

VWR[®] for calibration

01. TRACEABILITY

02. ACCURACY

03. RELIABILITY



VWR® for calibration

Scientific analysis becomes ever more sensitive and the need to ensure that results are verified and traceable gathers pace in all industries. Avantor's VWR brand offers a selection of products to support you each and every day to help you with continuity and reproducibility of your results and discoveries.

Integrity and quality are, and always will be our priority to deliver high purity standards and certified reference materials to support you every day.

From discovery to delivery, our objective is to be the trusted global partner to customers and suppliers in the life science and advanced technology industries. By providing superior product and service solutions, we accelerate innovation and empower the success of our customers.

We set science in motion to create a better world.

Integrity and quality are, and always will be our highest priority. That means delivering High Purity Standards and Certified Reference Materials to the market – supporting you every day.

- Calibration optimizes the accuracy of measuring devices
- Accurate measuring tools improve product quality
- Instrument calibration is an essential maintenance step that's required to ensure you get the most out of your equipment investment



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ASTM COLOUR SOLUTIONS

Ready to use solutions that are prepared gravimetrically on a weight/weight basis.

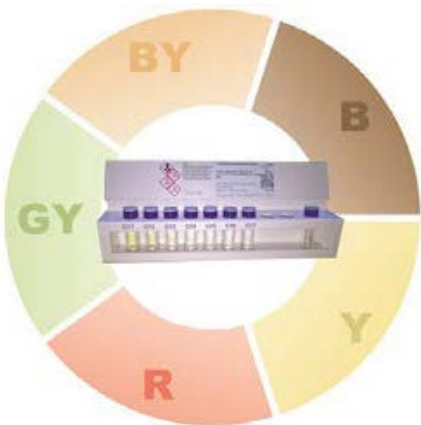
- Use either as calibration and/or quality control standards
- Designed specifically for use in ASTM analytical methods and produced in accordance with ASTM D1500, D6045, D1209
- Traceable product certified by an independent laboratory
- Supplied in high quality, tamper-evident bottles

Colour standards, Platinum-Cobalt (Pt-Co)Hazen - plastic bottle	Cat. No. Pk 1000 ml
0	84806.290
10	84807.290
25	84808.290
40	84809.290
50	84810.290
80	84811.290
100	84812.290
250	84813.290
500	84814.290

Colour standards - Saybolt - glass bottle	Cat. No. Pk 100 ml	Cat. No. Pk 500 ml
-15	84805.180	84805.260
0	84804.180	84804.260
12	84803.180	84803.260
15	84802.180	84802.260
19	84801.180	84801.260
25	84800.180	84800.260
30	84799.180	84799.260

Colour standards - Gardner - glass bottle	Cat. No. Pk 500 ml
2	84815.260
4	84816.260
6	84817.260
8	84818.260
10	84819.260
12	84820.260
14	84821.260
16	84822.260

Colour standards solutions - ASTM - glass bottle	Cat. No. Pk 100 ml	Cat. No. Pk 500 ml
A1	84834.180	84834.260
A3	84796.180	84796.260
A5	84797.180	84797.260
A7	84798.180	84798.260



Colour reference solutions

COLOUR REFERENCE SOLUTIONS ACC. TO PH. EUR., READY TO USE

These solutions are developed and produced according to chapter 2.2.2. Degree of coloration of liquids of the European Pharmacopeia. (brown, brown-yellow, green-yellow, red and yellow). These kits are ready to use, and are dedicated to help you save time and money because preparation of these solutions is very complex.

- Easy to use kits
- Ready to use solutions
- Stable - shelf life of 36 months
- Certificate of Analysis provided with the kit

The kits are easy to use: Just add the sample into the empty vial provided with the kit and compare the colour with the reference solution in the rack.

Description	Pk	Cat. No.
Colour reference solutions B (B1 - B9)	1 KIT	85752.001
Colour reference solutions BY (BY1 - BY7)	1 KIT	85753.001
Colour reference solutions Y (Y1-Y7)	1 KIT	85754.001
Colour reference solutions GY (GY1 - GY7)	1 KIT	85755.001
Colour reference solutions R (R1 - R7)	1 KIT	85756.001



CERTIFIED HUMIDITY STANDARDS

Although most relative humidity (RH) probes have excellent long-term stability, it is recommended that their calibration be checked regularly.

- Traceable to national standard – SCS (Swiss Calibration Service) certificate included
- Ampoules contain unsaturated salt solutions (~ 0,8 ml)
- Inexpensive on-site calibration
- Simple and safe use
- 10 years lifetime
- Practical packs of five ampoules of the same humidity value

Each ampoule is labelled with the humidity value and serial number.

Values and accuracy (measurement uncertainty values) below are measured at 23 °C.

Relative humidity (RH%)	Accuracy	Cat. No.
0,5%	±0,3% RH	620-2272
10%	±0,3% RH	620-2223
20%	±0,3% RH	620-2758
35%	±0,5% RH	620-2224
50%	±0,9% RH	620-2225
65%	±0,9% RH	707-0044
80%	±1,2% RH	620-2226
95%	±1,2% RH	707-0045



RELATIVE DENSITY STANDARDS WITHIN THE RANGE OF 15 °C TO 25 °C

The range of Relative Density Standards are certified in accordance with primary level ASTM D1480 methodology and are dual certified to ISO 17025 / ISO 17034 under UKAS accreditation. Relative density standards are designed for the calibration or verification of instruments used to measure density and relative density of materials at the desired test temperature within the range of 15 °C to 25 °C.

- Certified in accordance with primary level ASTM D1480 methodology
- Full traceability to national standards
- Supplied in Tamper-evident packaging with a 2 year shelf life

The Relative density is calculated by dividing the density, as obtained from ASTM D1480, by the density of water at the reference temperature.

The density of water was taken from the table «Density of Water» found in ASTM D1480 and confirms to the International Temperature Scale (ITS 90).

Dual certified to ISO 17025 / ISO 17034 under UKAS accreditation.

The density value given in the ordering table below is the Nominal Relative density value - the actual batch values are given in the certification documents supplied with the product and also on the label.

Density	Reference Temperature	Test Method	Pack type	Pk	Cat. No.
0,6643	15 °C	ASTM D1480	Glass bottle	500 ml	99131.260
0,7186	15 °C	ASTM D1480	Glass bottle	500 ml	99132.260
0,7807	15 °C	ASTM D1480	Glass bottle	500 ml	99133.260
0,8163	15 °C	ASTM D1480	Glass bottle	500 ml	99134.260
0,8494	15 °C	ASTM D1480	Glass bottle	500 ml	99135.260
0,8642	15 °C	ASTM D1480	Glass bottle	500 ml	99136.260
0,8797	15 °C	ASTM D1480	Glass bottle	500 ml	99137.260
0,6597	20 °C	ASTM D1480	Glass bottle	500 ml	99138.260
0,7145	20 °C	ASTM D1480	Glass bottle	500 ml	99139.260

Density	Reference Temperature	Test Method	Pack type	Pk	Cat. No.
0,7769	20 °C	ASTM D1480	Glass bottle	500 ml	99140.260
0,8400	20 °C	ASTM D1480	Glass bottle	500 ml	99141.260
0,8452	20 °C	ASTM D1480	Glass bottle	500 ml	99142.260
0,8723	20 °C	ASTM D1480	Glass bottle	500 ml	99143.260
0,6552	25 °C	ASTM D1480	Glass bottle	500 ml	99144.260
0,7104	25 °C	ASTM D1480	Glass bottle	500 ml	99145.260
0,7730	25 °C	ASTM D1480	Glass bottle	500 ml	99146.260
0,8366	25 °C	ASTM D1480	Glass bottle	500 ml	99147.260
0,8693	25 °C	ASTM D1480	Glass bottle	500 ml	99148.260



DENSITY STANDARDS

These products can be used as calibration standards for density measurements by pycnometric, vibrational or hydrometer-based techniques.

- High accuracy across an extensive density range
- No toxic heavy metals used in any formulation
- Can be used with any brand or type of density measuring instrument
- Supplied in a high quality, tamper proof, amber glass bottle

These standards are prepared gravimetrically (solute and solvent) using OIML traceable weights. The standard's density are established using fully calibrated reference pycnometers.

In accordance with ASTM D1480-12 for testing of density or relative density. A certificate of calibration is issued in accordance with the requirements of ISO/IEC 17025.

Conc. at 15 °C (g/ml)	Cat. No.
0,6960	85140.180
0,7073	85141.180
0,7184	85142.180
0,7298	85143.180
0,7411	85144.180
0,7524	85145.180
0,7721	85146.180
0,7933	85147.180
0,8168	85148.180
0,8428	85149.180
0,8715	85150.180
0,9135	85151.180
0,9514	85152.180
1,0040	85153.180
1,0337	85154.180

Conc. at 15 °C (g/ml)	Cat. No.
1,0828	85155.180
1,1661	85156.180
1,2498	85157.180
1,3318	85158.180
1,4152	85159.180
1,5820	85160.180
1,7495	85161.180
1,9171	85162.180
2,0846	85163.180
2,2568	85164.180
2,4261	85165.180
2,6055	85166.180
2,7588	85167.180
2,9418	85168.180
3,1140	85169.180

Conc. at 20 °C (g/ml)	Cat. No.
0,6919	85170.180
0,7033	85171.180
0,7148	85172.180
0,7261	85173.180
0,7374	85174.180
0,7488	85175.180
0,7683	85176.180
0,7893	85177.180
0,8126	85178.180
0,8384	85179.180
0,8668	85180.180
0,9098	85181.180
0,9476	85182.180
1,0005	85183.180
1,0301	85184.180

Conc. at 20 °C (g/ml)	Cat. No.
1,0792	85185.180
1,1651	85186.180
1,2486	85187.180
1,3304	85188.180
1,4136	85189.180
1,5799	85190.180
1,7470	85191.180
1,9141	85192.180
2,0812	85193.180
2,2531	85194.180
2,4219	85195.180
2,6011	85196.180
2,7542	85197.180
2,9370	85198.180
3,1096	85199.180

Conc. at 25 °C (g/ml)	Cat. No.
0,6878	85200.180
0,6993	85201.180
0,7111	85202.180
0,7223	85203.180
0,7337	85204.180
0,7452	85205.180
0,7645	85206.180
0,7853	85207.180
0,8084	85208.180
0,8340	85209.180
0,8622	85210.180
0,9060	85211.180
0,9438	85212.180
0,9969	85213.180
1,0265	85214.180

Conc. at 25 °C (g/ml)	Cat. No.
1,0755	85215.180
1,1639	85216.180
1,2471	85217.180
1,3287	85218.180
1,4117	85219.180
1,5775	85220.180
1,7441	85221.180
1,9108	85222.180
2,0775	85223.180
2,2490	85224.180
2,4175	85225.180
2,5964	85226.180
2,7493	85227.180
2,9319	85228.180
3,1043	85229.180

Conc. at 40 °C (g/ml)	Cat. No.
0,6752	85230.180
0,6872	85231.180
0,6997	85232.180
0,7109	85233.180
0,7226	85234.180
0,7343	85235.180
0,7531	85236.180
0,7733	85237.180
0,7958	85238.180
0,8207	85239.000
0,8482	85240.000
0,8945	85241.000
0,9323	85242.000
0,9857	85243.000
1,0152	85244.000

Conc. at 40 °C (g/ml)	Cat. No.
1,0642	85245.000
1,1581	85246.000
1,2408	85247.000
1,3217	85248.000
1,4039	85249.000
1,5685	85250.000
1,7339	85251.000
1,8994	85252.000
2,0649	85253.000
2,2352	85254.000
2,4028	85255.180
2,5807	85256.180
2,7329	85257.180
2,9132	85258.180
3,0852	85259.180

Conc. at 50 °C (g/ml)	Cat. No.
0,6668	85260.180
0,6791	85261.180
0,6917	85262.180
0,7033	85263.180
0,7151	85264.180
0,7269	85265.180
0,7454	85266.180
0,7653	85267.180
0,7873	85268.180
0,8118	85269.180
0,8387	85270.180
0,8868	85271.180
0,9245	85272.180
0,9777	85273.180
1,0073	85274.180

Conc. at 50 °C (g/ml)	Cat. No.
1,0562	85275.180
1,1512	85276.180
1,2346	85277.180
1,3138	85278.180
1,3973	85279.180
1,5609	85280.180
1,7257	85281.180
1,8904	85282.180
2,0551	85283.180
2,2247	85284.180
2,3916	85285.180
2,5689	85286.180
2,7207	85287.180
2,9005	85288.180
3,0721	85289.180

Conc. at 60 °C (g/ml)	Cat. No.
0,6582	85290.180
0,6708	85291.180
0,6835	85292.180
0,6955	85293.180
0,7076	85294.180
0,7196	85295.180
0,7376	85296.180
0,7572	85297.180
0,7788	85298.180
0,8027	85299.180
0,8292	85300.180
0,8790	85301.180
0,9166	85302.180
0,9695	85303.180
0,9990	85304.180
1,0478	85305.180

Conc. at 80 °C (g/ml)	Cat. No.
0,6407	85306.180
0,6538	85307.180
0,6661	85308.180
0,6798	85309.180
0,6923	85310.180
0,7047	85311.180
0,7220	85312.180
0,7407	85313.180
0,7614	85314.180
0,7844	85315.180
0,8098	85316.180
0,8629	85317.180
0,9006	85318.180
0,9520	85319.180
0,9815	85320.180
1,0302	85321.180



MELTING POINT STANDARDS

These standards can be used with any melting point apparatus and are prepared using pure raw materials. Melting points are determined using a high accuracy Differential Scanning Calorimeter (DSC) system that is calibrated to the ITS – 90 International Temperature Scale.

- Ready to use
- Traceable
- Uncertainty of measurement up to $\pm 0,3$ °C

The melting points of these standards range from benzophenone (+47...+49 °C) to anthraquinone (+283...+286 °C).

Description	Melting pt.	Pk (g)	Cat. No.
Anthraquinone	283...286 °C	1	85110.001
Benzoic acid	121...123 °C	1	85104.001
Benzophenone	47...49 °C	1	85101.001
Caffeine	235...238 °C	1	85108.001
Carbazole	243...247 °C	1	85109.001
Melting point standard set (sulphanilamide/ caffeine/ vanillin)	164 ...166 °C/235...238 °C/81...83 °C	3*	85111.003
Melting point standard set (benzophenone/ benzoic acid/ anthraquinone end of the bracket is missing)	47...49 °C/121...123 °C/283...286 °C	3 *	85112.003
Melting point standard set, (vanillin/ phenacetin/ caffeine)	81...83 °C/134...136 °C/235...237 °C	3*	85113.003
Phenacetin	133...135 °C	0,5	85105.005
Salicylic acid	158...160 °C	1	85106.001
Sulphanilamide	164 ...166 °C	1	85107.001
Vanillin	81...83 °C	1	85103.001

*1 g of each substance



REFRACTIVE INDEX STANDARDS

Refractive index of a standard is verified using a calibrated- and temperature-controlled refractometer.

- Standards are prepared gravimetrically on weight/weight basis
- Solute (sucrose) and solvent (water) are weighed on a calibrated balance using OIML traceable weights

Certificate of calibration is issued in accordance with the requirements of ISO/IEC 17025.

Description	Refractive index	Pk	Cat. No.
Refractive index standard at 20 °C, solvent-based	1,38779 nD	15 ml	85114.015
Refractive index standard at 20 °C, solvent-based	1,40485 nD	15 ml	85115.015
Refractive index standard at 20 °C, solvent-based	1,42345 nD	15 ml	85116.015
Refractive index standard at 20 °C, solvent-based	1,44468 nD	15 ml	85117.015
Refractive index standard at 20 °C, solvent-based	1,46768 nD	15 ml	85118.015
Refractive index standard at 20 °C, solvent-based	1,49672 nD	15 ml	85119.015
Refractive index standard at 20 °C, solvent based	1,50044 nD	15 ml	85120.015
Refractive index standard at 20 °C, solvent-based	1,51726 nD	15 ml	85121.015
Refractive index standard at 20 °C, solvent-based	1,53660 nD	15 ml	85122.015
Refractive index standard at 20 °C, solvent-based	1,65808 nD	15 ml	85123.015
Refractive index standard at 20 °C, stabilised sucrose	1,34325 nD	15 ml	85124.015
Refractive index standard at 20 °C, stabilised sucrose	1,34782 nD	15 ml	85125.015
Refractive index standard at 20 °C, stabilised sucrose	1,34968 nD	15 ml	85126.015

Description	Refractive index	Pk	Cat. No.
Refractive index standard at 20 °C, stabilised sucrose	1,35015 nD	15 ml	85127.015
Refractive index standard at 20 °C, stabilised sucrose	1,35093 nD	15 ml	85129.015
Refractive index standard at 20 °C, stabilised sucrose	1,35171 nD	15 ml	85128.015
Refractive index standard at 20 °C, stabilised sucrose	1,35568 nD	15 ml	85130.015
Refractive index standard at 20 °C, stabilised sucrose	1,37233 nD	15 ml	85131.015
Refractive index standard at 20 °C, stabilised sucrose	1,38115 nD	15 ml	85132.015
Refractive index standard at 20 °C, stabilised sucrose	1,39032 nD	15 ml	85133.015
Refractive index standard at 20 °C, stabilised sucrose	1,39986 nD	15 ml	85134.015
Refractive index standard at 20 °C, stabilised sucrose	1,40978 nD	15 ml	85135.015
Refractive index standard at 20 °C, stabilised sucrose	1,42009 nD	15 ml	85136.015
Refractive index standard at 20 °C, stabilised sucrose	1,43080 nD	15 ml	85137.015
Refractive index standard at 20 °C, stabilised sucrose	1,44193 nD	15 ml	85138.015



Refractive index standard kits

REFRACTIVE INDEX STANDARD KITS FOR CALIBRATION
ACCORDING TO PH. EUR. 2.2.6

These standards are for the calibration of refractometers prior to use.

Description	Refractive index	Pk	Cat. No.
Refractive index kit 1 (isooctane/water)	1,3915 / 1,3330	1 KIT	85757.001
Refractive index kit 2 (toluene/water)	1,4969 / 1,3330	1 KIT	85758.001



REFRACTIVE INDEX CERTIFIED REFERENCE MATERIAL AT 20 °C, 25 °C AND 30 °C

Refractive Index Certified Reference Materials (CRMs) are ideal for verification and calibration of temperature-controlled refractometers, with each CRM providing certified values for refractive index measurements at 20 °C, 25 °C and 30 °C.

- Certified in strict accordance to ISO 17025 and ISO 17034 under UKAS accreditation
- Highest level of accreditation guarantee, providing the most credible certified data available worldwide
- All measurements are fully traceable to NIST and international protocols
- Low levels of uncertainty, ensuring maximum accuracy of data at hand and dependable results
- Available in single 10 ml volume tamper-evident glass bottles or as a multi-pack of 5 per material (includes set of disposable pipettes)
- 12 month shelf life
- Manufactured in the United Kingdom

Refractive Index is measured for many reasons and is useful for multiple applications. It is a parameter that provides valuable information into determining the concentration of liquid mixtures (i.e. any dissolved mixtures), as well as provide information into the sample's purity and clarity. This is useful for identification and quality control purposes.

Many industries will use refractometers for quality control purposes, particularly within food and beverage industries, from portable hand-held machines to benchtop-based refractometers such as Abbe or automatic digital refractometers. Temperature controlled refractometers are ideal for high precision refractive index measurements. These are ideal for food, beverage, pharmaceutical, medical and petrochemical industries and applications.

