Mn	100 ± 1 µg/g	Cu	100 ± 1 µg/g																																																			
		P	100 ± 1 µg/g																																																			
VHG-PSNH-100	Tin Standard: Sn @ 1000 µg/mL in 20% HCl	100 mL																																																				
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VHG-PLIN-250	Lithium Standard: Li @ 1000 µg/mL in 5% HNO ₃	250 mL																																																				
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Li	1010 ± 3 µg/mL (w/v)																																																					
VHG-ICL1K-500	Chloride (from KCl) Standard: Cl ⁻ @ 1000 µg/mL in H ₂ O	500 mL																																																				
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VHG-TCON-500	Cobalt Standard: Co @ 10000 µg/mL in 5% HNO ₃	500 mL																																																				
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VHG-IF1K-500	Fluoride Standard: F ⁻ @ 1000 µg/mL in H ₂ O	500 mL																																																				
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VHG-TLIN-500	Lithium Standard: Li @ 10000 µg/mL in 5% HNO ₃	500 mL																																																				
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Standard

Code	Product	Unit			
VHG-TMNN-500	Manganese Standard: Mn @ 10000 µg/mL in 5% HNO ₃	500 mL			
	Analyte	Certified Concentration			
	Mn	9947 ± 33 µg/mL (w/v)			
VHG-SISO-10-100	Sulfur Standard: S @ 10 µg/g (0.0010 wt%) in Isooctane	100 mL			
	Species	Assigned Concentration			
	S	10.0 ± 0.1 µg/g			
VHG-ROHS-PE-SET2D	Set of 9 XRF Standards plus 1 QC Check Sample in PE Discs: Br, Cd, Cr, Hg, Pb	each			
	Concentrations (wt.%)				
Standard #	Br	Cd	Cr	Hg	Pb
1	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0050	0.0025	0.0050	0.0100	0.1000
3	0.0400	0.0100	0.0750	0.0075	0.0250
4	0.1000	0.0125	0.1250	0.0500	0.0050
5	0.0250	0.0075	0.1000	0.0250	0.1251
6	0.0500	0.0010	0.0650	0.0801	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	0.0250	0.0050	0.0500	0.0500	0.0500
VHG-ROHS-PE-SET2P	Set of 9 XRF Standards plus 1 QC Check Sample in PE Powder: Br, Cd, Cr, Hg, Pb	each			
	Concentrations (wt.%)				
Standard #	Br	Cd	Cr	Hg	Pb
1	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0050	0.0025	0.0050	0.0100	0.1000
3	0.0400	0.0100	0.0750	0.0075	0.0250
4	0.1000	0.0125	0.1250	0.0500	0.0050
5	0.0250	0.0075	0.1000	0.0250	0.1251
6	0.0500	0.0010	0.0650	0.0801	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	0.0250	0.0050	0.0500	0.0500	0.0500

Standard

Code	Product	Unit
VHG-SRES-3500-100	Sulfur @ 3500 µg/g in Residual Oil, 100mL Element Concentration S Certified W/W 3500 µg/g (0.350 wt. %) +/- 3% relative	100 mL
VHG-SRES-5000-100	Sulfur Standard: S @ 5000 µg/g (0.500 wt%) in Residual Oil Element Concentration S Certified W/W 5000 µg/g (0.500 wt. %) +/- 3% relative	100 mL
VHG-SRES-7000-100	Sulfur @ 7000 µg/g in Residual Oil Element Concentration S Certified W/W 7008 µg/g (0.701 wt. %) +/- 3% relative	100 mL
VHG-SDSL-20-100	Sulfur Standard: S @ 20 µg/g (0.0020 wt%) in #2 Diesel Fuel Analyte Certified Concentration S 20.0 ± 0.2 µg/g	100 mL
VHG-WPH4-500	Buffer, Reference Standard, pH 4.00 ± 0.01 at 25°C (Color Coded Red) Analyte Certified Concentration pH 4.01 ± 0.01 pH units	500 mL
VHG-WPH10-500	Buffer, Reference Standard, pH 10.00 ± 0.01 at 25°C (Color Coded Blue) Analyte Certified Concentration pH 10.01 ± 0.02 pH units	500 mL
VHG-II-100	Iodide (from NaI) Standard: I ⁻ @ 1000 µg/mL in H ₂ O Analyte Certified Concentration I ⁻ 1000 ± 5 µg/mL	100 mL
VHG-TBZ-500	Boron Standard: B @ 10000 µg/mL in NH ₄ OH Analyte Certified Concentration B 10,010 ± 43 µg/mL (w/v)	500 mL
VHG-TALH-500	Aluminum Standard: Al @ 10000 µg/mL in 5% HCl Analyte Certified Concentration Al 9948 ± 55 µg/mL (w/v)	500 mL