UKAS ISO 17025 & ISO 17034

Description	Pack type	Packed	Pk	Nominal Refractive Index at 25 °C	Cat. No.
Refractive index certified reference material	Glass Bottle	1 × 10 ml	10 ml	1,3325	99177.100
Refractive index certified reference material	Glass Bottles	5 × 10 ml	1 SET	1,3325	99177.001
Refractive index certified reference material	Glass Bottle	1 × 10 ml	10 ml	1,3891	99178.100
Refractive index certified reference material	Glass Bottles	5 × 10 ml	1 SET	1,3891	99178.001
Refractive index certified reference material	Glass Bottle	1 × 10 ml	10 ml	1,4023	99179.100
Refractive index certified reference material	Glass Bottles	5 × 10 ml	1 SET	1,4023	99179.001
Refractive index certified reference material	Glass Bottle	1 × 10 ml	10 ml	1,4196	99180.100
Refractive index certified reference material	Glass Bottles	5 × 10 ml	1 SET	1,4196	99180.001
Refractive index certified reference material	Glass Bottle	1 × 10 ml	10 ml	1,4206	99181.100
Refractive index certified reference material	Glass Bottles	5 × 10 ml	1 SET	1,4206	99181.001
Refractive index certified reference material	Glass Bottle	1 × 10 ml	10 ml	1,4573	99182.100
Refractive index certified reference material	Glass Bottles	5 × 10 ml	1 SET	1,4573	99182.001
Refractive index certified reference material	Glass Bottle	1 × 10 ml	10 ml	1,4941	99183.100
Refractive index certified reference material	Glass Bottles	5 × 10 ml	1 SET	1,4941	99183.001
Refractive index certified reference material	Glass Bottle	1 × 10 ml	10 ml	1,5349	99184.100
Refractive index certified reference material	Glass Bottles	5 × 10 ml	1 SET	1,5349	99184.001
Refractive index certified reference material	Glass Bottle	1 × 10 ml	10 ml	1,5440	99185.100
Refractive index certified reference material	Glass Bottles	5 × 10 ml	1 SET	1,5440	99185.001
Refractive index certified reference material	Glass Bottle	1 × 10 ml	10 ml	1,6556	99186.100
Refractive index certified reference material	Glass Bottles	5 × 10 ml	1 SET	1,6556	99186.001



Sucrose (Brix) standard, stabilised

SUCROSE (BRIX) STANDARDS, STABILISED SOLUTIONS FOR REFRACTOMETRY

A range of Brix/refractive index standards for ease of use when calibrating all types of refractometers.

- Manufactured using high purity raw materials
- Contain the same raw materials as the ICUMSA range, but are stabilised to have an extended shelf life of 12 months

These products represent excellent value for users that are not required to follow ICUMSA Guidelines.

Note: The Brix scale is reported with the degree type symbol (x°) but it equates to the % concentration of the stabilised sucrose solution used.

Therefore 0° = 0% concentration

5° = 5% concentration

* The refractive index value in the table below refers to the nominal refractive index and is taken from the ICUMSA published tables for all product numbers except 87022.015 (Brix value 67,5°) which is a measured value.

Description	Refractive index	Pk	Cat. No.
Sucrose (Brix) standard, stabilised, 0°	1.332986	15 ml	87000.015
Sucrose (Brix) standard, stabilised, 5°	1.340264	15 ml	87001.015
Sucrose (Brix) standard, stabilised, 7°	1.343253	15 ml	87002.015
Sucrose (Brix) standard, stabilised, 10°	1.347824	15 ml	87003.015
Sucrose (Brix) standard, stabilised, 11,2°	1.349682	15 ml	87004.015
Sucrose (Brix) standard, stabilised, 11,5°	1.350149	15 ml	87005.015
Sucrose (Brix) standard, stabilised, 12°	1.35093	15 ml	87006.015
Sucrose (Brix) standard, stabilised, 12,5°	1.351714	15 ml	87007.015
Sucrose (Brix) standard, stabilised, 14,9°	1.355519	15 ml	87008.015
Sucrose (Brix) standard, stabilised, 15°	1.355679	15 ml	87009.015
Sucrose (Brix) standard, stabilised, 20°	1.363842	15 ml	87011.015
Sucrose (Brix) standard, stabilised, 25°	1.372328	15 ml	87012.015
Sucrose (Brix) standard, stabilised, 30°	1.381149	15 ml	87013.015
Sucrose (Brix) standard, stabilised, 35°	1.390322	15 ml	87014.015
Sucrose (Brix) standard, stabilised, 40°	1.39986	15 ml	87015.015
Sucrose (Brix) standard, stabilised, 45°	1.409777	15 ml	87016.015
Sucrose (Brix) standard, stabilised, 50°	1.420087	15 ml	87018.015
Sucrose (Brix) standard, stabilised, 55°	1.4308	15 ml	87019.015
Sucrose (Brix) standard, stabilised, 60°	1.441928	15 ml	87021.015
Sucrose (Brix) standard, stabilised, 67,5°	1.45929	15 ml	87022.015



UV/VIS standards

UV/VIS STANDARDS

For spectrophotometer calibration according to European Pharmacopoeia (Ph. Eur.)

- Absorbance control
- Testing of resolution power
- Stray light testing
- Wavelength accuracy testing

In the pharmaceutical industry, a regular check of UV/Visible spectrophotometers according to Ph. Eur. is mandatory. Even in other industries, researchers who are using UV/Vis spectrophotometers, and who are working according to e.g. GMP, GLP, USP or ISO guidelines, need to check and qualify their instruments on a regular basis.

Description	Pk	Cat. No.
UV/Vis standard 1, for absorbance control	1 KIT	86124.001
UV/Vis standard 1A, for absorbance control	1 KIT	86125.001
UV/Vis standard 2, for stray light testing	1 KIT	86126.001
UV/Vis standard 3, for stray light testing	1 KIT	86127.001
UV/Vis standard 4, for stray light testing	1 KIT	86128.001
UV/Vis standard 5, toluene solution in n-hexane for resolution testing	1 KIT	86129.001
UV/Vis standard 6, for wavelength testing	1 KIT	86130.001

UV/VIS SPECTROSCOPY STANDARDS

The checking of UV/Vis spectrophotometers is required in many industries that use standards and guidelines, such as GLP, GMP and ISO 9001, to check their analytical systems at regular intervals, and to document such checks. VWR Chemicals offer ready to use chemicals for individual analyses or sealed cuvettes that avoid any additional handling.



Linearity standards

Description	Pk	Cat. No.
Supplied in 100 ml amber glass bottles - 235, 257, 313 and 350 nm		
Blank - 0,001 M perchloric acid	-	84756.180
Potassium dichromate absorbance/transmission standard - concentration mg/l	20	84757.180
	40	84758.180
	60	84759.180
	80	84760.180
	100	84761.180
Supplied in 100 ml amber glass bottles - 213 and 261 nm		
Blank - 0,1 M hydrochloric acid	-	84767.180
Nicotinic acid absorbance/transmission standard - concentration mg/l	6	84768.180
	12	84769.180
	18	84770.180
	24	84771.180
Set contents - full sets - supplied in permanently sealed UV cuvettes		
Potassium dichromate linearity standards at 235, 257, 313 and 350 - 0 mg/l, 20 mg/l, 40 mg/l, 60 mg/l, 80 mg/l, 100 mg/l (6 permanently sealed UV cuvettes plus blank)		84750.600
Nicotinic acid linearity standard set - 0 mg/l, 6 mg/l, 12 mg/l, 18 mg/l, 24 mg/l at 213 and 261 nm (set of 5 permanently sealed UV cuvettes plus blank)		84762.600

Stray light standards

Substance	Cut-off filter wavelength (nm)	Cat. No.
Supplied in 100 ml amber glass bottles		
Stray light blank	-	84829.180
Potassium chloride	200	84789.180
Sodium chloride	205	84788.180
Lithium carbonate	227	84787.180
Sodium iodide	260	84786.180
Potassium iodide	260	84785.180
Sodium nitrite	390	84784.180
Supplied in single permanently sealed cuvettes		
Potassium chloride	200	84783.600
Sodium chloride	205	84782.600
Lithium carbonate	227	84781.600
Sodium iodide	260	84780.600
Potassium iodide	260	84779.600
Sodium nitrite	390	84778.600

Absorbance/transmission standards

Description	Pk	Cat. No.
Single cuvettes with blank - 235, 257, 313 and 350 nm		
Potassium dichromate absorbance/transmission standard - concentration mg/l	20	84751.600
	40	84752.600
	60	84753.600
	80	84754.600
	100	84755.600
Single cuvettes with blank - 213 and 261nm		
Nicotinic acid absorbance/transmission standard - concentration mg/l	6	84763.600
	12	84764.600
	18	84765.600
	24	84766.600

Wavelength standards

Substance	UV/Vis wavelength standard (nm), certified at 0,1 nm, 0,2 nm, 0,5 nm, 1,0 nm, 2,0 nm and 5 nm slit widths	Cat. No.
Supplied in 100 ml amber glass bottles		
Samarium solution	235 - 480	84776.180
Holmium oxide solution	240 - 640	84777.180
Didymium solution	298 - 865	84775.180
Supplied in single permanently sealed UV cuvette		
Samarium solution	235 - 480	84773.600
Holmium oxide solution	240 - 640	84774.600
Didymium solution	298 - 865	84772.600

Bandwidth standards

Description	Pk	Cat. No.
Supplied in 100 ml amber glass bottles		
Bandwidth standard - blank - ratio of 268,7 nm peak to 266,8 nm trough	-	84795.180
Bandwidth standard - toluene in hexane - ratio of 268,7 nm peak to 266,8 nm trough	-	84833.180
Supplied in single permanently sealed cuvettes		
Blank - ratio of 268,7 nm peak to 266,8 nm trough	Sealed cuvette	84832.600
Toluene in hexane - with blank, ratio of 268,7 nm peak to 266,8 nm trough	2 sealed cuvettes	84830.600



Potassium dichromate in Sulfuric acid

STANDARD SOLUTION SET (POTASSIUM DICHROMATE SOLUTIONS) FOR CALIBRATION OF UV-VIS SPECTROPHOTOMETERS

A set for linearity check of the absorbance of spectrophotometers.

A set of reagents for calibration of spectrophotometers, to provide the user with a range two different concentration of potassium dichromate and additional Sulfuric acid as a reference solution.

Set contains

- 1 x 250 ml Potassium dichromate 50 mg/l in H₂SO₄ (0,005 M)
- 1 x 250 ml Potassium dichromate 100 mg/l in H₂SO₄ (0,005 M)
- 2 x 250 ml Sulfuric acid (0,005 M)

Description	Pk	Cat. No.
Potassium dichromate solutions set	1 SET	85969.001



CERTIFIED REFERENCE MATERIAL, CLEVELAND OPEN CUP FLASH POINT

Flash Point Certified Reference Materials are for the verification of laboratory flash point instruments that are used in testing petroleum and derivative products. COC Flash Point Standards are tested and certified in accordance with ASTM D92 'Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester.'

- Fully certified in accordance with ISO 17025 and ISO 17034
- Highest level of accreditation guarantee, providing the most credible data currently available worldwide
- All data generated exclusively by ISO 17025 accredited independent laboratories
- Ensures good inter-laboratory correlation
- Certified in accordance with ASTM / EN or IP test method protocol
- Fully traceable to International Standards
- Supplied in tamper-evident UN compliant security pack

Flash Point Certified Reference Materials are for the verification of laboratory flash point instruments that are used in testing petroleum and derivative products. These CRMs are used for Cleveland Open Cup (ASTM D92, IP 36, ISO 2592).

UKAS ISO 17025 & ISO 17034

The flash point given in the ordering table below is the Nominal flash point - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	Flash point	Pk	Cat. No.
Certified reference material, cleveland open cup flash point	111,0 °C	1 SET	99149.001
Certified reference material, cleveland open cup flash point	161,4 °C	1 SET	99150.001
Certified reference material, cleveland open cup flash point	262,0 °C	1 SET	99151.001
Certified reference material, cleveland open cup flash point (lubricant)	256,8 °C	250 ml	99114.230

1 SET = 3x80ml



CERTIFIED REFERENCE MATERIAL, PENSKY MARTENS FLASH POINT

Flash Point Certified Reference Materials are for the verification of laboratory flash point instruments that are used in testing petroleum and derivative products. PMCC Flash Point Standards are tested and certified in accordance with ASTM D93 'Standard Test Method for Flash Point by Pensky Martens Closed Cup Tester - Procedure A'

- Fully certified in accordance with ISO 17025 and ISO 17034
- Highest level of accreditation guarantee, providing the most credible data currently available worldwide
- All data generated exclusively by ISO 17025 accredited independent laboratories
- Ensures good inter-laboratory correlation
- Certified in accordance with ASTM / EN or IP test method protocol
- Fully traceable to International Standards
- Supplied in tamper-evident UN compliant security pack

Flash Point Certified Reference Materials are for the verification of laboratory flash point instruments that are used in testing petroleum and derivative products. These CRMs are used for Pensky-Martens Closed Cup (ASTM D93, IP 34, ISO 2719).

UKAS ISO 17025 & ISO 17034

The flash point given in the ordering table below is the Nominal flash point - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	Flash point	Pk	Cat. No.
Certified reference material, Pensky-Martens flash point, diesel	56,2 °C	250 ml	99115.230
Certified reference material, Pensky-Martens flash point	76,5 °C	1 SET	99152.001
Certified reference material, Pensky-Martens flash point, lubricant	100,7 °C	250 ml	99113.230
Certified reference material, Pensky-Martens flash point	135,4 °C	1 SET	99153.001
Certified reference material, Pensky-Martens flash point, lubricant	190,5 °C	250 ml	99112.230
Certified reference material, Pensky-Martens flash point	210,5 °C	1 SET	99154.001

1 SET = 3x80ml



FLASH POINT REFERENCE STANDARD, CLEVELAND OPEN CUP

COC Flash Point Standards are tested and certified in accordance with ASTM D92 'Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester.'

- Certified according to ISO 17025 / ISO 17034 under UKAS accreditation
- One bottle per test ensures zero contamination / high end volatile loss
- Fully traceable to International Standards
- Supplied with MSDS
- Tamper-evident security packaging
- 12 Month shelf life

These UKAS certified standards are specifically designed to be used for regular instrument performance checks. Packed uniquely in 3 x 80mL 'single shot' bottles ensuring the highest level of sample integrity. An economical, time saving addition to any laboratory concerned with the generation of valid analytical test data. Typically used in, but not limited to, the analysis of petroleum products with flash points above 79°C (175°F) and below 400°C (752°F)

UKAS ISO 17025 & ISO 17034

The flash point given in the ordering table below is the Nominal flash point - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	Flash point	Test method	Pk	Cat. No.
Flash point reference standard, Cleveland Open cup	84 °C	ASTM D92	1 SET	99161.001
Flash point reference standard, Cleveland Open cup	164 °C	ASTM D92	1 SET	99162.001
Flash point reference standard, Cleveland Open cup	205 °C	ASTM D92	1 SET	99163.001
Flash point reference standard, Cleveland Open cup	259 °C	ASTM D92	1 SET	99164.001
Flash point reference standard, Cleveland Open cup	118 °C	ASTM D92	1 SET	99165.001

1 SET = 3x80ml



FLASH POINT REFERENCE STANDARD, PENSKY-MARTENS

PMCC Flash Point Standards are tested and certified in accordance with ASTM D93 'Standard Test Method for Flash Point by Pensky Martens Closed Cup Tester - Procedure A'

- Certified according to ISO 17025 / ISO 17034 under UKAS accreditation
- One bottle per test ensures zero contamination / high end volatile loss
- Fully traceable to International Standards
- Supplied with MSDS
- Tamper-evident security packaging
- 12 month shelf life

Procedure A is applicable to distillate fuels - diesels, bio-diesel blends, kerosene, heating oil, turbine fuels and lubricating oils. These UKAS certified standards are specifically designed to be used for regular instrument performance checks. Packed uniquely in 3x80 ml 'single shot' bottles ensuring the highest level of sample integrity. An economical, time saving addition to any laboratory concerned with the generation of valid analytical test data. Typically used in, but not limited to, the analysis of petroleum products with flash points above 40°C and below 360°C.

UKAS ISO 17025 & ISO 17034

The flash point given in the ordering table below is the Nominal flash point - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	Flash point	Pk	Cat. No.
Flash point reference standard, Pensky-Martens	55,0 °C	1 SET	99155.001
Flash point reference standard, Pensky-Martens	75,5 °C	1 SET	99156.001
Flash point reference standard, Pensky-Martens	109,0 °C	1 SET	99157.001
Flash point reference standard, Pensky-Martens	137,5 °C	1 SET	99158.001
Flash point reference standard, Pensky-Martens	175,0 °C	1 SET	99159.001
Flash point reference standard, Pensky-Martens	219,5 °C	1 SET	99160.001

1 SET = 3x80ml



FLASH POINT REFERENCE STANDARD, ABEL CLOSED CUP, JET AVIATION FUEL

Flash Point Certified Reference Material for the calibration and verification of laboratory instruments used in testing petroleum and derivative products for Abel Closed-Cup (IP 170, ISO 13736).

- Certified according to ISO 17025 / ISO 17034 under UKAS accreditation
- Fully traceable to International Standards
- Supplied with MSDS
- Tamper-evident security packaging
- 12 month shelf life

UKAS ISO 17025 & ISO 17034

The flash point given in the ordering table below is the Nominal flash point - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	Flash point	Test method	Pk	Cat. No.
Flash point reference standard, abel closed cup, jet aviation fuel	41,2 °C	IP 170, ISO 13736	250 ml	99116.230



FLASH POINT REFERENCE STANDARD, TAG CLOSED CUP, JET AVIATION FUEL

Flash Point Certified Reference Material for the calibration and verification of laboratory instruments used in testing petroleum and derivative products for TAG Closed Cup (ASTM D56).

- Certified according to ISO 17025 / ISO 17034 under UKAS accreditation
- Fully traceable to International Standards
- Supplied with MSDS
- Tamper-evident security packaging
- 12 month shelf life

UKAS ISO 17025 & ISO 17034

The flash point given in the ordering table below is the Nominal flash point - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	Flash point	Test method	Pk	Cat. No.
Flash point reference standard, TAG closed cup, jet aviation fuel	40,4 °C	ASTM D56	250 ml	99117.230



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Volumetric flasks for precise measurement in solution preparation and dilution are available at VWR. Select models of borosilicate glass, nalgene, or other plastics that conform to Class A or Class B requirements. Purchase volumetric flasks individually or by the case.



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PB19039-NA

VISCOSITY STANDARDS

These standards can be used for calibration, control, verification, qualification or method validation of kinematic and dynamic viscosity measurement instruments (both manual and automatic). Each standard is certified for kinematic viscosity (mm²/s, cSt), dynamic viscosity (cP) and density (g/ml) at a range of temperatures.

- Manufactured from high quality, stable base oils and additives
- Extended shelf life with secure package
- All standards observe Newtonian fluid behaviour

These standards are traceable to the ITS-90 temperature scale and the universally accepted primary standard value of the viscosity of water at 20 °C, defined as 1,0034 mm²/s (cSt) by ISO 3666.

Certified according to ASTM D2162 using Ubbelohde master viscometers and ISO 17025 accreditation for calibration.