Standard

Code	Product	Unit
VHG-TASN-500	Arsenic Standard: As @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	As 10,080 ± 31 µg/mL (w/v)	
VHG-TSEN-500	Selenium Standard: Se @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Se 9953 ± 54 µg/mL (w/v)	
VHG-TCDN-500	Cadmium Standard: Cd @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Cd 10,068 ± 54 µg/mL (w/v)	
VHG-TCDN-500	Cadmium Standard: Cd @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Cd 10,068 ± 54 µg/mL (w/v)	
VHG-TPBN-500	Lead Standard: Pb @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Pb 10,080 ± 30 µg/mL (w/v)	
VHG-TUN-500	Uranium Standard: U @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	U 10,019 ± 50 µg/mL (w/v)	
VHG-TSBWTN-500	Antimony Standard: Sb @ 10000 µg/mL in 1% HNO ₃ , 6% Tartaric Acid	500 mL
	Analyte	Certified Concentration
	Sb 10,030 ± 65 µg/mL (w/v)	
VHG-TBAN-500	Barium Standard: Ba @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Ba 10,020 ± 39 µg/mL (w/v)	
VHG-TSNH-500	Tin Standard: Sn @ 10000 µg/mL in 20% HCl	500 mL
	Analyte	Certified Concentration
	Ba 10,020 ± 39 µg/mL (w/v)	

Standard

Code	Product	Unit
VHG-THGN-500	Mercury Standard: Hg @ 10000 µg/mL in 5% HNO ₃	500 mL
	Analyte	Certified Concentration
	Hg	9940 ± 41 µg/mL (w/v)
VHG-PCR6W-250	Hexavalent Chromium - Cr+6 @ 1000 µg/mL in H ₂ O	250 mL
	Analyte	Certified Concentration
	Cr ⁺⁶	999.6 ± 5.0 µg/mL
VHG-LSEN-100	Selenium Standard: Se @ 10 µg/mL in 2% HNO ₃	100 mL
	Analyte	Certified Concentration
	Se	10.00 ± 0.05 µg/mL (w/v)
VHG-LBW-100	Boron Standard: B @ 10 µg/mL in H ₂ O	100 mL
	Analyte	Certified Concentration
	B	10.0 ± 0.1 µg/mL (w/v)
VHG-LCUN-100	Copper Standard: Cu @ 10 µg/mL in 2% HNO ₃	100 mL
	Analyte	Certified Concentration
	Cu	10.00 ± 0.05 µg/mL (w/v)
VHG-LZNN-500	Zinc - Zn @ 10 µg/mL in 2% HNO ₃	500 mL
	Analyte	Certified Concentration
	Zn	10.00 ± 0.05 µg/mL (w/v)
VHG-LUN-100	Uranium Standard: U @ 10 µg/mL in 2% HNO ₃	100 mL
	Analyte	Certified Concentration
	U	10.00 ± 0.05 µg/mL (w/v)
VHG-LSBWTN-100	Antimony Standard: Sb @ 10 µg/mL in 1% HNO ₃ , tr. Tartaric Acid	100 mL
	Analyte	Certified Concentration
	Sb	10.01 ± 0.05 µg/mL (w/v)
VHG-SPCRD-BLK-100	Sulfur Standard: S BLK (0 wt%) in Crude Oil	100 mL
	Analyte	Certified Concentration
	S	592 ± 6 µg/g

Standard

Code	Product	Unit
VHG-SPCRD-1P-100	Sulfur Standard: S @ 10000 µg/g (1.00 wt%) in Crude Oil Analyte S 10,000 ± 100 µg/g	100 mL
VHG-SPCRD-2P-100	Sulfur Standard: S @ 20000 µg/g (2.00 wt%) in Crude Oil Analyte S 20,000 ± 200 µg/g	100 mL
VHG-SPCRD-3P-100	Sulfur Standard: S @ 30000 µg/g (3.00 wt%) in Crude Oil Analyte S 30,000 ± 300 µg/g	100 mL
VHG-SPCRD-4P-100	Sulfur Standard: S @ 40000 µg/g (4.00 wt%) in Crude Oil Analyte S 40,000 ± 400 µg/g	100 mL
VHG-SPCRD-5P-100	Sulfur Standard: S @ 50000 µg/g (5.00 wt%) in Crude Oil Analyte S 50,000 ± 500 µg/g	100 mL
VHG-TTIW-500	Titanium Standard: Ti @ 10000 µg/mL in H ₂ O, tr. F- Analyte Ti 9931 ± 23 µg/mL (w/v)	500 mL
VHG-LPENXSUSDIL-500	ICP-MS Setup Solution: Be, Ce, Fe, In, Li, Mg, Pb, U @ 1 µg/L in 1% HNO ₃ Analyte Certified Concentration Analyte Certified Concentration Be 1.000 ± 0.005 µg/L Li 1.000 ± 0.005 µg/L In 1.000 ± 0.005 µg/L U 1.000 ± 0.005 µg/L Pb 1.000 ± 0.005 µg/L Fe 1.000 ± 0.005 µg/L Ce 1.000 ± 0.005 µg/L Mg 1.000 ± 0.005 µg/L	500 mL
VHG-PLIN-100	Lithium Standard: Li @ 1000 µg/mL in 5% HNO ₃ Analyte Li 1010 ± 3 µg/mL (w/v)	100 mL

Standard

Code	Product	Unit																																																				
VHG-V23-100-400G	100 µg/g Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Si, Sn, Ti, V, Zn in Hydrocarbon Oil	400 g																																																				
	<table border="0"> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr> <td>Ag</td> <td>100 ± 1 µg/g</td> <td>Sn</td> <td>100 ± 1 µg/g</td> </tr> <tr> <td>Fe</td> <td>100 ± 1 µg/g</td> <td>Ca</td> <td>100 ± 1 µg/g</td> </tr> <tr> <td>Pb</td> <td>100 ± 1 µg/g</td> <td>Mo</td> <td>100 ± 1 µg/g</td> </tr> <tr> <td>Al</td> <td>100 ± 1 µg/g</td> <td>Ti</td> <td>100 ± 1 µg/g</td> </tr> <tr> <td>K</td> <td>100 ± 1 µg/g</td> <td>Cd</td> <td>100 ± 1 µg/g</td> </tr> <tr> <td>Sb</td> <td>100 ± 1 µg/g</td> <td>Na</td> <td>100 ± 1 µg/g</td> </tr> <tr> <td>B</td> <td>100 ± 1 µg/g</td> <td>V</td> <td>100 ± 1 µg/g</td> </tr> <tr> <td>Mg</td> <td>100 ± 1 µg/g</td> <td>Cr</td> <td>100 ± 1 µg/g</td> </tr> <tr> <td>Si</td> <td>100 ± 1 µg/g</td> <td>Ni</td> <td>100 ± 1 µg/g</td> </tr> <tr> <td>Ba</td> <td>100 ± 1 µg/g</td> <td>Zn</td> <td>100 ± 1 µg/g</td> </tr> <tr> <td>Mn</td> <td>100 ± 1 µg/g</td> <td>Cu</td> <td>100 ± 1 µg/g</td> </tr> <tr> <td></td> <td></td> <td>P</td> <td>100 ± 1 µg/g</td> </tr> </tbody> </table>	Analyte	Certified Concentration	Analyte	Certified Concentration	Ag	100 ± 1 µg/g	Sn	100 ± 1 µg/g	Fe	100 ± 1 µg/g	Ca	100 ± 1 µg/g	Pb	100 ± 1 µg/g	Mo	100 ± 1 µg/g	Al	100 ± 1 µg/g	Ti	100 ± 1 µg/g	K	100 ± 1 µg/g	Cd	100 ± 1 µg/g	Sb	100 ± 1 µg/g	Na	100 ± 1 µg/g	B	100 ± 1 µg/g	V	100 ± 1 µg/g	Mg	100 ± 1 µg/g	Cr	100 ± 1 µg/g	Si	100 ± 1 µg/g	Ni	100 ± 1 µg/g	Ba	100 ± 1 µg/g	Zn	100 ± 1 µg/g	Mn	100 ± 1 µg/g	Cu	100 ± 1 µg/g			P	100 ± 1 µg/g	
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VHG-OAS-1000-50G	Arsenic Standard: As @ 1000 µg/g in Hydrocarbon Oil	50 g																																																				
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VHG-OHG-1000-50G	Mercury Standard: Hg @ 1000 µg/g in Hydrocarbon Oil	50 g																																																				
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Hg	1000 ± 10 µg/g																																																					
VHG-PCEN-100	Cerium Standard: Ce @ 1000 µg/mL in 5% HNO ₃	100 mL																																																				
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VHG-PNBF-100	Niobium Standard: Nb @ 1000 µg/mL in 2% HF	100 mL																																																				
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VHG-ICH-USP-TELD-100	ICH/USP Oral Target Elements Standard D: Cr @ 11,000; Sn @ 6000; Cu, Mo @ 3000; Ba @ 1400; Sb @ 1200; Li @ 550 µg/mL in 5% HNO ₃ /tr. HF	100 mL																																																				
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Cr	11,000 ± 55 µg/mL																																																					