Viscosity standards (CSt), supplied in packs of 500 ml

at 20 °C	at 25 °C	at 37,78 °C	at 40 °C	at 50 °C	Cat. No.
0,47	0,45	0,41	0,4	-	85067.260
0,74	0,7	0,61	0,6	-	85068.260
1,3	1,2	1	0,97	0,87	85069.260
2,9	2,6	2,1	2	1,7	85078.260
4,4	3,9	3	2,9	2,4	85095.260
6,7	5,8	4,2	4	3,2	85084.260
10	8,7	6	5,7	4,4	85097.260
14	12	8	7,5	5,8	85089.260
20	16	11	10	7,5	85070.260
30	24	15	14	10	85074.260
43	34	20	18	13	85092.260
59	47	27	25	18	85081.260
88	66	35	32	21	85082.260
110	87	48	44	30	85087.260
160	120	60	54	35	85098.260
210	160	83	75	50	85090.260
320	230	110	98	61	85071.260
400	300	160	140	90	85075.260
550	400	200	180	110	85093.260
790	580	280	250	160	85079.260
980	710	340	310	190	85083.260
1400	1000	470	410	250	85086.260
1800	1300	590	520	310	85099.260
2600	1800	850	750	450	85091.260
3300	2300	1100	940	560	85072.260
4900	3500	1600	1400	30	85076.260
7900	5800	2800	2500	1500	85080.260
8400	5300	1900	1600	810	85094.260
100000	64000	-	18000	8500	85077.260
19000	12000	4000	3400	1,700	85085.260
28000	17000	6000	5100	2500	85088.260
41000	25000	8000	6700	3200	85100.260
58000	36000	-	10000	4900	85073.260
77000	47000	-	13000	6100	85324.260



Viscosity standard, general purpose

GENERAL PURPOSE VISCOSITY STANDARDS

These ISO 17025 & ISO 17034 certified General Purpose Viscosity standards provide certified kinematic viscosity, dynamic viscosity and density data across temperature ranges from 20 °C to 100 °C.

- Certified in strict accordance with ASTM D2162
- Density g/ml in accordance with ASTM D1480
- For use with glass capillary viscometers, automatic viscometers and other viscosity measuring equipment
- Kinematic (cSt) & dynamic viscosity (mPa.s) given at all temperatures
- Fully traceable to National Standards
- Ensures full compliance to ASTM & IP test method protocol
- Tamper-evident security packaging

Certified in strict accordance with ASTM D2162, the primary method for viscosity standards manufacture.

These products have been tested at Primary level using master viscometers in accordance with ASTM D2162 to ensure the lowest uncertainty of measurement thus providing standards that are certified with primary level accuracy. ASTM D2162 is the only referenced method for the certification of viscosity standards when adopting ASTM test method protocol.

Certified according to ISO 17025 / ISO 17034 under UKAS accreditation.

The viscosity value given in the ordering table below is the Nominal viscosity value - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	No.	Viscosity at 25 °C	Test method	Packed	Pk	Cat. No.
Standard with certified values at 20 °C to 40 °C	N.4	0,2950 mPa.s	ASTM D2162	Glass bottle	500 ml	99444.260
Standard with certified values at 20 °C to 40 °C	N.8	0,5204 mPa.s	ASTM D2162	Glass bottle	500 ml	99445.260
Standard with certified values at 20 °C to 50 °C	N1.0	0,9525 mPa.s	ASTM D2162	Glass bottle	500 ml	99446.260
Standard with certified values at 20 °C to 60 °C	N2	2,144 mPa.s	ASTM D2162	Glass bottle	500 ml	99456.260
Standard with certified values at 20 °C to 100 °C	S3	3,291 mPa.s	ASTM D2162	Glass bottle	500 ml	99472.260
Standard with certified values at 20 °C to 100 °C	D5	4,745 mPa.s	ASTM D2162	Glass bottle	500 ml	99440.260
Standard with certified values at 20 °C to 100 °C	S6	7,442 mPa.s	ASTM D2162	Glass bottle	500 ml	99474.260
Standard with certified values at 20 °C to 100 °C	N7.5	8,559 mPa.s	ASTM D2162	Glass bottle	500 ml	99466.260
Standard with certified values at 20 °C to 100 °C	D10	10,37 mPa.s	ASTM D2162	Glass bottle	500 ml	99438.260
Standard with certified values at 20 °C to 100 °C	N10	14,42 mPa.s	ASTM D2162	Glass bottle	500 ml	99447.260
Standard with certified values at 20 °C to 100 °C	N14	20,4 mPa.s	ASTM D2162	Glass bottle	500 ml	99448.260
Standard with certified values at 20 °C to 100 °C	S20	29,04 mPa.s	ASTM D2162	Glass bottle	500 ml	99469.260
Standard with certified values at 20 °C to 100 °C	N26	48,59 mPa.s	ASTM D2162	Glass bottle	500 ml	99459.260
Standard with certified values at 20 °C to 100 °C	N35	55,36 mPa.s	ASTM D2162	Glass bottle	500 ml	99460.260
Standard with certified values at 20 °C to 100 °C	N44	71,11 mPa.s	ASTM D2162	Glass bottle	500 ml	99462.260
Standard with certified values at 20 °C to 100 °C	S60	100,7 mPa.s	ASTM D2162	Glass bottle	500 ml	99475.260
Standard with certified values at 20 °C to 100 °C	N75	124,9 mPa.s	ASTM D2162	Glass bottle	500 ml	99467.260
Standard with certified values at 20 °C to 100 °C	N100	202,6 mPa.s	ASTM D2162	Glass bottle	500 ml	99449.260
Standard with certified values at 20 °C to 100 °C	N140	258 mPa.s	ASTM D2162	Glass bottle	500 ml	99451.260
Standard with certified values at 20 °C to 100 °C	S200	392 mPa.s	ASTM D2162	Glass bottle	500 ml	99470.260
Standard with certified values at 20 °C to 100 °C	N250	488,1 mPa.s	ASTM D2162	Glass bottle	500 ml	99457.260
Standard with certified values at 20 °C to 100 °C	D500	494 mPa.s	ASTM D2162	Glass bottle	500 ml	99441.260
Standard with certified values at 20 °C to 100 °C	N350	717,4 mPa.s	ASTM D2162	Glass bottle	500 ml	99461.260
Standard with certified values at 20 °C to 100 °C	N415	796,5 mPa.s	ASTM D2162	Glass bottle	500 ml	99463.260
Standard with certified values at 20 °C to 100 °C	D1000	990,9 mPa.s	ASTM D2162	Glass bottle	500 ml	99439.260
Standard with certified values at 20 °C to 100 °C	S600	1273 mPa.s	ASTM D2162	Glass bottle	500 ml	99476.260
Standard with certified values at 20 °C to 100 °C	N750	1690 mPa.s	ASTM D2162	Glass bottle	500 ml	99468.260
Standard with certified values at 20 °C to 100 °C	N1000	2610 mPa.s	ASTM D2162	Glass bottle	500 ml	99452.260
Standard with certified values at 20 °C to 100 °C	N1400	3481 mPa.s	ASTM D2162	Glass bottle	500 ml	99453.260
Standard with certified values at 20 °C to 100 °C	S2000	4599 mPa.s	ASTM D2162	Glass bottle	500 ml	99471.260
Standard with certified values at 20 °C to 100 °C	D5000	5738 mPa.s	ASTM D2162	Glass bottle	500 ml	99442.260
Standard with certified values at 20 °C to 100 °C	N2500	6618 mPa.s	ASTM D2162	Glass bottle	500 ml	99458.260
Standard with certified values at 20 °C to 100 °C	D7500	7657 mPa.s	ASTM D2162	Glass bottle	500 ml	99443.260
Standard with certified values at 20 °C to 100 °C	N4000	10030 mPa.s	ASTM D2162	Glass bottle	500 ml	99464.260
Standard with certified values at 20 °C to 100 °C	N5100	15406 mPa.s	ASTM D2162	Glass bottle	500 ml	99465.260
Standard with certified values at 20 °C to 100 °C	S8000	19588 mPa.s	ASTM D2162	Glass bottle	500 ml	99477.260
Standard with certified values at 20 °C to 100 °C	N10200	30991 mPa.s	ASTM D2162	Glass bottle	500 ml	99450.260
Standard with certified values at 20 °C to 100 °C	N15000	40049 mPa.s	ASTM D2162	Glass bottle	500 ml	99454.260
Standard with certified values at 20 °C to 100 °C	N18000	54900 mPa.s	ASTM D2162	Glass bottle	500 ml	99455.260
Standard with certified values at 20 °C to 100 °C	S30000	72328 mPa.s	ASTM D2162	Glass bottle	500 ml	99473.260



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VISCOSITY CHECK OILS

The viscosity values for the certified viscosity check oils have been tested and certified at typical blend targets. These check oils are for the validating the performance of Cold-Cranking Simulator and Kinematic Viscometers by measuring commercially available formulated engine oils.

- Kinematic Viscosity mm²/s (cSt) in accordance with ASTM D445
- Fully traceable to National Standards
- Tamper-evident security packaging

Kinematic viscosity measurements have been made in accordance with ASTM D445, using Reference Viscometers certified in accordance with ASTM D446 and ASTM D2162.

Values for Density (ASTM D4052), CCS Dynamic Viscosity mPa.s (cP) in accordance with ASTM D5293 and Viscosity Index in accordance with ASTM D2270 are provided with documentation.

Manufactured and certified in strict accordance with the requirements of ISO 17025 and ISO 17034.

The kinematic viscosity value given in the ordering table below is the Nominal kinematic viscosity value - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	Viscosity at 40 °C	Pk	Cat. No.
Check oil 5W30	65,90 mm ² /s	500 ml	99170.260
Check oil 5W30	65,90 mm ² /s	5 L	99170.360
Check oil 10W30	67,27 mm ² /s	500 ml	99171.260

Description	Viscosity at 40 °C	Pk	Cat. No.
Check oil 10W30	67,27 mm ² /s	5 L	99171.360
Check oil 15W40	103,1 mm ² /s	500 ml	99172.260
Check oil 15W40	103,1 mm ² /s	5 L	99172.360



COLD CRANKING SIMULATOR (CCS) VISCOSITY STANDARDS

High quality CCS Viscosity Standards are ideal for the calibration and verification of analytical equipment used in Cold Cranking Simulator (CCS) testing.

- Full traceability to National Standards
- Ensures full compliance to ASTM & IP test method protocol
- Tamper-evident security packaging
- CCS kits available (Set of 8, 14 or 18)

These Cold Cranking Simulator (CCS) Viscosity Standards are for the calibration and verification of analytical equipment used in Cold Cranking Simulator (CCS) testing to ASTM D5293 and SAE Specification J300.

Certified according to ISO 17025 / ISO 17034 under UKAS accreditation.

The viscosity value given in the ordering table below is the Nominal viscosity value - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	No.	Viscosity (mPa s)	Pk	Cat. No.
CCS viscosity standard	CL08	(-35,00°C) 857,1	500 ml	99376.260
CCS viscosity standard	CL09	(-35,00°C) 1175	500 ml	99377.260
CCS viscosity standard	CL10	(-30,00°C) 896,2	500 ml	99378.260
CCS viscosity standard	CL11	(-30,00°C) 1035	500 ml	99379.260
CCS viscosity standard	CL12	(-25,00°C) 770,4	500 ml	99380.260
CCS viscosity standard	CL13	(-25,00°C) 980,1	500 ml	99381.260
CCS viscosity standard	CL14	(-20,00°C) 826,1	500 ml	99382.260
CCS viscosity standard	CL15	(-20,00°C) 921,0	500 ml	99383.260
CCS viscosity standard	CL16	(-20,00°C) 1186	500 ml	99384.260
CCS viscosity standard	CL17	(-15,00°C) 872,6	500 ml	99385.260
CCS viscosity standard	CL19	(-15,00°C) 1075	500 ml	99386.260
CCS viscosity standard	CL20	(-10,00°C) 870,7	500 ml	99387.260
CCS viscosity standard	CL22	(-10,00°C) 1030	500 ml	99388.260
CCS viscosity standard	CL24	(-10,00°C) 1211	500 ml	99389.260

Description	No.	Viscosity (mPa s)	Pk	Cat. No.
CCS viscosity standard	CL25	(-10,00°C) 1376	500 ml	99390.260
CCS viscosity standard	CL26	(-10,00°C) 1680	500 ml	99391.260
CCS viscosity standard	CL28	(-10,00°C) 2016	500 ml	99392.260
CCS viscosity standard	CL30	(-10,00°C) 2431	500 ml	99393.260
CCS viscosity standard	CL32	(-10,00°C) 3049	500 ml	99394.260
CCS viscosity standard	CL34	(-10,00°C) 3431	500 ml	99395.260
CCS viscosity standard	CL38	(-10,00°C) 4199	500 ml	99396.260
CCS viscosity standard	CL42	(-10,00°C) 4969	500 ml	99397.260
CCS viscosity standard	CL48	(-10,00°C) 6135	500 ml	99398.260
CCS viscosity standard	CL53	(-10,00°C) 7440	500 ml	99399.260
CCS viscosity standard	CL60	(-10,00°C) 9303	500 ml	99400.260
CCS viscosity standard	CL68	(-10,00°C) 11417	500 ml	99401.260
CCS viscosity standard	CL74	(-10,00°C) 12567	500 ml	99402.260

Description	No.	Type	Pk	Cat. No.
Sets				
CCS viscosity standard kit 8	VIS-CCS-8	8 Set: CL14, CL19, CL22, CL25, CL28, CL32, CL48, CL68.	1 SET	99403.001
CCS viscosity standard kit 14	VIS-CCS-14	14 Set: CL10, CL12, CL14, CL16, CL19, CL22, CL25 (2), CL28, CL32, CL38, CL48, CL60, CL68.	1 SET	99404.001
CCS viscosity standard kit 18	VIS-CCS-18	18 Set: CL08, CL09, CL10, CL11, CL12, CL13, CL14, CL15, CL16, CL19, CL22, CL25(x2), CL28, CL32, CL38, CL48 & CL60.	1 SET	99405.001



CONE AND PLATE VISCOSITY STANDARDS

High quality Cone & Plate Viscosity Standards are ideal for the paints and coatings industry.

- Kinematic viscosity certified in strict accordance with ASTM D2162 at 20 °C, 23 °C & 25 °C
- Kinematic viscosity certified in accordance with ASTM D341 at intermediate temperatures
- Density, dynamic viscosity and kinematic viscosity quoted at all temperatures
- Ensures full compliance to ASTM & IP test method protocol and full traceability to National Standards
- Tamper-evident security packaging

Certified according to ISO 17025 / ISO 17034 under UKAS accreditation. The viscosity value given in the ordering table below is the Nominal viscosity value - the actual batch values are given in the certification

Cone & plate viscosity standard 20.00 °C, 21.00 °C, 22.00 °C, 23.00 °C, 24.00 °C & 25.00 °C

No.	Viscosity at 25 °C	Test method	Pack type	Pk	Cat. No.
2162/21	14,50 mPa.s	ASTM D2162 / ASTM D341	Glass bottle	500 ml	99419.260
2162/22	28,97 mPa.s	ASTM D2162 / ASTM D342	Glass bottle	500 ml	99420.260
2162/1	56,14 mPa.s	ASTM D2162 / ASTM D343	Glass bottle	500 ml	99406.260
2162/2	75,19 mPa.s	ASTM D2162 / ASTM D344	Glass bottle	500 ml	99417.260
2162/3	100,4 mPa.s	ASTM D2162 / ASTM D345	Glass bottle	500 ml	99422.260
2162/4	150,0 mPa.s	ASTM D2162 / ASTM D346	Glass bottle	500 ml	99423.260
2162/5	200,4 mPa.s	ASTM D2162 / ASTM D347	Glass bottle	500 ml	99424.260
2162/6	250,2 mPa.s	ASTM D2162 / ASTM D348	Glass bottle	500 ml	99425.260
2162/7	300,8 mPa.s	ASTM D2162 / ASTM D349	Glass bottle	500 ml	99426.260
2162/8	351,1 mPa.s	ASTM D2162 / ASTM D350	Glass bottle	500 ml	99427.260
2162/9	391,0 mPa.s	ASTM D2162 / ASTM D351	Glass bottle	500 ml	99428.260
2162/10	498,1 mPa.s	ASTM D2162 / ASTM D352	Glass bottle	500 ml	99407.260

Cone & plate viscosity standard 20.00 °C, 21.00 °C, 22.00 °C, 23.00 °C, 24.00 °C & 25.00 °C

No.	Viscosity at 25 °C	Test method	Pack type	Pk	Cat. No.
2162/11	714,8 mPa.s	ASTM D2162 / ASTM D353	Glass bottle	500 ml	99408.260
2162/12	1008 mPa.s	ASTM D2162 / ASTM D354	Glass bottle	500 ml	99409.260
2162/13	1517 mPa.s	ASTM D2162 / ASTM D355	Glass bottle	500 ml	99410.260
2162/24	2044 mPa.s	ASTM D2162 / ASTM D356	Glass bottle	500 ml	99421.260
2162/14	2506 mPa.s	ASTM D2162 / ASTM D357	Glass bottle	500 ml	99411.260
2162/15	3993 mPa.s	ASTM D2162 / ASTM D358	Glass bottle	500 ml	99412.260
2162/16	6055 mPa.s	ASTM D2162 / ASTM D359	Glass bottle	500 ml	99413.260
2162/17	8081 mPa.s	ASTM D2162 / ASTM D360	Glass bottle	500 ml	99414.260
2162/18	10030 mPa.s	ASTM D2162 / ASTM D361	Glass bottle	500 ml	99415.260
2162/19	15166 mPa.s	ASTM D2162 / ASTM D362	Glass bottle	500 ml	99416.260
2162/20	20077 mPa.s	ASTM D2162 / ASTM D363	Glass bottle	500 ml	99418.260



FLOW CUP VISCOSITY STANDARDS

Flow Cup Viscosity Standards are specifically formulated for use with viscosity flow cups such as Ford, Shell, Zahn.

- Certified in strict accordance with ASTM D2162
- Density g/ml in accordance with ASTM D1480
- Density, dynamic viscosity and kinematic viscosity quoted at all temperatures
- Ensures full compliance to ASTM & IP test method protocol
- Full traceability to National Standards
- Tamper-evident security packaging

Certified data for kinematic viscosity, dynamic viscosity and density at 20 °C and 25 °C including relevant flow cup information.

Each standard is dual certified to ISO 17025 & ISO 17034 under UKAS.

The viscosity value given in the ordering table below is the Nominal viscosity value - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	No.	Viscosity at 20 °C	Test method	Packed	Pk	Cat. No.
Standard with certified values at 20 °C & 25 °C	C6	8,945 mPa.s	ASTM D2162	Glass bottle	500 ml	99435.260
Standard with certified values at 20 °C & 25 °C	C10	17,78 mPa.s	ASTM D2162	Glass bottle	500 ml	99429.260
Standard with certified values at 20 °C & 25 °C	C20	37,22 mPa.s	ASTM D2162	Glass bottle	500 ml	99431.260
Standard with certified values at 20 °C & 25 °C	C35	72,9 mPa.s	ASTM D2162	Glass bottle	500 ml	99433.260
Standard with certified values at 20 °C & 25 °C	C60	135,9 mPa.s	ASTM D2162	Glass bottle	500 ml	99436.260
Standard with certified values at 20 °C & 25 °C	C100	281,4 mPa.s	ASTM D2162	Glass bottle	500 ml	99430.260
Standard with certified values at 20 °C & 25 °C	C200	557,7 mPa.s	ASTM D2162	Glass bottle	500 ml	99432.260
Standard with certified values at 20 °C & 25 °C	C600	1882 mPa.s	ASTM D2162	Glass bottle	500 ml	99437.260



HIGH TEMPERATURE VISCOSITY STANDARDS

High Temperature Viscosity Standards are ideal for the calibration and verification of glass capillary viscometers and other viscosity measuring equipment where operating temperature is controlled precisely.