Standard

Code	Product	Unit																
VHG-ICH-USP-TELB-100	ICH/USP Oral Target Elements Standard B: Ni @ 200; Ag, Se @ 150; V @ 100; Co @ 50; Tl @ 8 µg/mL in 2% HNO ₃	100 mL																
	<table border="0"> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr> <td>Ag</td> <td>150.0 ± 0.8 µg/mL</td> <td>Co</td> <td>50.00 ± 0.25 µg/mL</td> </tr> <tr> <td>Ni</td> <td>200.1 ± 1.0 µg/mL</td> <td>Se</td> <td>150.0 ± 0.8 µg/mL</td> </tr> <tr> <td>Tl</td> <td>8.002 ± 0.040 µg/mL</td> <td>V</td> <td>100.0 ± 0.5 µg/mL</td> </tr> </tbody> </table>	Analyte	Certified Concentration	Analyte	Certified Concentration	Ag	150.0 ± 0.8 µg/mL	Co	50.00 ± 0.25 µg/mL	Ni	200.1 ± 1.0 µg/mL	Se	150.0 ± 0.8 µg/mL	Tl	8.002 ± 0.040 µg/mL	V	100.0 ± 0.5 µg/mL	
Analyte	Certified Concentration	Analyte	Certified Concentration															
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Ni	200.1 ± 1.0 µg/mL	Se	150.0 ± 0.8 µg/mL															
Tl	8.002 ± 0.040 µg/mL	V	100.0 ± 0.5 µg/mL															
VHG-ICH-USP-TELA-100	ICH/USP Oral Target Elements Standard A: Hg @ 30; As @ 15; Cd, Pb @ 5 µg/mL in 2% HNO ₃	100 mL																
	<table border="0"> <thead> <tr> <th>Analyte</th> <th>Certified Concentration</th> <th>Analyte</th> <th>Certified Concentration</th> </tr> </thead> <tbody> <tr> <td>As</td> <td>15.00 ± 0.08 µg/mL</td> <td>Cd</td> <td>4.999 ± 0.025 µg/mL</td> </tr> <tr> <td>Hg</td> <td>30.00 ± 0.15 µg/mL</td> <td>Pb</td> <td>5.000 ± 0.025 µg/mL</td> </tr> </tbody> </table>	Analyte	Certified Concentration	Analyte	Certified Concentration	As	15.00 ± 0.08 µg/mL	Cd	4.999 ± 0.025 µg/mL	Hg	30.00 ± 0.15 µg/mL	Pb	5.000 ± 0.025 µg/mL					
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Hg	30.00 ± 0.15 µg/mL	Pb	5.000 ± 0.025 µg/mL															
VHG-OB-1000-50G	Boron Standard: B @ 1000 µg/g in Hydrocarbon Oil	50 g																
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B	1000 ± 10 µg/g																	
VHG-OS-1000-50G	Sulfur Standard: S @ 1000 µg/g in Hydrocarbon Oil	50 g																
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Analyte	Certified Concentration																	
S	1000 ± 10 µg/g																	
VHG-LNIN-100	Nickel Standard: Ni @ 10 µg/mL in 2% HNO ₃	100 mL																
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Analyte	Certified Concentration																	
Ni	10.00 ± 0.05 µg/mL (w/v)																	
VHG-LPBN-100	Lead Standard: Pb @ 10 µg/mL in 2% HNO ₃	100 mL																
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Analyte	Certified Concentration																	
Pb	10.00 ± 0.05 µg/mL (w/v)																	
VHG-LCDN-100	Cadmium Standard: Cd @ 10 µg/mL in 2% HNO ₃	100 mL																
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Analyte	Certified Concentration																	
Cd	10.00 ± 0.05 µg/mL (w/v)																	
VHG-LASN-100	Arsenic Standard: As @ 10 µg/mL in 2% HNO ₃	100 mL																
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As	10.00 ± 0.05 µg/mL (w/v)																	