- Kinematic (cSt), dynamic viscosity (mPa·s) and density (g/ml) given at all temperatures
- Standard pack size is 500 ml, in tamper-evident packaging
- Fully traceable to National Standards
- Ensures full compliance to ASTM & IP test method protocol

Certified according to ISO 17025 / ISO 17034 under UKAS accreditation.

The viscosity value given in the ordering table below is the Nominal viscosity value - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	No.	Viscosity (mPa s)	Pk	Cat. No.
High temp. viscosity standard, 20 °C through to 150 °C	S6S	(60 °C) 2,935	500 ml	99491.260
High temp. viscosity standard, 20 °C through to 150 °C	S20S	(60 °C) 7,806	500 ml	99492.260
High temp. viscosity standard, 20 °C through to 150 °C	S60S	(60 °C) 20,05	500 ml	99493.260
High temp. viscosity standard, 20 °C through to 150 °C	N100S	(60 °C) 34,33	500 ml	99494.260
High temp. viscosity standard, 20 °C through to 150 °C	S200S	(60 °C) 57,98	500 ml	99495.260
High temp. viscosity standard, 20 °C through to 150 °C	S600S	(60 °C) 149,2	500 ml	99496.260
High temp. viscosity standard, 20 °C through to 150 °C	S2000S	(60 °C) 431,7	500 ml	99497.260
High temp. viscosity standard, 20 °C through to 150 °C	S8000S	(60 °C) 1533	500 ml	99498.260
High temp. viscosity standard, 20 °C through to 150 °C	S30000S	(60 °C) 4897	500 ml	99499.260
High temp. viscosity standard, 25 °C, 60 °C & 135 °C	N600	(60 °C) 149,2	500 ml	99500.260
High temp. viscosity standard, 25 °C, 60 °C & 135 °C	N2000	(60 °C) 431,7	500 ml	99501.260
High temp. viscosity standard, 100 °C, 110 °C, 120 °C, 130 °C, 140 °C & 150 °C	N100HT	(100 °C) 11,57	500 ml	99502.260
High temp. viscosity standard, 100 °C, 110 °C, 120 °C, 130 °C, 140 °C & 150 °C	S200HT	(100 °C) 17,43	500 ml	99503.260
High temp. viscosity standard, 100 °C, 110 °C, 120 °C, 130 °C, 140 °C & 150 °C	S600HT	(100 °C) 36,15	500 ml	99504.260



LOW TEMPERATURE VISCOSITY STANDARDS

Low Temperature Viscosity Standards have certified data for kinematic viscosity, dynamic viscosity and density for various low temperatures.

- Fully traceable to National Standards
- Ensures full compliance to ASTM & IP test method protocol
- Tamper-evident security packaging

Low Temperature Viscosity Standards are for the calibration and verification of glass capillary viscometers and other viscosity measuring equipment where operating temperature is controlled precisely.

Certified according to ISO 17025 / ISO 17034 under UKAS accreditation.

The viscosity value given in the ordering table below is the Nominal viscosity value - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	No.	Viscosity (mm ² /s)	Pk	Cat. No.
Standard with certified values at -20 °C and -40 °C	N2B	(-20 °C): 9,095	500 ml	99487.260
Standard with certified values at -0 °C and -20 °C	JF1-H	(-40 °C): 17,68	500 ml	99479.260
Standard with certified values at -20 °C and -40 °C	J10	(-40 °C): 894,8	500 ml	99478.260
Standard with certified values at -40 °C	N14B	(-40 °C): 19605	500 ml	99485.260
Standard with certified values at -25 °C, -30 °C, -35 °C and -40 °C	N27B	(-40 °C): 24522	500 ml	99486.260
Standard with certified values at -19 °C, -19.5 °C, -20 °C, -20.5 °C, -21 °C and -25 °C	N105B	(-20 °C): 34202	500 ml	99481.260
Standard with certified values at -24 °C, -24.5 °C, -25 °C, -25.5 °C and -26 °C	N400B	(-25 °C): 68176	500 ml	99488.260
Standard with certified values at -25 °C, -25.5 °C, -26 °C, -26.11 °C, -26.5 °C and -27 °C	N480B	(-25 °C): 148029	500 ml	99489.260
Standard with certified values at 20 °F, 10 °F, 0 °F, -10 °F, -15 °F and -20 °F	N115B	(-20 °F): 158559	500 ml	99482.260
Standard with certified values at -11 °C, -11.5 °C, -12 °C, -12.22 °C, -12.5 °C and -13 °C	N1400B	(-12 °C): 170492	500 ml	99484.260
Standard with certified values at -39 °C, -39.5 °C, -40 °C, -40.5 °C, and -41 °C	N120B	(-40 °C): 172601	500 ml	99483.260



MEDICAL GRADE VISCOSITY STANDARDS

Medical Grade Viscosity Standards provide certified dynamic viscosity data at 25 and 37 °C, are dual certified to ISO 17025 & ISO 17034 under UKAS and are ideal for the calibration and verification of viscosity measuring equipment.

- Full traceability to National Standards
- Contains anti-bacterial agent
- Tamper-evident security packaging

Certified according to ISO 17025 / ISO 17034 under UKAS accreditation.

The viscosity value given in the ordering table below is the Nominal viscosity value - the actual batch values are given in the certification documents supplied with the product and also on the label.

Medical Grade Viscosity Standard, 25.00 °C & 37.00 °C

No.	Viscosity at 25 °C	Test method	Pack type	Pk	Cat. No.
MGVS12	1,2 mPa.s	ASTM D2162	Glass bottle	100 ml	99505.180
MGVS12	1,2 mPa.s	ASTM D2163	Glass bottle	500 ml	99505.260
MGVS16	1,6 mPa.s	ASTM D2164	Glass bottle	100 ml	99506.180
MGVS16	1,6 mPa.s	ASTM D2165	Glass bottle	500 ml	99506.260
MGVS20	2,0 mPa.s	ASTM D2166	Glass bottle	100 ml	99507.180
MGVS20	2,0 mPa.s	ASTM D2167	Glass bottle	500 ml	99507.260
MGVS30	3,0 mPa.s	ASTM D2168	Glass bottle	100 ml	99508.180
MGVS30	3,0 mPa.s	ASTM D2169	Glass bottle	500 ml	99508.260
MGVS40	4,0 mPa.s	ASTM D2170	Glass bottle	100 ml	99509.180
MGVS40	4,0 mPa.s	ASTM D2171	Glass bottle	500 ml	99509.260
MGVS60	6,0 mPa.s	ASTM D2172	Glass bottle	100 ml	99510.180
MGVS60	6,0 mPa.s	ASTM D2173	Glass bottle	500 ml	99510.260
MGVS100	10,0 mPa.s	ASTM D2174	Glass bottle	100 ml	99511.180
MGVS100	10,0 mPa.s	ASTM D2175	Glass bottle	500 ml	99511.260



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MINERAL OIL ROTATIONAL VISCOSITY STANDARDS

Mineral Oil Rotational Viscosity Standards are specifically formulated for use with rotational viscometers and are dual certified to ISO 17025 & ISO 17034 under UKAS.

- Certified in strict accordance with ASTM D2162 at 20°C and 25°C
- Density g/ml in accordance with ASTM D1480 at 20°C and 25°C
- Kinematic viscosity at other temperatures are calculated in accordance with ASTM D341
- Densities at other temperatures are derived from proportional calculations of the measurements at 20°C and 25°C
- Inert glass packaging (500 ml) with tamper-evident cap provides absolute assurance of sample integrity
- Full traceability to National Standards

These mineral oil rotational viscosity standards are the first choice option where end users are unable to have silicone in their process. This range of standards provide both calibration and verification options for rotational viscometer test equipment.

Certified according to ISO 17025 / ISO 17034 under our UKAS accreditation.

The viscosity value given in the ordering table below is the Nominal viscosity value - the actual batch values are given in the certification documents supplied with the product and also on the label.

Standard with certified values at 20 °C to 25 °C

No.	Viscosity at 25 °C	Test method	Pack type	Pk	Cat. No.
RTM1	0,3051 mPa.s	ASTM D2162	Glass bottle	500 ml	99527.260
RTM2	0,5204 mPa.s	ASTM D2162	Glass bottle	500 ml	99528.260
RTM3	0,9525 mPa.s	ASTM D2162	Glass bottle	500 ml	99529.260
RTM4	2,144 mPa.s	ASTM D2162	Glass bottle	500 ml	99530.260
RTM5	3,329 mPa.s	ASTM D2162	Glass bottle	500 ml	99531.260
RTM6	4,745 mPa.s	ASTM D2162	Glass bottle	500 ml	99532.260
RTM7	7,520 mPa.s	ASTM D2162	Glass bottle	500 ml	99533.260
RTM8	10,37 mPa.s	ASTM D2162	Glass bottle	500 ml	99534.260
RTM9	14,50 mPa.s	ASTM D2162	Glass bottle	500 ml	99535.260
RTM10	20,40 mPa.s	ASTM D2162	Glass bottle	500 ml	99536.260
RTM11	29,04 mPa.s	ASTM D2162	Glass bottle	500 ml	99537.260
RTM12	55,68 mPa.s	ASTM D2162	Glass bottle	500 ml	99538.260
RTM13	75,19 mPa.s	ASTM D2162	Glass bottle	500 ml	99539.260
RTM14	101,4 mPa.s	ASTM D2162	Glass bottle	500 ml	99540.260
RTM15	150,0 mPa.s	ASTM D2162	Glass bottle	500 ml	99541.260
RTM16	203,1 mPa.s	ASTM D2162	Glass bottle	500 ml	99542.260
RTM17	250,0 mPa.s	ASTM D2162	Glass bottle	500 ml	99543.260
RTM18	300,8 mPa.s	ASTM D2162	Glass bottle	500 ml	99544.260
RTM19	351,1 mPa.s	ASTM D2162	Glass bottle	500 ml	99545.260
RTM20	389,1 mPa.s	ASTM D2162	Glass bottle	500 ml	99546.260
RTM21	494,0 mPa.s	ASTM D2162	Glass bottle	500 ml	99547.260
RTM22	719,7 mPa.s	ASTM D2162	Glass bottle	500 ml	99548.260
RTM23	796,5 mPa.s	ASTM D2162	Glass bottle	500 ml	99549.260
RTM24	1008 mPa.s	ASTM D2162	Glass bottle	500 ml	99550.260
RTM25	1260 mPa.s	ASTM D2162	Glass bottle	500 ml	99551.260
RTM26	1517 mPa.s	ASTM D2162	Glass bottle	500 ml	99552.260
RTM27	2013 mPa.s	ASTM D2162	Glass bottle	500 ml	99553.260
RTM28	2556 mPa.s	ASTM D2162	Glass bottle	500 ml	99554.260
RTM29	4024 mPa.s	ASTM D2162	Glass bottle	500 ml	99555.260
RTM30	4588 mPa.s	ASTM D2162	Glass bottle	500 ml	99556.260
RTM31	5738 mPa.s	ASTM D2162	Glass bottle	500 ml	99557.260
RTM32	6055 mPa.s	ASTM D2162	Glass bottle	500 ml	99558.260
RTM33	7657 mPa.s	ASTM D2162	Glass bottle	500 ml	99559.260
RTM34	8081 mPa.s	ASTM D2162	Glass bottle	500 ml	99560.260
RTM35	10030 mPa.s	ASTM D2162	Glass bottle	500 ml	99561.260
RTM36	15166 mPa.s	ASTM D2162	Glass bottle	500 ml	99562.260
RTM37	19588 mPa.s	ASTM D2162	Glass bottle	500 ml	99563.260
RTM38	40049 mPa.s	ASTM D2162	Glass bottle	500 ml	99564.260
RTM39	72328 mPa.s	ASTM D2162	Glass bottle	500 ml	99565.260

SILICONE ROTATIONAL VISCOSITY STANDARDS

Silicone Rotational Viscosity Standards are specifically formulated for use with equipment with minimal temperature control. Supplied in 600 ml 'ready to use' packs specially designed to eliminate cleaning of laboratory glassware, which is inherently difficult due to the nature of silicone.

- Ensures full compliance to international test method protocol
- Full traceability to National Standards
- Tamper-evident security packaging
- Safer working, less mess, less waste, higher throughput

This range of standards provide both calibration and verification options for rotational viscometer test equipment.

Certified according to ISO 17025 / ISO 17034 under UKAS accreditation.

600 ml of product supplied in a ready to use 'test in pack' container.

Note: Applicable to all spindles with the exception of the L1 spindle, further provision should be made when using the L1 spindle

The viscosity value given in the ordering table below is the Nominal viscosity value - the actual batch values are given in the certification documents supplied with the product and also on the label.



Rotational Viscosity Standard, 20.00 °C & 25.00 °C

No.	Type	Viscosity at 25 °C	Pack type	Pk	Cat. No.
VIS-RT5	Silicone	4,988 mPa.s	HDPE container	600 ml	99521.271
VIS-RT10	Silicone	10,12 mPa.s	HDPE container	600 ml	99512.271
VIS-RT50	Silicone	50,49 mPa.s	HDPE container	600 ml	99522.271
VIS-RT75	Silicone	75,53 mPa.s	HDPE container	600 ml	99526.271
VIS-RT100	Silicone	100,7 mPa.s	HDPE container	600 ml	99514.271
VIS-RT250	Silicone	251,5 mPa.s	HDPE container	600 ml	99518.271
VIS-RT350	Silicone	357,0 mPa.s	HDPE container	600 ml	99520.271
VIS-RT500	Silicone	503,9 mPa.s	HDPE container	600 ml	99523.271

No.	Type	Viscosity at 25 °C	Pack type	Pk	Cat. No.
VIS-RT1K	Silicone	1003 mPa.s	HDPE container	600 ml	99516.271
VIS-RT5K	Silicone	5034 mPa.s	HDPE container	600 ml	99524.271
VIS-RT10K	Silicone	9970 mPa.s	HDPE container	600 ml	99513.271
VIS-RT12K	Silicone	12423 mPa.s	HDPE container	600 ml	99517.271
VIS-RT30K	Silicone	30036 mPa.s	HDPE container	600 ml	99519.271
VIS-RT60K	Silicone	60139 mPa.s	HDPE container	600 ml	99525.271
VIS-RT100K	Silicone	100075 mPa.s	HDPE container	600 ml	99515.271

SMALL SAMPLE VISCOSITY STANDARDS - ASTM D7279

These standards are certified in strict accordance with ASTM D2162 at 40 °C and 100 °C under ISO 17025 and ISO 17034 accreditation and have been manufactured specifically for the users of ASTM D7279, Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids by Automated Houillon Viscometer and other similar type test equipment.

- Fully traceable to International Standards
- Ensures full compliance to ASTM & IP test method protocol
- Certified in strict accordance with ASTM D2162
- 60 ml pack is a lower volume cost effective solution
- Tamper-evident security packaging

ISO 17025 and ISO 17034 accreditation

The viscosity value given in the ordering table below is the Nominal kinematic viscosity value - the actual batch values are given in the certification documents supplied with the product and also on the label.



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Viscosity at 40 °C	Test method	Pack type	Pk	Cat. No.
10,0 cSt	ASTM D2162	Glass bottle	60 ml	99362.600
100,3 cSt	ASTM D2162	Glass bottle	60 ml	99365.600
1009 cSt	ASTM D2162	Glass bottle	60 ml	99369.600
1705 cSt	ASTM D2162	Glass bottle	60 ml	99370.600
181,3 cSt	ASTM D2162	Glass bottle	60 ml	99366.600
2,884 cSt	ASTM D2162	Glass bottle	60 ml	99360.600
2094 cSt	ASTM D2162	Glass bottle	60 ml	99371.600
23037 cSt	ASTM D2162	Glass bottle	60 ml	99375.600

Viscosity at 40 °C	Test method	Pack type	Pk	Cat. No.
3072 cSt	ASTM D2162	Glass bottle	60 ml	99374.600
31,99 cSt	ASTM D2162	Glass bottle	60 ml	99363.600
313,7 cSt	ASTM D2162	Glass bottle	60 ml	99367.600
3351 cSt	ASTM D2162	Glass bottle	60 ml	99372.600
5,697 cSt	ASTM D2162	Glass bottle	60 ml	99361.600
524,8 cSt	ASTM D2162	Glass bottle	60 ml	99368.600
54,13 cSt	ASTM D2162	Glass bottle	60 ml	99364.600
6684 cSt	ASTM D2162	Glass bottle	60 ml	99373.600

PURE WATER VISCOSITY STANDARD

Pure Water Viscosity Standard has certified data for kinematic viscosity, dynamic viscosity and density at 5 °C, 20 °C, 25 °C & 37 °C.

- Certified in strict accordance with ASTM D2162 for 20, 25 and 37 °C
- Density g/ml in accordance with ASTM D1480 for all temperatures
- For use with glass capillary viscometers, automatic viscometers and other viscosity measuring equipment
- Kinematic (cSt) & dynamic viscosity (mPa.s) given at all temperatures
- Fully traceable to National Standards
- Ensures full compliance to ASTM & IP test method protocol
- Tamper-evident security packaging

Pure Water Viscosity standards are for the calibration and verification of glass capillary viscometers and other viscosity measuring equipment where operating temperature is controlled precisely.

These standards are certified in strict accordance with ASTM D2162, the primary method for viscosity standards manufacture, for temperatures at 20 °C, 25 °C and 37 °C. These products have been tested at Primary level using master viscometers in accordance with ASTM D2162 to ensure the lowest uncertainty of measurement thus providing standards that are certified with primary level accuracy.

Certified according to ISO 17025 / ISO 17034 under UKAS accreditation.

The viscosity value given in the ordering table below is the Nominal viscosity value; the actual batch values are given in the certification documents supplied with the product and also on the label.

Standard with certified values at 5 °C, 20 °C, 25 °C & 37 °C

No.	Viscosity at 25 °C	Test method	Pack type	Pk	Cat. No.
VISC-WAT	1,0018 mPa.s	ASTM D2162	Glass bottle	100 ml	99566.180



**New Standards for
Petrochemistry brochure**

COLD FILTER PUGGING POINT (CFPP) STANDARDS, CERTIFIED REFERENCE MATERIALS

Cold Filter Plugging Point (CFPP) Certified Reference Materials are for the verification of laboratory instruments used in testing petroleum and derivative products for Cold Filter Plugging Point (CFPP) according to IP 309, EN 116 & ASTM D6371 and other equivalent test methodology.

- Tested in accordance with ASTM / EN or IP test method protocol
- Low level of uncertainty achieves maximum accuracy of data
- Supplied in tamper-evident UN compliant security pack with 12 months shelf life

Fully certified in accordance with ISO 17034 under accreditation by UKAS

Description	Temp. (°C)	Pk	Cat. No.
CFPP standard (CRM)	-21,7	250 ml	99102.230
CFPP standard (CRM)	-12,4	250 ml	99103.230

CLOUD POINT STANDARD, CERTIFIED REFERENCE MATERIAL (CRM)

Cloud Point Certified Reference Materials are for the verification of laboratory instruments used in testing petroleum and derivative products for Cloud Point according to IP 219, ISO 3015, EN 23015, ASTM D2500 and other equivalent test methodology.

- Tested in accordance with ASTM / EN or IP Test method protocol
- Low level of uncertainty achieves maximum accuracy of data
- Supplied in tamper-evident UN compliant security pack with 12 months shelf life
- Fully traceable to International Standards

IP 219, ISO 3015, EN 23015, ASTM D2500

Fully certified in accordance with UKAS and ISO/IEC 17034.

Description	Temp. (°C)	Pk	Cat. No.
Cloud point standard	-7,6 °C (nominal value)	250 ml	99104.230

DISTILLATION STANDARDS FOR THE PETROLEUM INDUSTRY, CERTIFIED REFERENCE MATERIALS

Distillation Certified Reference Materials are for the verification of laboratory instruments used in testing petroleum and derivative products for distillation at atmospheric pressure according to ASTM D86, IP 123, ISO 3405 and other such equivalent international methodology.

- Certified in accordance with ASTM / EN or IP test method protocols
- Certified by Round Robin Method using independent test laboratories ensuring good inter-laboratory correlation
- Low level of uncertainty achieves maximum accuracy of data
- Fully traceable to International Standards
- Supplied in tamper-evident bottles with 12 months shelf life

Fully certified in accordance with ISO 17034 under accreditation by UKAS



Description	Temp. (°C)	Pk	Cat. No.
Distillation standard, diesel	Nominal 152,9... 358,1	250 ml	99106.230
Distillation standard, gasoline	Nominal 26,4... 174,9	250 ml	99107.230
Distillation standard, jet aviation fuel	Nominal 148,1...260,3	250 ml	99108.230

FUEL TESTING STANDARDS - JET AVIATION FUEL

Fuel Testing Certified Reference Materials are for the verification of laboratory instruments used in testing petroleum and derivative products. This includes, but is not limited to, the analysis and measurement of: Acidity content, Sulfur content, Aniline Point, Fluorescent Indicator Adsorption (FIA) Aromatics, Freezing point.

- Highest level of accreditation guarantee, providing the most credible data currently available worldwide
- Low levels of uncertainty achieves maximum accuracy of data
- All data generated exclusively by ISO 17025 accredited independent laboratories
- Ensures good inter-laboratory correlation
- Certified in accordance with ASTM / EN or IP test method protocol
- Fully traceable to International Standards
- Tamper-evident security packaging

Fully certified in accordance with ISO 17034 under accreditation by UKAS

Description	Concentration	Test method	Temp. (°C)	Pk	Cat. No.
Acidity standard	0,0083 mg KOH/g	ASTM D3242		250 ml	99122.230
Aniline point	—	ASTM D611	58,48	250 ml	99123.230
FIA aromatics	17,7% (vol)	ASTM D1319		250 ml	99124.230
Sulfur standard	7,4 mg/kg	ASTM D3227 / IP 342 / ISO 3012		250 ml	99126.230
Freezing point	—	ASTM D2386, IP 16, ISO 3013	–55,5	250 ml	99127.230

SMOKE POINT STANDARD

Fuels Testing Certified Reference Material for the calibration and verification of laboratory instruments used in testing petroleum and derivative products for Smoke Point ASTM D1322 / IP 57.

- Certified in accordance with ASTM / EN or IP test method protocol
- Fully traceable to International Standards
- Tamper-evident security packaging

Fully certified in accordance with ISO 17034 under accreditation by UKAS

Description	Test method	Pk	Cat. No.
Smoke point standard jet aviation fuel, 24.47 mm	ASTM D1322 / IP 57	250 ml	99125.230



New Standards for Petrochemistry brochure

CETANE NUMBER STANDARD, ASTM D 613

Fuels Testing Certified Reference Material for the calibration and verification of laboratory instruments used in testing petroleum and derivative products for Cetane Number ASTM D613

- Certified in accordance with ASTM / EN or IP test method protocol
- Certified by Round Robin Method using independent test laboratories.
- Ensures good inter-laboratory correlation
- Tamper-evident security pack

Description	Test method	Pk	Cat. No.
Cetane number standard, nominal value 52,6	ASTM D613	1 L	99128.290

FUELS TESTING STANDARDS - GASOLINE

Fuels Testing Certified Reference Material for the calibration and verification of laboratory instruments used in testing petroleum and derivative products for Octane Number.

- Certified in accordance with ASTM / EN or IP test method protocol
- Certified by Round Robin Method using independent test laboratories.
- Ensures good inter-laboratory correlation
- Supplied in tamper-evident UN compliant security pack

Description	Test method	Pk	Cat. No.
Motor octane number standard, nominal value 86,9	ASTM D2700	1 L	99129.290
Research octane number standard, nominal value 98	ASTM D2699	1 L	99130.290

POUR POINT STANDARDS

Pour Point Certified Reference Materials for the verification of laboratory instruments used in testing petroleum and derivative products for Pour Point to ASTM D97, IP 15, ISO 3016 and other equivalent international test methodology.

- Highest level of accreditation guarantee, providing the most credible data currently available worldwide
- Low levels of uncertainty achieves maximum accuracy of data
- Certified in accordance with ASTM / EN or IP test method protocol
- Fully traceable to International Standards
- Tamper-evident security packaging

Fully certified in accordance with ISO 17034 under accreditation by UKAS. All data generated exclusively by ISO 17025 accredited independent laboratories.

The temperature value given in the ordering table below is the Nominal Temperature for the pour point value - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	Test method	Temp. (°C)	Pk	Cat. No.
Pour point standard, diesel	ASTM D97, IP 15, ISO 3016	-30	250 ml	99118.230
Pour point standard, lubricant	ASTM D97, IP 15, ISO 3016	-14,7	250 ml	99119.230
Pour point standard, lubricant	ASTM D97, IP 15, ISO 3016	-30,3	250 ml	99120.230
Pour point standard, lubricant	ASTM D97, IP 15, ISO 3016	-38	250 ml	99121.230



DIESEL AND LUBRICANT, MULTI-PARAMETER CERTIFIED REFERENCE MATERIALS (MPCRMS)

MPCRM's provide both calibration and verification options for laboratory test equipment, all from the same sample, with their values certified to the highest level of accreditation integrity available globally.

- Highest level of accreditation guarantee, providing the most credible certified data currently available worldwide
- Low levels of uncertainty achieves maximum accuracy of data
- Multiple test parameters provide a flexible and cost effective solution
- Fully traceable to International Standards
- Glass packaging with tamper-evident cap

Diesel: Certified for Viscosity, Density, Flash Point, Cloud Point, CFPP & Distillation using ASTM / IP and EN test method protocols

Lubricant: Certified for Viscosity, Density, Flash Point & Pour Point using ASTM / IP and EN test method protocols

Fully dual certified in accordance with ISO 17025 and ISO 17034 under accreditation by UKAS

The ordering table below provides a small sample of the data available with the documentation.

Description	Flash point	Temp. (°C)	Pk	Cat. No.
MPCRM diesel, dynamic viscosity 2,187 mPa.s	PMCC 66 °C	Cloud point: -7,4	500 ml	99100.260
MPCRM lubricant, kinematic viscosity (at 40 °C) 76,78 mPa.s	PMCC 182,6 °C	Pour point:-30,3	500 ml	99101.260



Solutions for precision

VWR® Labmax™
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Dispensers

- Unique closed-circuit air purging system
- Reagent guard valve prevents leakage
- Exclusive 360° swivel turn
- Quick, accurate volume adjustment
- Unique piston design



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PB19035-NA



CONDUCTIVITY STANDARDS, KCL

Conductivity standards in sachets in kits of 30x30ml.
Delivered with a complete Certificate of Analysis

Description	Conductivity (mS/cm)	Pk	Cat. No.
Conductivity standard (0,01 M)	1,41	1 KIT	85953.001
Conductivity standard (0,1 M)	12,88	1 KIT	85954.001

1 KIT = 30x30ml



CONDUCTIVITY STANDARD SOLUTIONS

A complete range of certified control standards with values ranging from 10 to 100 000 µS to meet all the requirements for electrochemical analysis.

- Accurate to ±1%
- Traceable to NIST, meeting Ph. Eur. and USP requirements
- Tested using INAB accredited test methods to ISO 17025

Standard values (25 °C)

Used for determining cell constant - see recommendations of instrument manufacturer for the relevant cell design.

Premium values (25 °C)

These standards are for verifying that the measuring system (instrument, probe and operator) can accurately detect sample values in the area of interest (e.g. 10 µS/cm for pharmaceutical water, or 500 000 µS/cm for environmental samples).

Description	Pk (ml)	Cat. No.
Standard values (25 °C) - (µS/cm)		
84	100	84131.180
84	500	84131.260
147	500	84132.260
1413	100	84135.180
1413	500	84135.260
1413	1000	84135.290
12880	100	84136.180
12880	500	84136.260
12880	1000	84136.290
Premium values (25 °C) - (µS/cm)		
1.3	500	84134.260
5	500	84133.260
10	500	84137.260
15	500	84107.260
20	500	84140.260
50	500	84143.260
100	500	84139.260
200	500	84145.260
500	500	84138.260
1000	500	84141.260
10000	500	84146.260
111800	500	84108.260
20000	500	84149.260
50000	500	84142.260
100000	500	84144.260
150000	500	85917.260
200000	500	85918.260
500000	500	85919.260



BUFFER SOLUTIONS, 25 °C AVS TITRINORM

- Solutions prepared from AnalAR® NORMAPUR® grade analytical reagents
- True analytical value on the label to an accuracy of $\pm 0,02$ pH units
- Traceable to SRM from NIST
- Batch number and packing date for traceability
- Buffers @ 25 °C conform to Reag. Ph. Eur.

Certificate of Analysis available from vwr.com

Analysed by an independent accredited control laboratory according to ISO EN 17025 and ISO EN 17034.

pH value	pH buffer type	Colour	Pack type	Pk	Cat. No.
1,68	Oxalate	Colourless	Plastic bottle	500 ml	85506.260
4,01	Phthalate	Colourless	Plastic bottle	500 ml	85511.260
6,87	Phosphate	Colourless	Plastic bottle	500 ml	85515.260
7,41	Phosphate	Colourless	Plastic bottle	500 ml	85516.260
9,18	Borate	Colourless	Plastic bottle	500 ml	85517.260
10,01	Carbonate	Colourless	Plastic bottle	500 ml	85518.260



BUFFER SOLUTIONS, SECONDARY STANDARDS

- Solution standardised at 25 °C, compliant with DIN 17025
- Accurate to $\pm 0,010$ pH units (except buffer 12,454 with accuracy $\pm 0,050$)
- Fully traceable for optimum pH calibration (traceable to NIST)
- Supplied with detailed Certificate of Analysis
- Temperature dependence data is printed on the labels as are batch number and expiry date

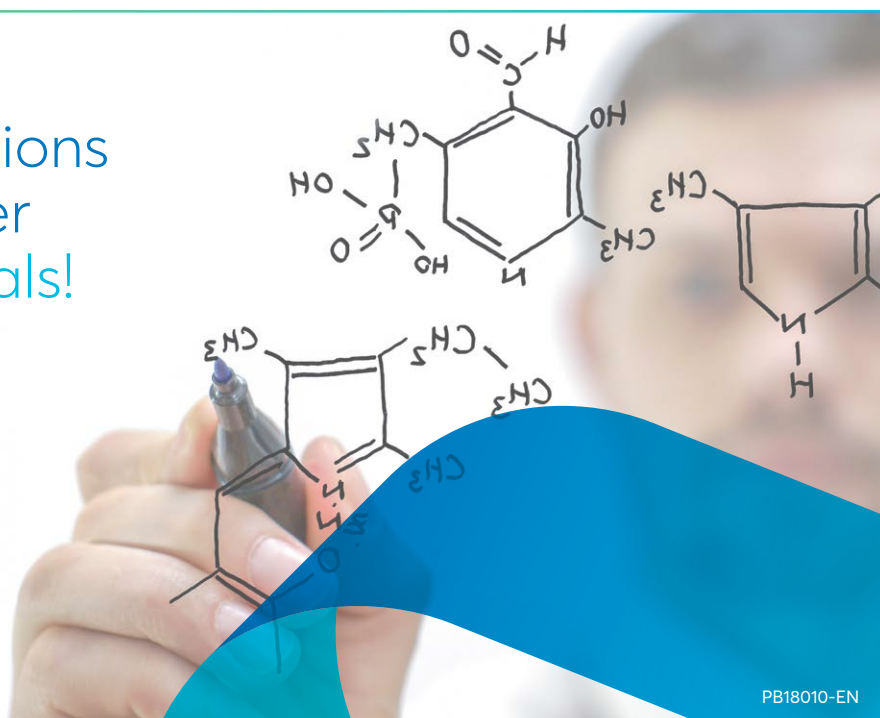
pH value	pH accuracy	Pk	Cat. No.
1,679	$\pm 0,010$	500 ml	84580.260
4,005	$\pm 0,010$	500 ml	84582.260
6,865	$\pm 0,010$	500 ml	84583.260
7,413	$\pm 0,010$	500 ml	84584.260
9,18	$\pm 0,010$	500 ml	84585.260
10,012	$\pm 0,010$	500 ml	84586.260
12,454	$\pm 0,050$	500 ml	84587.260

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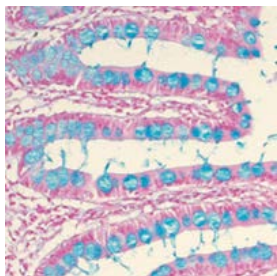


pH BUFFER SOLUTIONS IN SACHETS, 20 °C, AVS TITRINORM
FOR PH METER CALIBRATION

- Practical colour coded 30 ml sachets - one use per sachet - no risk of contamination
- Ideal for on-site analyses
- Accuracy: pH is $\pm 0,02$ at 20 °C
- Traceable to SRM from NIST

pH value	pH accuracy	pH buffer type	Colour	Pack type	Pk Info	Pk	Cat. No.
2,00	$\pm 0,02$	Citrate	Colourless	Sachet	30x30 ml	1 KIT	85937.001
4,00	$\pm 0,02$	Phthalate	Colourless	Sachet	30x30 ml	1 KIT	85041.001
6,00	$\pm 0,02$	Citrate	Colourless	Sachet	30x30 ml	1 KIT	85938.001
7,00	$\pm 0,02$	Phosphate	Colourless	Sachet	30x30 ml	1 KIT	85042.001
9,00	$\pm 0,02$	Borate	Colourless	Sachet	30x30 ml	1 KIT	85043.001
10,00	$\pm 0,02$	Borate	Colourless	Sachet	30x30 ml	1 KIT	85044.001
11,00	$\pm 0,02$	NaOH/Na ₃	Colourless	Sachet	30x30 ml	1 KIT	85950.001
12,00	$\pm 0,05$	Phosphate	Colourless	Sachet	30x30 ml	1 KIT	85951.001

pH value	Colour	Packed	Pk	Cat. No.
Assorted buffer kits				
4,00/7,00/9,00	Colourless	10x30 ml sachets of pH 4,01; 10x30 ml sachets of pH 7,00; 10x30 ml sachets of pH 9,00	1 KIT	85045.001
4,00/7,00/10,00	Colourless	10x30 ml sachets of pH 4,01; 10x30 ml sachets of pH 7,00; 10x30 ml sachets of pH 10,00	1 KIT	85046.001



BUFFER TABLETS, GURR®

- These tablets provide a rapid and convenient method of preparing a buffer solution
- Gurr® buffer tablets also for the preparation of microscopical stain solutions
- One tablet dissolved in distilled water, and made up to 100 ml, produces a solution of the stated pH at 20 °C
- The molarity of the buffer solutions is 0,005 M

Description	pH	Pk	Cat. No.
Buffer tablets	4,0 $\pm 0,02$	50 Tab.	331542Q
Buffer tablets	7,0 $\pm 0,02$	50 Tab.	331552S
Buffer tablets	9,2 $\pm 0,02$	50 Tab.	331562U

pH BUFFER CAPSULES

- Colour coded for easy identification
- Preservative-free
- Extended shelf life
- Add one capsule to 100 ml of distilled water



pH value	pH accuracy	Colour	Final volume (ml)	Packed	Pk	Cat. No.
4,01	$\pm 0,02$	Orange	100	5 plastic tubes, 10 capsules/tube	50	332732B
7,00	$\pm 0,02$	Green	100	5 plastic tubes, 10 capsules/tube	50	332742D
10,00	$\pm 0,02$	Blue	100	5 plastic tubes, 10 capsules/tube	50	332762H



BUFFER SOLUTIONS, 20 °C AVS TITRINORM

- Solutions prepared from AnalAR® NORMAPUR® grade analytical reagents
- True analytical value on the label to an accuracy of $\pm 0,02$ pH units (pH 1 to 11)
- ($\pm 0,05$ for pH 12,00 buffer)
- Traceable to SRM from NIST
- Batch number and packing date for traceability
- Certificate of Analysis available from vwr.com

Analysed by an independent accredited control laboratory according ISO EN 17025 and 17034

If significantly large volumes are required please contact your local VWR sales office for a customised offer.

* For total hardness in water

pH value	pH accuracy	pH buffer type	Colour	Packed	Pk	Cat. No.
Buffer solutions in bottles						
1,00	$\pm 0,02$	Glycine	Colourless	Plastic bottle	1 l	32031.297
2,00	$\pm 0,02$	Citrate	Colourless	Plastic bottle	1 l	32032.291
3,00	$\pm 0,02$	Citrate	Colourless	Plastic bottle	1 l	32033.294
4,00	$\pm 0,02$	Phthalate	Colourless	Plastic bottle	100 ml	32095.184
4,00	$\pm 0,02$	Phthalate	Colourless	Plastic bottle	500 ml	32095.264
4,00	$\pm 0,02$	Phthalate	Colourless	Plastic bottle	1 l	32095.297
4,00	$\pm 0,02$	Phthalate	Colourless	Plastic bottle	5 l	32095.366
4,00	$\pm 0,02$	Phthalate	Colourless	Bag-in-box (Cubitainer)	5 l	32095.377
4,00	$\pm 0,02$	Phthalate	Red	Plastic bottle	500 ml	32044.268
4,00	$\pm 0,02$	Phthalate	Red	Dosing bottle (Plastic)	1 l	32044.290
4,66	$\pm 0,02$	Acetate	Colourless	Plastic bottle	500 ml	98192.260
4,66	$\pm 0,02$	Acetate	Colourless	Plastic bottle	1 l	98192.290
5,00	$\pm 0,02$	Citrate	Colourless	Plastic bottle	1 l	32035.291
6,00	$\pm 0,02$	Citrate	Colourless	Plastic bottle	1 l	32036.294
6,88	$\pm 0,02$	Phosphate	Colourless	Plastic bottle	1 l	83601.290
7,00	$\pm 0,02$	Phosphate	Colourless	Plastic bottle	100 ml	32096.187
7,00	$\pm 0,02$	Phosphate	Colourless	Plastic bottle	500 ml	32096.267
7,00	$\pm 0,02$	Phosphate	Colourless	Plastic bottle	1 l	32096.291
7,00	$\pm 0,02$	Phosphate	Colourless	Plastic bottle	5 l	32096.360
7,00	$\pm 0,02$	Phosphate	Colourless	Bag-in-box (Cubitainer)	5 l	32096.371
7,00	$\pm 0,02$	Phosphate	Colourless	Bag-in-box (Cubitainer)	10 l	32096.400
7,00	$\pm 0,02$	Phosphate	Green	Plastic bottle	500 ml	32045.262
7,00	$\pm 0,02$	Phosphate	Green	Dosing Bottle (Plastic)	1 l	32045.290
7,00	$\pm 0,02$	Phosphate	Green	Plastic bottle	1 l	32045.295
7,00	$\pm 0,02$	Phosphate	Green	Bag-in-box (Cubitainer)	5 l	32045.375
8,00	$\pm 0,02$	Borate	Colourless	Plastic bottle	1 l	32038.291
9,00	$\pm 0,02$	Borate	Colourless	Plastic bottle	500 ml	32039.261
9,00	$\pm 0,02$	Borate	Colourless	Plastic bottle	1 l	32039.294
9,00	$\pm 0,02$	Borate	Colourless	Bag-in-box (Cubitainer)	5 l	32039.374
9,00	$\pm 0,02$	Borate	Blue	Plastic bottle	500 ml	32046.265
9,00	$\pm 0,02$	Borate	Blue	Dosing Bottle (Plastic)	1 l	32046.290
9,00	$\pm 0,02$	Borate	Blue	Plastic bottle	1 l	32046.298
9,00	$\pm 0,02$	Borate	Blue	Bag-in-box (Cubitainer)	5 l	32046.378
9,22	$\pm 0,02$	Borate	Colourless	Plastic bottle	500 ml	32097.261
9,22	$\pm 0,02$	Borate	Colourless	Plastic bottle	1 l	32097.29
10,00	$\pm 0,02$	Borate	Colourless	Plastic bottle	100 ml	32040.185
10,00	$\pm 0,02$	Borate	Colourless	Plastic bottle	500 ml	32040.260
10,00	$\pm 0,02$	Borate	Colourless	Plastic bottle	1 l	32040.298
10,00	$\pm 0,02$	Borate	Colourless	Bag-in-box (Cubitainer)	5 l	32040.378
10,00	$\pm 0,05$	Ammonia	Colourless	Plastic bottle	500 ml	98213.260
10,00	$\pm 0,02$	Borate	Yellow	Plastic bottle	500 ml	85680.260
10,00	$\pm 0,02$	Borate	Yellow	Dosing bottle (Plastic)	1 l	85680.290
10,00	$\pm 0,02$	Borate	Yellow	Plastic bottle	1 l	85680.295
11,00	$\pm 0,05$	Phosphate	Colourless	Plastic bottle	1 l	32041.292
12,00	$\pm 0,05$	Phosphate	Colourless	Plastic bottle	1 l	32042.295
Buffer solution sets						
10,00/7,00/4,00	$\pm 0,02$		Blue/green/red	Plastic bottle (3x100 ml)	1	83610.600
10,00/7,00/4,00	$\pm 0,02$		Blue/green/red	Plastic bottle (3x250 ml)	1	83610.610



SECONDARY REFERENCE STANDARD FOR VOLUMETRIC TITRATION

The VWR® range of secondary reference standards offer extraordinary purity and homogeneity and are perfectly suited for the verification of the factor for volumetric solutions.