Standard

Code	Product	Unit		
VHG-LCRN-100	Chromium Standard: Cr @ 10 µg/mL in 2% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Cr	10.0 ± 0.1 µg/mL (w/v)		
VHG-LALN-100	Aluminum Standard: Al @ 10 µg/mL in 2% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Al	9.999 ± 0.050 µg/mL (w/v)		
VHG-PAUH-500	Gold Standard: Au @ 1000 µg/mL in 20% HCl	500 mL		
	Analyte	Certified Concentration		
	Au	999.0 ± 3.0 µg/mL (w/v)		
VHG-PPTH-500	Platinum Standard: Pt @ 1000 µg/mL in 20% HCl	500 mL		
	Analyte	Certified Concentration		
	Pt	999.0 ± 6.0 µg/mL (w/v)		
VHG-D19-100-100G	Spectrometric Oil Reference Standard D19-100: Ag, Al, B, Ba, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Na, Ni, Pb, Si, Sn, Ti, V, Zn @ 100 µg/g in Aviation Reference Oil	100 g		
	Analyte	Certified Concentration	Analyte	Certified Concentration
	Ag	99.7 ± 1.0 µg/g	Ba	99.6 ± 1.0 µg/g
	Fe	99.5 ± 1.0 µg/g	Mo	99.6 ± 1.0 µg/g
	Si	99.7 ± 1.0 µg/g	V	99.5 ± 1.0 µg/g
	Al	99.5 ± 1.0 µg/g	Cd	99.6 ± 1.0 µg/g
	Mg	99.5 ± 1.0 µg/g	Na	99.6 ± 1.0 µg/g
	Sn	99.7 ± 1.0 µg/g	Zn	99.5 ± 1.0 µg/g
	B	99.5 ± 1.0 µg/g	Cr	99.5 ± 1.0 µg/g
	Mn	99.5 ± 1.0 µg/g	Ni	99.5 ± 1.0 µg/g
	Ti	99.6 ± 1.0 µg/g	Cu	99.6 ± 1.0 µg/g
			Pb	99.5 ± 1.0 µg/g
VHG-PCAN-100	Calcium Standard: Ca @ 1000 µg/mL in 5% HNO ₃	100 mL		
	Analyte	Certified Concentration		
	Ca	1006 ± 3 µg/mL (w/v)		
VHG-INH41K-500	Ammonium Standard: NH ₄ ⁺ @ 1000 µg/mL in H ₂ O	500 mL		
	Analyte	Certified Concentration		
	NH ₄ ⁺	1000 ± 5 µg/mL		