- High purity prevents possible titration interference
- Accurately determined content decreases mistakes linked to the method
- Complete Certificate of Analysis delivered with each unit offers quality assurance
- Glass pack delivered in opaque cardboard box prevents deterioration due to light
- Traceable to NIST standards

The titre of volumetric solutions may vary over time. As a consequence it is recommended that periodical verifications are performed, especially for extremely diluted solutions or solutions that are unstable due to their chemical composition.

CAS No.	Description	Formula	Pk (g)	Cat. No.
65-85-0	Benzoic acid	$C_7H_6O_2$	80	85682.080
471-34-1	Calcium carbonate	$CaCO_3$	60	85683.060
62-76-0	di-Sodium oxalate	$Na_2C_2H_2O_4$	80	85684.080
877-24-7	Potassium hydrogen phthalate	$KC_8H_5O_4$	100	85685.100
7447-40-7	Potassium chloride	KCl	100	85686.100
7778-50-9	Potassium dichromate	$K_2Cr_2O_7$	100	85687.100
5/6/7758	Potassium iodate	KIO_3	100	85688.100
7647-14-5	Sodium chloride	NaCl	100	85689.100
497-19-8	Sodium carbonate anhydrous	Na_2CO_3	80	85734.080
77-86-1	Tris-(hydroxymethyl)-aminomethane (TRIS)	$C_4H_{11}NO_3$	80	85690.080



WATER STANDARDS FOR KARL FISCHER TITRATION

Our water standard range comprises of three parts.

Standards for coulometric Karl Fischer titrations for water in liquid petroleum.

- Packed in sets of 10x2 ml, 10x5 ml, or 5x20 ml
- Conform to ASTM D1744, E1064, D4377

Water standard	Pk	Cat. No.
Coulometric standards		
1% - 1 g contains 10,0 mg H_2O	10x4 g	85487.004
Volumetric standards		
0,5% - 1 ml methanol contains 5,0 mg H_2O	250 ml	85488.230
1% - 1 ml methanol contains 10,0 mg H_2O	500 ml	85489.260

Standards for coulometric and volumetric Karl Fischer titrations	Pk	Cat. No.
Karl Fischer water standard in liquid petroleum		
60 µg/g	10x5 ml	85482.005
	10x2 ml	85483.002
100 µg/g	10x5 ml	85483.005
	5x20 ml	85483.020
1000 µg/g	10x2 ml	85484.002
	10x5 ml	85484.005
	5x20 ml	85484.020
	10x2 ml	85485.002
5000 µg/g	10x5 ml	85485.005
	5x20 ml	85485.020

Solid standard for Karl Fischer and Karl Fischer oven	Pk	Cat. No.
di-Sodium tartrate dihydrated, secondary standard for Karl Fischer	100 g	85692.100

LACTOSE STANDARD, 5% WATER STANDARD, SOLID, FOR WATER DETERMINATION BY THE KARL FISCHER METHOD

Certified Reference Material (CRM) for calibration by Karl Fischer coulometric/volumetric titration.

The metrological traceability is assured through Karl Fischer coulometric titration. The method is tested against NIST SRM 2890. The measured water content is traceable to Si-unit (kg)

Calibration method: CRM's calibration procedure (WQP 5.15.1.26)

Description	Concentration	Pk	Cat. No.
Lactose solid standard	4,98 ± 0,03% H ₂ O	10 g	85449.100

TOTAL ACID NUMBER (TAN) STANDARDS

Total Acid Number (TAN) Standards are specifically manufactured for the verification of analytical instruments used to determine acid number by potentiometric titration. Each standard is certified in strict accordance with international test method protocols, ASTM D664 / IP 177.

- Typically used in, but not limited to, the analysis of used oils and lubricants
- Acid Number (TAN) tested and certified in accordance with ASTM D664 / IP 177
- Fully traceable to International Standards and low levels of uncertainty achieves maximum accuracy of data
- Supplied in tamper-evident glass packaging, providing assurance of sample integrity

Manufacture and certification is carried out in strict accordance with dual UKAS accreditations to ISO 17025 & ISO 17034. This dual accreditation ensures the highest level of accreditation guarantee and provides the most credible certified data available worldwide.

The concentration value given in the ordering table below is the Nominal Concentration for the TAN value - the actual batch values are given in the certification documents supplied with the product and also on the label.



Description	Concentration	Test method	Pk	Cat. No.
TAN001	0,10 mg KOH/g	ASTM D664/IP 177	125 g	99343.202
TAN001	0,10 mg KOH/g	ASTM D664/IP 177	1 SET	99343.001
TAN005	0,49 mg KOH/g	ASTM D664/IP 177	125 g	99344.202
TAN005	0,49 mg KOH/g	ASTM D664/IP 177	1 SET	99344.001
TAN010	0,99 mg KOH/g	ASTM D664/IP 177	125 g	99345.202
TAN010	0,99 mg KOH/g	ASTM D664/IP 177	1 SET	99345.001
TAN015	1,54 mg KOH/g	ASTM D664/IP 177	125 g	99346.202
TAN015	1,54 mg KOH/g	ASTM D664/IP 177	1 SET	99346.001
TAN020	2,02 mg KOH/g	ASTM D664/IP 177	50 g	99347.154

Description	Concentration	Test method	Pk	Cat. No.
TAN020	2,02 mg KOH/g	ASTM D664/IP 177	1 SET	99347.001
TAN025	2,48 mg KOH/g	ASTM D664/IP 177	50 g	99348.154
TAN025	2,48 mg KOH/g	ASTM D664/IP 177	1 SET	99348.001
TAN030	2,93 mg KOH/g	ASTM D664/IP 177	50 g	99349.154
TAN030	2,93 mg KOH/g	ASTM D664/IP 177	1 SET	99349.001
TAN050	4,57 mg KOH/g	ASTM D664/IP 177	50 g	99350.154
TAN050	4,57 mg KOH/g	ASTM D664/IP 177	1 SET	99350.001
TAN100	10,14 mg KOH/g	ASTM D664/IP 177	50 g	99351.154
TAN100	10,14 mg KOH/g	ASTM D664/IP 177	1 SET	99351.001

Add : 1 ST = 3x125 g



VWR Chemicals Karl Fischer reagents for accurate water determination

Ready to use' solutions, reagents and standards for volumetric and coulometric analyses.

- Fast, stable and accurate endpoints
- Buffered systems for controlled pH
- Long-term stability and shelf life
- Batch-to-batch reproducibility



DISCOVER
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TOTAL BASE NUMBER (TBN) STANDARDS

Total Base Number (TBN) Standards are specifically manufactured for the verification of analytical instruments used to determine base number by potentiometric titration. Each standard is certified in strict accordance with international test method protocols, ASTM D2896 / IP 276.

- Typically used in, but not limited to, the analysis of used oils and lubricants
- Base Number (BN) tested and certified in accordance with ASTM D2896 / IP 276
- Fully traceable to International Standards and low levels of uncertainty achieves maximum accuracy of data
- Supplied in tamper-evident glass packaging, providing assurance of sample integrity

Manufacture and certification is carried out in strict accordance with dual UKAS accreditations to ISO 17025 & ISO 17034. This dual accreditation ensures the highest level of accreditation guarantee and provides the most credible certified data available worldwide.

The concentration value given in the ordering table below is the Nominal Concentration for the TBN value - the actual batch values are given in the certification documents supplied with the product and also on the label.

Description	Concentration	Test method	Pk	Cat. No.
TBN1	0,99 mg KOH/g	ASTM D2896/IP 276	125 g	99352.202
TBN1	0,99 mg KOH/g	ASTM D2896/IP 276	1 SET	99352.001
TBN3	3,01 mg KOH/g	ASTM D2896/IP 276	50 g	99353.154
TBN3	3,01 mg KOH/g	ASTM D2896/IP 276	1 SET	99353.001
TBN6	6,06 mg KOH/g	ASTM D2896/IP 276	50 g	99358.154
TBN6	6,06 mg KOH/g	ASTM D2896/IP 276	1 SET	99358.001
TBN10	10,01 mg KOH/g	ASTM D2896/IP 276	50 g	99354.154
TBN10	10,01 mg KOH/g	ASTM D2896/IP 276	1 SET	99354.001
TBN15	15,17 mg KOH/g	ASTM D2896/IP 276	50 g	99355.154
TBN15	15,17 mg KOH/g	ASTM D2896/IP 276	1 SET	99355.001
TBN30	30,17 mg KOH/g	ASTM D2896/IP 276	50 g	99356.154
TBN30	30,17 mg KOH/g	ASTM D2896/IP 276	1 SET	99356.001
TBN40	40,51 mg KOH/g	ASTM D2896/IP 276	50 g	99357.154
TBN40	40,51 mg KOH/g	ASTM D2896/IP 276	1 SET	99357.001
TBN70	70,24 mg KOH/g	ASTM D2896/IP 276	50 g	99359.154
TBN70	70,24 mg KOH/g	ASTM D2896/IP 276	1 SET	99359.001

Add : 1 SET = 3x125 g



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benchtop and
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A complete line of electrochemistry
meters for all your testing and
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AVS TITRINORM® AAS STANDARDS

This classic range of AAS standards (1000 mg/l) has been extended with 37 new elements.

- Complete range of 66 different standards
- Very competitive price
- Real value $\pm 0,3\%$
- Delivered with a complete Certificate of Analysis in a single aluminium bag
- Tested according to ISO EN 17025 and ISO EN 17034
- Traceable to NIST
- Available in 100 ml and 500 ml

Element	Matrix	Cat. No.	
		Pk 100 ml	Pk 500 ml
Ag	2% HNO ₃	86659.180	86659.260
Al	2% HCl	86660.180	86660.260
As	2% HNO ₃	86661.180	86661.260
Au	2% HCl	86662.180	86662.260
B	Water	86663.180	86663.260
Ba	2% HNO ₃	86664.180	86664.260
Be	2% HCl	86665.180	86665.260
Bi	10% HNO ₃	86666.180	86666.260
Ca	2% HNO ₃	86667.180	86667.260
Cd	2% HNO ₃	86668.180	86668.260
Ce	2% HNO ₃	86669.180	86669.260
Co	2% HNO ₃	86670.180	86670.260
Cr	2% HNO ₃	86671.180	86671.260
Cs	2% HNO ₃	86672.180	86672.260
Cu	2% HNO ₃	86673.180	86673.260
Dy	2% HNO ₃	86674.180	86674.260
Er	2% HNO ₃	86675.180	86675.260
Eu	2% HNO ₃	86676.180	86676.260
Fe	2% HCl	86677.180	86677.260
Ga	2% HNO ₃	86678.180	86678.260
Gd	2% HNO ₃	86679.180	86679.260
Ge	5% HNO ₃	86680.180	86680.260
Hf	2% HNO ₃	86681.180	86681.260
Hg	10% HNO ₃	86682.180	86682.260
Ho	2% HNO ₃	86683.180	86683.260
In	2% HNO ₃	86684.180	86684.260
Ir	10% HCl	86685.180	86685.260
K	2% HNO ₃	86686.180	86686.260
La	2% HNO ₃	86687.180	86687.260
Li	2% HNO ₃	86688.180	86688.260
Mg	2% HNO ₃	86690.180	86690.260
Mn	2% HNO ₃	86691.180	86691.260
Mo	Water	86692.180	86692.260

Element	Matrix	Cat. No.	
		Pk 100 ml	Pk 500 ml
Na	2% HNO ₃	86693.180	86693.260
Nb	5% HNO ₃	86694.180	86694.260
Nd	2% HNO ₃	86695.180	86695.260
Ni	2% HNO ₃	86696.180	86696.260
Os	5% HCl	86697.180	–
P	Water	86698.180	86698.260
Pb	2% HNO ₃	86699.180	86699.260
Pd	5% HCl	86700.180	86700.260
Pt	10% HCl	86701.180	86701.260
Rb	2% HNO ₃	86702.180	86702.260
Rh	2% HNO ₃	86703.180	86703.260
Ru	5% HCl	86704.180	86704.260
S	Water	86705.180	86705.260
Sb	5% HNO ₃	86706.180	86706.260
Sc	2% HNO ₃	86707.180	86707.260
Se	2% HNO ₃	86708.180	86708.260
Si	Water	86709.180	86709.260
Sr	2% HNO ₃	86710.180	86710.260
Ta	20% HCl	86711.180	86711.260
Te	2% HNO ₃	86712.180	86712.260
Ti	5% HNO ₃	86713.180	86713.260
Tl	5% HNO ₃	86714.180	86714.260
Tm	10% HNO ₃	86715.180	86715.260
Ti	5% HNO ₃	86717.180	86717.260
Tl	2% HNO ₃	86718.180	86718.260
Tm	2% HNO ₃	86719.180	86719.260
V	2% H ₂ SO ₄	86720.180	86720.260
W	1% HNO ₃	86721.180	86721.260
Y	2% HNO ₃	86722.180	86722.260
Yb	2% HNO ₃	86723.180	86723.260
Zn	–	86724.180	86724.260
Zr	5% HCl	86725.180	86725.260
		86726.180	86726.260



ARISTAR® ICP SINGLE ELEMENT STANDARDS

- Available as 1000 ppm or 10 000 ppm in 2 packs of 100 and 500 ml
- Produced from high purity acids, water ASTM I 18 MΩ and 99,999% high purity salts
- Solution assayed by titration
- Final concentration verified against ICP standards from NIST
- Total maximum uncertainty: $\pm 1\%$
- Delivered in an aluminium bag with a complete Certificate of Analysis
- Produced by accredited supplier according to ISO EN 17025 and ISO 17034

ICP standard	Cat. No.	Cat. No.			
		ICP 1000 ppm		ICP 10 000 ppm	
Element	Composition	Pk 100 ml	Pk 500 ml	Pk 100 ml	Pk 500 ml
Aluminium	Al(NO ₃) ₃ ·9H ₂ O in HNO ₃ 2-5%	455002C	455004E	455012E	455014G
Antimony	Sb in HNO ₃ 2-5%	455022G	455024Y	-	455034K
Arsenic	As in HNO ₃ 2-5%	455042K	455044M	455052M	455054X
Barium	(Ba(NO ₃) ₂) ₂ in HNO ₃ 2-5%	455062X	455064Q	455072Q	-
Beryllium	BeO(C ₂ H ₃ O ₂) ₆ in HNO ₃ 2-5%	455082S	455084U	455092U	455094W
Bismuth	Bi in HNO ₃ 2-5%	455102F	455104H	455112H	455114J
Boron	H ₃ BO ₃ in H ₂ O and NH ₄ OH traces	455122J	455124L	455132L	455134N
Cadmium	Cd in HNO ₃ 2-5%	455142N	455144P	455152P	455154R
Calcium	CaCO ₃ in HNO ₃ 2-5%	455162R	455164T	455172T	455174V
Cerium	(NH ₄) ₂ Ce(NO ₃) ₆ in HNO ₃ 2-5%	455182V	455184A	455192A	-
Caesium	CsNO ₃ in HNO ₃ 2-5%	455202Y	455204K	455212K	455214M
Chromium	(NH ₄) ₂ Cr ₂ O ₇ in HCl 5%	455242Q	455244S	455252S	455254U
Cobalt	Co in HNO ₃ 2-5%	455262U	455264W	455272W	455274B
Copper	Cu in HNO ₃ 2-5%	455282B	455284D	455292D	455294F
Dysprosium	Dy ₂ O ₃ in HNO ₃ 2-5%	455302L	455304N	455212N	455214P
Erbium	Er ₂ O ₃ in HNO ₃ 2-5%	455322P	455324R	-	455334T
Europium	Eu ₂ O ₃ in HNO ₃ 2-5%	455342T	455344V	455352V	455354A
Gadolinium	Gd ₂ O ₃ in HNO ₃ 2-5%	455362A	455364C	455372C	455374E
Gallium	Ga in HNO ₃ 2-5%	455382E	455384G	455392G	-
Germanium	(NH ₄) ₂ GeF ₆ in H ₂ O, HF traces	455402X	455404Q	455412Q	-
Gold	Au in HCl 10%	455422S	455424U	455432U	455434W
Hafnium	HfO ₂ in HNO ₃ 2-5%, HF traces	455442W	455444B	455452B	455454D
Holmium	Ho ₂ O ₃ in HNO ₃ 2-5%	455462D	455464F	455472F	455474H
Indium	In in HNO ₃ 2-5%	455482H	455484J	455492J	-
Iridium	IrCl ₃ ·3H ₂ O in HCl 10%	455502R	455504T	-	-
Iron	Fe in HNO ₃ 2-5%	455522V	455524A	455532A	455534C
Lanthanum	La ₂ O ₃ in HNO ₃ 2-5%	455542C	455544E	-	455554G
Lead	Pb(NO ₃) ₂ in HNO ₃ 2-5%	455562G	455564Y	455572Y	455574K
Lithium	Li ₂ CO ₃ in HNO ₃ 2-5%	455582K	455584M	455592M	455594X
Lutetium	Lu ₂ O ₃ in HNO ₃ 2-5%	455602U	455604W	455612W	455614B
Magnesium	Mg in HNO ₃ 2-5%	455622B	455624D	455632D	455634F
Manganese	Mn in HNO ₃ 2-5%	455642F	455644H	455652H	455654J
Mercury	Hg in HNO ₃ 10%	455662J	455664L	455672L	455674N
Molybdenum	(NH ₄) ₂ MoO ₄ in HNO ₃ , HF traces	455682N	455684P	455692P	-
Neodymium	Nd ₂ O ₃ in HNO ₃ 2-5%	455702A	455704C	455712C	455714E
Nickel	Ni in HNO ₃ 2-5%	455722E	455724G	455732G	455734Y
Niobium	Nb ₂ O ₅ in H ₂ O, HF traces	455742Y	455744K	455752K	-
Palladium	Pd in HCl 10%	455762M	455764X	455772X	-
Phosphorus	P in H ₂ O	455782Q	455784S	455792S	455794U
Platinum	Pt in HCl 10%	455802D	455804F	455812F	-
Potassium	KNO ₃ in HNO ₃ 2-5%	455822H	455824J	455832J	455834L
Praseodymium	Pr ₆ O ₁₁ in HNO ₃ 2-5%	455842L	455844N	455852N	-
Rhenium	Re in H ₂ O, HNO ₃ traces	455862P	455864R	455872R	-
Rhodium	Rh in HCl 10%	455882T	455884V	-	-
Rubidium	RbNO ₃ in HNO ₃ 2-5%	455902G	455904Y	455912Y	-
Ruthenium	RuCl ₃ ·3H ₂ O in HCl 10%	455922K	455924M	455932M	-
Samarium	Sm ₂ O ₃ in HNO ₃ 2-5%	455942X	455944Q	455952Q	455954S
Scandium	Sc in HNO ₃ 2-5%	455962S	455964U	455972U	455974W
Selenium	Se in HNO ₃ 2-5%	455982W	455984B	455992B	-
Silicon	(NH ₄) ₂ SiF ₆ in H ₂ O, HF traces	456002G	456004Y	456012Y	-
Silver	Ag in HNO ₃ 2-5%	456022K	456024M	456032M	-
Sodium	NaNO ₃ in HNO ₃ 2-5%	456042X	456044Q	456052Q	456054S
Strontium	Sr in HNO ₃ 2-5%	456062S	-	456072U	-
Sulfur	(NH ₄) ₂ SO ₄ in H ₂ O	456082W	456084B	456092B	456094D
Tantalum	Ta in H ₂ O, HF traces	456102J	456104L	456112L	456114N
Tellurium	Te in HCl 20%	456122N	456124P	456132P	-
Terbium	Tb ₄ O ₇ in HNO ₃ 2-5%	456142R	456144T	456152T	456154V
Thallium	Tl in HNO ₃ 2-5%	456162V	456164A	456172A	456174C
Tin	Sn in HNO ₃ 2-5%, HF traces	456222Q	456224S	456232S	-
	Sn in HCl 20%	456242U	456244W	456252W	456254B
Titanium	Ti in H ₂ O, HF traces	456262B	456264D	456272D	-
Vanadium	V ₂ O ₅ in HNO ₃ 2-5%	456322T	456324V	456332V	456334A
Ytterbium	Yb ₂ O ₃ in HNO ₃ 2-5%	456342A	456344C	456352C	456354E
Yttrium	Y in HNO ₃ 2-5%	456362E	456364G	456372G	456374Y
Zinc	Zn in HNO ₃ 2-5%	456382Y	456384K	456392K	456394M
Zirconium	ZrO(NO ₃) ₂ in HNO ₃ 2-5%	456402S	456404U	456412U	456414W
Tungsten	W in H ₂ O, NH ₄ OH traces	457182G	457184Y	457172E	457174G



ICP-MS STANDARDS, ARISTAR®

- Produced from high purity acids, water ASTM I 18 MΩ
- Solution assayed by titration
- Final concentration verified against ICP standards from NIST
- Total maximum uncertainty: ±1%
- Delivered with complete Certificate of Analysis

Produced by accredited supplier in compliance with ISO EN 17034 and ISO EN 17025

Safety note: These standards are in acid solutions, for full details of hazards and specification, please see vwr.com and the links to the Safety Data Sheets (SDS) and Certificates of Analysis.

ICP-MS standard Concentration (ppm)		Cat. No. 10 ppm		Cat. No. 1000 ppm
Element	Matrix		Matrix	
Aluminum	2-5% HNO ₃	85548.180	2-5% HNO ₃	457202A
Antimony	2% HNO ₃ /0,5% HF	85560.180	2-5% HNO ₃	456632H
Arsenic	2-5% HNO ₃	85595.180	-	-
Barium	2-5% HNO ₃	85549.180	2-5% HNO ₃	456652L
Beryllium	2-5% HNO ₃	85552.180	2-5% HNO ₃	456662N
Bismuth	2-5% HNO ₃	85553.180	2-5% HNO ₃	456672P
Boron	H ₂ O/tr.NH ₄ OH	85554.180	H ₂ O/tr.NH ₄ OH	457213B
Cadmium	2-5% HNO ₃	85551.180	2-5% HNO ₃	456682R
Calcium	2-5% HNO ₃	85556.180	2-5% HNO ₃	456692T
Cerium	2% HNO ₃	85555.180	2-5% HNO ₃	457224C
Cesium	2-5% HNO ₃	85557.180	2% HNO ₃	457235D
Chromium	2% HNO ₃	85559.180	2-5% HNO ₃	-
Cobalt	2-5% HNO ₃	85558.180	2-5% HNO ₃	457062W
Copper	2-5% HNO ₃	85561.180	2-5% HNO ₃	456722Y
Dysprosium	2-5% HNO ₃	85562.180	2-5% HNO ₃	457246F
Erbium	2-5% HNO ₃	85563.180	2-5% HNO ₃	457257G
Europium	2-5% HNO ₃	85564.180	2-5% HNO ₃	457268H
Gadolinium	2-5% HNO ₃	85567.180	2-5% HNO ₃	457279J
Gallium	2-5% HNO ₃	85566.180	2-5% HNO ₃	457281A
Germanium	2% HNO ₃ /0,2% HF	85568.180	H ₂ O/tr HF	456732K
Gold	2% HCl	85550.180	10% HCl	456742M
Hafnium	2% HNO ₃ /0,5% HF	85569.180	2% HNO ₃ /0,5% HF	457292B
Holmium	2-5% HNO ₃	85571.180	2-5% HNO ₃	457303C
Indium	2-5% HNO ₃	85572.180	2-5% HNO ₃	456752X
Iridium	10% HCl	85573.180	10% HCl	457314D
Iron	2-5% HNO ₃	85565.180	2-5% HNO ₃	456762Q
Lanthanum	2-5% HNO ₃	85575.180	2-5% HNO ₃	457325E
Lead	2-5% HNO ₃	85586.180	2-5% HNO ₃	456772S
Lithium	2-5% HNO ₃	85576.180	2-5% HNO ₃	456782U
Lutetium	2-5% HNO ₃	85577.180	2-5% HNO ₃	457336F
Magnesium	2-5% HNO ₃	85578.180	2-5% HNO ₃	456792W
Manganese	2-5% HNO ₃	85579.180	2-5% HNO ₃	456802H
Mercury	5% HNO ₃	85570.180	10% HNO ₃	456812J
Molybdenum	H ₂ O/tr HF	85580.180	H ₂ O/tr.NH ₄ OH	457347G

ICP-MS standard Concentration (ppm)		Cat. No. 10 ppm		Cat. No. 1000 ppm
Element	Matrix		Matrix	
Neodymium	2-5% HNO ₃	85583.180	2-5% HNO ₃	457358H
Nickel	2-5% HNO ₃	85584.180	2-5% HNO ₃	456832N
Niobium	2% HNO ₃ /0,5% HF	85582.180	H ₂ O/tr HF	457369J
Palladium	2% HNO ₃	85587.180	10% HCl	457371K
Phosphorus	H ₂ O	85585.180	H ₂ O	456842P
Platinum	2% HCl	85589.180	10% HCl	457382L
Potassium	2-5% HNO ₃	85574.180	2-5% HNO ₃	456852R
Praseodymium	2-5% HNO ₃	85588.180	2-5% HNO ₃	457393M
Rhenium	H ₂ O/tr HNO ₃	85591.180	H ₂ O/tr HNO ₃	457404N
Rhodium	2% HCl	85592.180	10% HCl	456862T
Rubidium	2-5% HNO ₃	85590.180	2-5% HNO ₃	457415P
Ruthenium	2% HCl	85593.180	10% HCl	457426Q
Samarium	2% HNO ₃	85599.180	2-5% HNO ₃	457437R
Scandium	2% HNO ₃	85596.180	2-5% HNO ₃	456872V
Selenium	2% HNO ₃	85597.180	2-5% HNO ₃	456882A
Silicon	H ₂ O/tr HF	85598.180	H ₂ O/tr HF	457448S
Silver	2% HNO ₃	85547.180	2-5% HNO ₃	456892C
Sodium	2-5% HNO ₃	85581.180	2-5% HNO ₃	456902K
Strontium	2% HNO ₃	85631.180	2-5% HNO ₃	456912M
Sulfur	H ₂ O	85594.180	H ₂ O	456922X
Tantalum	2% HNO ₃ /0,5% HF	85632.180	H ₂ O/tr HF	457459V
Tellurium	2% HNO ₃	85634.180	20% HCl	457461A
Terbium	2% HNO ₃	85633.180	2-5% HNO ₃	456932Q
Thallium	2% HNO ₃	85639.180	2-5% HNO ₃	456942S
Thulium	2% HNO ₃	85640.180	-	-
Tin	1% HNO ₃	85630.180	2% HNO ₃ /0,5% HF	456952U
Titanium	H ₂ O/tr HF	85636.180	H ₂ O/tr HF	456962W
Tungsten	H ₂ O/tr.NH ₄ OH	85644.180	H ₂ O/tr.NH ₄ OH	457494D
Uranium	2% HNO ₃	85641.180	-	-
Vanadium	2% HNO ₃	85643.180	2-5% HNO ₃	456972B
Ytterbium	2% HNO ₃	85647.180	2-5% HNO ₃	457472B
Yttrium	2% HNO ₃	85646.180	2-5% HNO ₃	456982D
Zinc	2% HNO ₃	85648.180	2-5% HNO ₃	456992F
Zirconium	2% HNO ₃	85649.180	2-5% HNO ₃	457483C



VWR Chemicals trace analysis

All you need for metal trace analysis.

- High purity NORMATOM® acids for sample preparation
- ICP and ICP-MS single- and multi-element standard solutions
- AAS standard solutions at 1000 mg/l
- IC single- and multi-element standard solutions
- Custom manufacturing services



SEE THE
RANGE



ARISTAR® ICP AND ICP-MS MULTI-ELEMENT STANDARDS

Multi-element standards are directly traceable to NIST. A Certificate of Analysis is delivered with each product including exact data on content, composition, traceability, date of release and minimum shelf life.

Description	Cat. No.
ICP multi-element solution according USP232 dietary supplements 4 elements: Cd 5 mg/l, Pb 10 mg/l, as 15 mg/l, Hg 15 mg/l in HNO ₃ 7%	85035.180
ICP multi-element solution according USP232 oral dose 8 elements: Cd 25 mg/l, Pb 5 mg/l, as 1,5 mg/l, Hg 15 mg/l, Mo 100 mg/l, Ni 500 mg/l, V 100 mg/l, Cu 1000 mg/l in HNO ₃ 7%	85036.180
ICP multi-element solution diluted according USP232 oral dose 8 elements: Cd 2,5 mg/l, Pb 5 mg/l, as 1,5 mg/l, Hg 1,5 mg/l, Mo 10 mg/l, Ni 50 mg/l, V 10 mg/l, Cu 100 mg/l in HNO ₃ 7%	85037.180
ICP multi-element solution according USP232 parental dose 6 elements: 100 mg/l each of Ir; Pt; Os; Rh; Pd; Ru in HCl 15%	85038.180
ICP multi-element solution according USP232 parental dose 6 elements: 10 mg/l each of Ir; Pt; Os; Rh; Pd; Ru in HCl 15%	85039.180

ARISTAR® ICP and ICP-MS multi-element standards		ARISTAR® grade matrix	Pk (ml)	Cat. No.
No. Element	Composition			
-	ICP nitric acid calibration blank ARISTAR®: HNO ₃ 5% in H ₂ O	Water	500	456484N
Multi-element quality control/calibration standards for ICP				
3	K 10000 mg/l, Li 250 mg/l, Na 1000 mg/l	HNO ₃ 2%	100	456462H
4	1000 mg/l: Ba, Ca, Mg, Sr	HNO ₃ 2%	100	456472J
7	Ag 50 mg/l, Al, B, Ba, Na at 100 mg/l, K at 1000 mg/l, Si 500 mg/l	HNO ₃ 5%, HF traces	100 500	456432B 456434D
9	100 mg/l: Au, Ir, Os, Pd, Pt, Rh, Ru, Sn, Te	HCl 10%	100	84792.18
15	100 mg/l: Al, Ba, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Ni, Na, Ti, Zn	HNO ₃ 5%	100 500	456442D 456444F
19	Ag, Ni 50 mg/l, Al 100 mg/l, B, Fe 15 mg/l, Ba, Mn 5 mg/l, Be, Sr 1 mg/l, Bi, In, Pb 20 mg/l, Cd, Co, Cu, Zn 20 mg/l, Cr 25 mg/l, Ga 150 mg/l, Ti 40 mg/l	HNO ₃ 5%	100	456452F
21	100 mg/l: Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, Pb, P, Ti, Zn, Si, S	HNO ₃ 5%	100	89166.180
21	1000 mg/l: Ag, As, Al, B, Ba, Bi, Cd, Co, Cr, Cu, Fe, Ga, In, Li, Mn, Ni, Pb, Sr, Ti, Zn, Si	HNO ₃ 4%	100	87629.180
22	10 mg/l: As, Ba, Be, Cd, Co, Cr, Cu, Fe, Al, Mn, Mo, Ni, Pb, Sb, Se, Sn, Ti, Ti, V, U, Te, Zn	HNO ₃ 5%	50	88724.150
23	100 mg/l: As, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Li, Mg, Mn, Mo, Ni, Pb, Sb, Se, Sr, Ti, Ti, V, Zn	HNO ₃ 5%	100	84790.180
23	100 mg/l: As, Be, Ca, Cd, Co, Cr, Cu, Fe, Li, Mg, Mn, Mo, Ni, P, Pb, Sb, Se, Sn, Sr, Ti, Ti, V, Zn	HNO ₃ 5%, HF traces	100 500	456422W 456424B
23	1000 mg/l: Ag, Al, B, Ba, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, In, K, Li, Mg, Mn, Na, Ni, Pb, Sr, Ti, Zn	HNO ₃ 5%	100	85025.180
28	1 mg/l: Al, Ag, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sr, Ti, Ti, V, Zn	HNO ₃ 2%	100	5200.185
28	100 mg/l: Al, Ag, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Sr, Ti, Ti, V, Zn	HNO ₃ 2%	100	85006.186
32	100 mg/l: Ag, Al, Ba, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, Ge, In, K, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Re, Sb, Si, Sn, Ta, Ti, V, W, Zn	HNO ₃ 5%	100	89186.180
33	100 mg/l: Al, Ag, As, B, Ba, Be, Bi, Ca, Cd, Cs, Co, Cr, Cu, Fe, In, K, Li, Mg, Mn, Mo, Na, Ni, Nb, Pb, Rb, Sb, Se, Sr, Ti, Ti, V, U, Zn	HNO ₃ 5%	100	84791.180
24	100 mg/l each of Al; B; Ba; Be; Bi; Co; Cd; Co; Cr; Cu; Fe; Ga; K; Li; Mg; Mn; Na; N; Pb; Se; Sr; Te; Ti; Zn	HNO ₃ 2%	100	87047.180
9	100 mg/l each of As; Be; Pb; Cd; Cr; Ni; Hg; Se; Ti HNO ₃ 5%		100	87048.180
23	As 50 µl/l; B 100 µl/l; Ba 50 µl/l; Be 20 µl/l; Bi 10 µl/l; Ca 35000 µl/l; Cd 20 µl/l; Co 25 µl/l; Cr 20 µl/l; Cu 20 µl/l; Fe 100 µl/l; K 3000 µl/l; Mg 15000 µl/l; Mn 30 µl/l; Mo 100 µl/l; Na 8000 µl/l; Ni 50 µl/l; Pb 25 µl/l; Se 10 µl/l; Sr 100 µl/l; Ti 10 µl/l; V 50 µl/l; Zn 50 µl/l	HNO ₃ 5%	100	87044.180
7	Cd 10 mg/l; Cr 900 mg/l; Cu 800 mg/l; Ni 200 mg/l; Pb 900 mg/l; Zn 2500 mg/l; Hg 8mg/l	HNO ₃ 5%	100	87046.180
15	500 mg/l Al; 250 mg/l V; 100 mg/l As, Be, Co, Cr, Cu, Fe, Mn, Ni, Pb, Zn; 25 mg/l Cd, Se; 5 mg/l Hg;	HNO ₃ 5%	100	87045.180
7	100 mg/l each of Hf; Ir; Sb; Sn; Ta; Ti; Zr	HCl/tr. HF/tr.HNO ₃ 15%	100	87049.180
Multi-element quality control standards for ICP-MS				
9	100 mg/l: Be, I, Bi, Li, Cr, Mg, Co, Pb, U	HNO ₃ 5%	250	88175.230
9	10 mg/l: Be, Bi, Ce, Co, In, Pb, Mg, Ni, U	HNO ₃ 2%	100	456592Q
12	10 mg/l: Hf, Ge, Mo, Nb, Sb, Si, Sn, Ta, Te, Ti, W, Zr	HNO ₃ 2%, HF traces	100	84794.180
12	10 mg/l: B, Ge, Mo, Nb, P, Re, S, Si, Ta, Ti, W, Zr	Water	100	456522C
17	10 mg/l: Ce, Dy, Er, Eu, Gd, Ho, La, Lu, Nd, Pr, Sc, Sm, Tb, Th, Tm, Y, Yb	HNO ₃ 5%	100	456622F
25	10 mg/l: Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Th, Ti, U, V, Zn	HNO ₃ 5%	100	456602B
29	10 mg/l: Ag, Al, As, Ba, Be, Bi, Ca, Cd, Co, Cr, Cs, Cu, Fe, Ga, In, K, Li, Mg, Mn, Na, Ni, P, Rb, Se, Sr, Ti, U, V, ZN	HNO ₃ 5%	100	456502V
30	1000 mg/l: As, B, Be, Fe, Se, Zn at 100 mg/l, Ba, Bi, Cd, Co, Cr, Cu, K, Li, Mg, Mn, Mo, Na, Ni, Pb, Rb, Sr, Te, Ti, U, V at 10 mg/l/Ca	HNO ₃ 2%, HF traces	100	85026.180
36	10 mg/l: Al, Ag, As, B, Ba, Ca, Cd, Ce, Co, Cr, Cu, Dy, Er, Eu, Fe, Gd, Ho, K, La, Li, Lu, Mg, Mn, Na, Nd, Ni, P, Pb, Rb, Se, Sm, Sr, Ti, Tm, V, Zn	HNO ₃ 2%	100	84793.180
ICP-MS Tuning solutions				
8	100 mg/l: Ba, Be, Cu, In, Li, Mg, Ti, U	HNO ₃ 2%	100	456532E
13	100 mg/l: Ba, Be, Bi, Ce, Cu, Ho, In, Li, Mg, Pb, Ti, U, Y	HNO ₃ 2%	100	456542G
ICP-MS interference check				
11	Ag, C, Cr, Cu, Mn, Ni, V at 20 mg/l, As, Cd, Se, Zn at 10 mg/l	HNO ₃ 1%	100	456562K
12	Cl 18000 mg/l: Al, K, Mg, P, S 1000 mg/l, C 2000 mg/l, Ca 3000 mg/l, Fe, Na 2500 mg/l, Mo, Ti 20 mg/l	HNO ₃ 1%	100	456552Y



IC STANDARDS, ARISTAR®

Ion chromatography (IC) is used in many different industries such as food and beverage, environmental, life sciences, pharmaceutical, power generation, electronics and many more. The large number of applications includes analytes like inorganic anions and cations, organic acids, carbohydrates, amino acids, proteins, fatty acids, polysaccharides, polyphosphates, surfactants and more.

- High quality
- Complete range of 52 elements
- Available in 100 ml and also in 500 ml packs for the most commonly used materials
- Certificate of Analysis delivered with the product in individual packaging
- Traceability to NIST
- Control lab accredited to ISO EN 17034 and ISO EN 17025

Please note all products are 1000 mg/l in water unless otherwise stated.

Description	Cat. No. Pk 100 ml	Cat. No. Pk 500 ml
Acetate	84951.180	-
Ammonium	84952.180	84952.260
Ammonium (in N)	84953.180	84953.260
Barium	84954.180	-
Benzoate	84955.180	-
Bromate	84956.180	-
Bromide	84957.180	84957.260
Calcium	84958.180	-
Cesium	84959.180	-
Chlorate	84960.180	-
Chlorite 1000 mg/l in NaOH solution	84961.180	-
Chloride	84962.180	84962.260
Chromate (in Cr VI)	84963.180	-
Citrate water	84965.180	-
Fluoride	84966.180	84966.260
Formate	84967.180	-
Glycolate	84968.180	-
Hydrogenophthalate	84969.180	-
Hydrogenosulphite	84970.180	-
Iodate	84971.180	-
Iodide	84972.180	84972.260
Lactate	84973.180	-
Lithium	84974.180	-
Magnesium	84975.180	84975.260
Maleate	84976.180	-
Methane sulphonate	84977.180	-
3-Methoxypropylamine	84978.180	-

Description	Cat. No. Pk 100 ml	Cat. No. Pk 500 ml
Monoethanolamine	84979.180	-
Monomethylamine	84980.180	-
Nitrate	84981.180	84981.260
Nitrate (in N)	84982.180	84982.260
Nitilotriacetate	84983.180	-
Nitrite	84984.180	84984.260
Nitrite (in N)	84985.180	84985.260
Oxalate	84986.180	-
Perchlorate	84987.180	-
Phosphate	84988.180	84988.260
Phosphate (in P)	84989.180	84989.260
Potassium	84990.180	84990.260
Propionate	84991.180	-
Silicate	84992.180	-
Sodium	84993.180	84993.260
Strontium	84994.180	-
Succinate	84995.180	-
Sulfate	84996.180	84996.260
Sulfite (in HSO ₃ ⁻)	84997.180	84997.260
Tartrate	84998.180	-
Thiocyanate	84999.180	-
Thiosulphate 1000 mg/l in amylc alcohol	85000.180	-
Triethanolamine	85001.180	-
Triethylamine	85002.180	-
Trimethylamine	85003.180	-

MULTI-ELEMENT STANDARDS, ANIONIC, FOR ION CHROMATOGRAPHY, ARISTAR®

- Traceable to NIST
- Manufactured and tested under ISO EN 17034 and ISO EN 17025 accredited facilities
- Supplied with certificate of analysis

Description	Contents	Concentration	Pk	Cat. No
IC anion multi-element standard solution I	F, Br, PO ₄ at 1000 mg/l each	1000 mg/l	500 ml	87037.260
IC anion multi-element standard solution II	Cl, NO ₃ , SO ₄ at 1000 mg/l each	1000 mg/l	500 ml	87038.260
IC multi-element standard solution I	F 100mg/l, Cl 250 mg/l, NO ₃ and SO ₄ 500 mg/l, PO ₄ 1000 mg/l	100 - 1000 mg/l	500 ml	87039.260
IC multi-element standard solution V	F and Br 10 mg/l, NO ₃ and PO ₄ 50 mg/l, Cl 100 mg/l and SO ₄ 200 mg/l	10 - 200 mg/l	100 ml	87040.180



MULTI-ELEMENT STANDARDS, CATIONIC FOR ION CHROMATOGRAPHY, ARISTAR®

- Traceable to NIST
- Manufactured and tested in ISO EN 17034 and ISO EN 17025 accredited facilities
- Supplied with certificate of analysis
- Ion chromatography cation multi-element standard solution VII, ARISTAR® (100 mg/l: Li, Na, K, NH₄, Mn, Ca, Mg, Sr, Ba in 0.1% HNO₃)

Description	Concentration	Pk	Cat. No
Ion chromatography cation multi-element standard solution VII	100 mg/l: Ba ₂ ⁺ , Ca ₂ ⁺ , K ⁺ , Li ⁺ , Mg ₂ ⁺ , Mn ₂ ⁺ , Na ⁺ , NH ₄ ⁺ , Sr ₂ ⁺	100 ml	87041.180
Ion chromatography cation multi-element standard solution VI	100 mg/l: NH ₄ 10, K 50, Na, Ca and Mg 100 mg/l	100 ml	87042.180



SULFUR, CERTIFIED REFERENCE MATERIALS, IN LIGHT MINERAL OIL

Sulfur CRMs are suitable for calibration, verification or for use in quality control procedures used for analysing Sulfur content in petroleum products.

- Certified in strict accordance to ISO 17025 and ISO 17034 under UKAS accreditation.
- Highest level of accreditation guarantee, providing the most credible certified data available worldwide.
- Suitable for but not limited to internationally recognised test methods and protocol: ASTM D2622, ASTM D3120, ASTM D4294, ASTM D5453, ASTM D7039, IP 336, IP 496, IP 497.
- Fully traceable to International Standards and low levels of uncertainty achieves maximum accuracy of data.
- Supplied in 100 ml volume, tamper-evident glass packaging, providing assurance of sample integrity

Quantitative analysis of Sulfur in crude oil, petroleum products and feedstock is extremely important to ensure compliance with regulatory bodies and legislation, failure to do so can result in costly fines. Analysis techniques for Sulfur content measurement include wet chemistry, X-ray fluorescence, atomic spectroscopy and various thermal combustion methods with different detection limits. Regardless of the technique employed for measurement, robust analytical data is paramount, calibration and/or verification.

Convenient sets, are available for different testing criteria.

UKAS ISO 17025 & ISO 17034

Description	Concentration	Pk	Cat. No.
Sulfur in light mineral oil	0,0005 % (5ppm)	100 ml	99187.180
Sulfur in light mineral oil	0,0010 % (10ppm)	100 ml	99188.180
Sulfur in light mineral oil	0,0025 % (25ppm)	100 ml	99189.180
Sulfur in light mineral oil	0,0050 % (50ppm)	100 ml	99190.180
Sulfur in light mineral oil	0,0100 % (100ppm)	100 ml	99191.180
Sulfur in light mineral oil	0,0250 % (250ppm)	100 ml	99192.180
Sulfur in light mineral oil	0,0300 % (300ppm)	100 ml	99193.180
Sulfur in light mineral oil	0,0500 % (500ppm)	100 ml	99194.180
Sulfur in light mineral oil	0,0700 % (700ppm)	100 ml	99195.180
Sulfur in light mineral oil	0,0750 % (750ppm)	100 ml	99196.180
Sulfur in light mineral oil	0,1000 % (1000ppm)	100 ml	99197.180

Description	Concentration	Pk	Cat. No.
Sulfur in light mineral oil	0,2500 % (2500ppm)	100 ml	99198.180
Sulfur in light mineral oil	0,3000 % (3000ppm)	100 ml	99199.180
Sulfur in light mineral oil	0,5000 % (5000ppm)	100 ml	99200.180
Sulfur in light mineral oil	1,0000 % (10000ppm)	100 ml	99201.180
Sulfur in light mineral oil	1,5000 % (15000ppm)	100 ml	99202.180
Sulfur in light mineral oil	2,0000 % (20000ppm)	100 ml	99203.180
Sulfur in light mineral oil	3,0000 % (30000ppm)	100 ml	99204.180
Sulfur in light mineral oil	4,0000 % (40000ppm)	100 ml	99205.180
Sulfur in light mineral oil	5,0000 % (50000ppm)	100 ml	99206.180
Sulfur in light mineral oil	0 % (0 ppm) / Blank	100 ml	99207.180

Description	Concentration	Test method	Packed	Pk	Cat. No.
Sulfur in light mineral oil, calibration set A	Blank, 5 ppm, 10 ppm, 100 ppm, 250 ppm, 500 ppm, 750 ppm, 1000 ppm	ASTM D2622	8x100 ml	1 SET	99250.001
Sulfur in light mineral oil, calibration set B	1000 ppm, 2500 ppm, 5000 ppm, 10000 ppm	ASTM D2622	4x100 ml	1 SET	99251.001
Sulfur in light mineral oil, calibration set C	10000 ppm, 20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	ASTM D2622	5x100 ml	1 SET	99252.001
Sulfur in light mineral oil, calibration set A	Blank, 5 ppm, 10 ppm, 100 ppm, 250 ppm, 500 ppm, 750 ppm, 1000 ppm	ASTM D4294	8x100 ml	1 SET	99256.001
Sulfur in light mineral oil, calibration set B	1000 ppm, 2500 ppm, 5000 ppm, 10000 ppm	ASTM D4294	4x100 ml	1 SET	99257.001
Sulfur in light mineral oil, calibration set C	10000 ppm, 20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	ASTM D4294	5x100 ml	1 SET	99258.001
Sulfur in light mineral oil, calibration set A	Blank, 5 ppm, 50 ppm, 250 ppm, 500 ppm	ASTM D7039	5x100 ml	1 SET	99262.001
Sulfur in light mineral oil, calibration set B	Blank, 25 ppm, 100 ppm, 500 ppm, 1000 ppm, 3000 ppm	ASTM D7039	6x100 ml	1 SET	99263.001
Sulfur in light mineral oil, calibration set A	Blank, 5 ppm, 10 ppm, 25 ppm, 50 ppm	ASTM D7220	5x100 ml	1 SET	99266.001
Sulfur in light mineral oil, calibration set B	50 ppm, 100 ppm, 250 ppm, 500 ppm, 750 ppm, 1000 ppm	ASTM D7220	6x100 ml	1 SET	99267.001
Sulfur in light mineral oil, calibration set A	Blank, 300 ppm, 500 ppm, 700 ppm, 1000 ppm	IP 336	5x100 ml	1 SET	99270.001
Sulfur in light mineral oil, calibration set B	Blank, 1000 ppm, 3000 ppm, 5000 ppm	IP 336	4x100ml	1 SET	99271.001
Sulfur in light mineral oil, calibration set C	5000 ppm, 10000 ppm, 15000 ppm, 20000 ppm	IP 336	4x100ml	1 SET	99272.001
Sulfur in light mineral oil, calibration set D	20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	IP 336	4x100 ml	1 SET	99273.001
Sulfur in light mineral oil, calibration set E	Blank, 300 ppm, 500 ppm, 700 ppm, 1000 ppm, 3000 ppm, 5000 ppm	IP 336	7x100 ml	1 SET	99274.001
Sulfur in light mineral oil, calibration set F	5000 ppm, 10000 ppm, 15000 ppm, 20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	IP 336	7x100 ml	1 SET	99275.001
Sulfur in light mineral oil, calibration set A	Blank, 100 ppm, 300 ppm, 500 ppm, 700 ppm, 1000 ppm	IP 496	6x100 ml	1 SET	99282.001
Sulfur in light mineral oil, calibration set A	Blank, 50 ppm, 100 ppm, 250 ppm, 300 ppm, 500 ppm	IP 497	6x100 ml	1 SET	99284.001

SULFUR, CERTIFIED REFERENCE MATERIALS, IN HEAVY MINERAL OIL

Sulfur CRMs are suitable for calibration, verification or for use in quality control procedures used for analysing Sulfur content in petroleum products.

- Certified in strict accordance to ISO 17025 and ISO 17034 under UKAS accreditation.
- Highest level of accreditation guarantee, providing the most credible certified data available worldwide.
- Suitable for but not limited to internationally recognised test methods and protocol: ASTM D2622, ASTM D3120, ASTM D4294, ASTM D5453, ASTM D7039, IP 336, IP 496, IP 497.
- Fully traceable to International Standards and low levels of uncertainty achieves maximum accuracy of data.
- Supplied in 100 ml volume, tamper-evident glass packaging, providing assurance of sample integrity

Quantitative analysis of sulfur in crude oil, petroleum products and feedstock is extremely important to ensure compliance with regulatory bodies and legislation, failure to do so can result in costly fines. Analysis techniques for Sulfur content measurement include wet chemistry, X-ray fluorescence, atomic spectroscopy and various thermal combustion methods with different detection limits. Regardless of the technique employed for measurement, robust analytical data is paramount, calibration and/or verification.

Convenient sets, are available for different testing criteria.

UKAS ISO 17025 & ISO 17034



New Standards for
Petrochemistry brochure

Description	Concentration	Pk	Cat. No.
Sulfur in heavy mineral oil	0,0005 % (5 ppm)	100 ml	99208.180
Sulfur in heavy mineral oil	0,0010 % (10 ppm)	100 ml	99209.180
Sulfur in heavy mineral oil	0,0025 % (25 ppm)	100 ml	99210.180
Sulfur in heavy mineral oil	0,0050 % (50 ppm)	100 ml	99211.180
Sulfur in heavy mineral oil	0,0100 % (100 ppm)	100 ml	99212.180
Sulfur in heavy mineral oil	0,0250 % (250 ppm)	100 ml	99213.180
Sulfur in heavy mineral oil	0,0300 % (300 ppm)	100 ml	99214.180
Sulfur in heavy mineral oil	0,0500 % (500 ppm)	100 ml	99215.180
Sulfur in heavy mineral oil	0,0700 % (700 ppm)	100 ml	99216.180
Sulfur in heavy mineral oil	0,0750 % (750 ppm)	100 ml	99217.180
Sulfur in heavy mineral oil	0,1000 % (1000 ppm)	100 ml	99218.180

Description	Concentration	Pk	Cat. No.
Sulfur in heavy mineral oil	0,2500 % (2500 ppm)	100 ml	99219.180
Sulfur in heavy mineral oil	0,3000 % (3000 ppm)	100 ml	99220.180
Sulfur in heavy mineral oil	0,5000 % (5000 ppm)	100 ml	99221.180
Sulfur in heavy mineral oil	1,0000 % (10000 ppm)	100 ml	99222.180
Sulfur in heavy mineral oil	1,5000 % (15000 ppm)	100 ml	99223.180
Sulfur in heavy mineral oil	2,0000 % (20000 ppm)	100 ml	99224.180
Sulfur in heavy mineral oil	3,0000 % (30000 ppm)	100 ml	99225.180
Sulfur in heavy mineral oil	4,0000 % (40000 ppm)	100 ml	99226.180
Sulfur in heavy mineral oil	5,0000 % (50000 ppm)	100 ml	99227.180
Sulfur in heavy mineral oil	0 % (0 ppm) / Blank	100 ml	99228.180

Description	Concentration	Test method	Packed	Pk	Cat. No.
Sulfur in heavy mineral oil, calibration set A	Blank, 5 ppm, 10 ppm, 100 ppm, 250 ppm, 500 ppm, 750 ppm, 1000 ppm	ASTM D2622	8x100 ml	1 SET	99253.001
Sulfur in heavy mineral oil, calibration set B	1000 ppm, 2500 ppm, 5000 ppm, 10000 ppm	ASTM D2622	4x100 ml	1 SET	99254.001
Sulfur in heavy mineral oil, calibration set C	10000 ppm, 20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	ASTM D2622	5x100 ml	1 SET	99255.001
Sulfur in heavy mineral oil, calibration set A	Blank, 5 ppm, 10 ppm, 100 ppm, 250 ppm, 500 ppm, 750 ppm, 1000 ppm	ASTM D4294	8x100 ml	1 SET	99259.001
Sulfur in heavy mineral oil, calibration set B	1000 ppm, 2500 ppm, 5000 ppm, 10000 ppm	ASTM D4294	4x100 ml	1 SET	99260.001
Sulfur in heavy mineral oil, calibration set C	10000 ppm, 20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	ASTM D4294	5x100 ml	1 SET	99261.001
Sulfur in heavy mineral oil, calibration set A	Blank, 5 ppm, 50 ppm, 250 ppm, 500 ppm	ASTM D7039	5x100 ml	1 SET	99264.001
Sulfur in heavy mineral oil, calibration set B	Blank, 25 ppm, 100 ppm, 500 ppm, 1000 ppm, 3000 ppm	ASTM D7039	6x100 ml	1 SET	99265.001
Sulfur in heavy mineral oil, calibration set A	Blank, 5 ppm, 10 ppm, 25 ppm, 50 ppm	ASTM D7220	5x100 ml	1 SET	99268.001
Sulfur in heavy mineral oil, calibration set B	50 ppm, 100 ppm, 250 ppm, 500 ppm, 750 ppm, 1000 ppm	ASTM D7220	6x100 ml	1 SET	99269.001
Sulfur in heavy mineral oil, calibration set A	Blank, 300 ppm, 500 ppm, 700 ppm, 1000 ppm	IP 336	5x100 ml	1 SET	99276.001
Sulfur in heavy mineral oil, calibration set B	Blank, 1000 ppm, 3000 ppm, 5000 ppm	IP 336	4x100ml	1 SET	99277.001
Sulfur in heavy mineral oil, calibration set C	5000 ppm, 10000 ppm, 15000 ppm, 20000 ppm	IP 336	4x100ml	1 SET	99278.001
Sulfur in heavy mineral oil, calibration set D	20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	IP 336	4x100 ml	1 SET	99279.001
Sulfur in heavy mineral oil, calibration set E	Blank, 300 ppm, 500 ppm, 700 ppm, 1000 ppm, 3000 ppm, 5000 ppm	IP 336	7x100 ml	1 SET	99280.001
Sulfur in heavy mineral oil, calibration set F	5000 ppm, 10000 ppm, 15000 ppm, 20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	IP 336	7x100 ml	1 SET	99281.001
Sulfur in heavy mineral oil, calibration set A	Blank, 100 ppm, 300 ppm, 500 ppm, 700 ppm, 1000 ppm	IP 496	6x100 ml	1 SET	99283.001
Sulfur in heavy mineral oil, calibration set A	Blank, 50 ppm, 100 ppm, 250 ppm, 300 ppm, 500 ppm	IP 497	6x100 ml	1 SET	99285.001

SULFUR, CERTIFIED REFERENCE MATERIALS, IN SYNTHETIC DIESEL

CRMs are suitable for calibration, verification or for use in quality control procedures used for analysing Sulfur content in petroleum products.

- Certified in strict accordance to ISO 17025 and ISO 17034 under UKAS accreditation.
- Highest level of accreditation guarantee, providing the most credible certified data available worldwide.
- Suitable for but not limited to internationally recognised test methods and protocol: ASTM D2622, ASTM D3120, ASTM D4294, ASTM D5453, ASTM D7039, IP 336, IP 496, IP 497.
- Fully traceable to International Standards and low levels of uncertainty achieves maximum accuracy of data.
- Supplied in 100 ml volume, tamper-evident glass packaging, providing assurance of sample integrity

Quantitative analysis of Sulfur in crude oil, petroleum products and feedstock is extremely important to ensure compliance with regulatory bodies and legislation, failure to do so can result in costly fines. Analysis techniques for Sulfur content measurement include wet chemistry, X-ray fluorescence, atomic spectroscopy and various thermal combustion methods with different detection limits. Regardless of the technique employed for measurement, robust analytical data is paramount, calibration and/or verification.

Convenient sets, are available for different testing criteria.

UKAS ISO 17025 & ISO 17034

Description	Concentration	Pk	Cat. No.
Sulfur in synthetic diesel	0,0005 % (5 ppm)	100 ml	99229.180
Sulfur in synthetic diesel	0,0010 % (10 ppm)	100 ml	99230.180
Sulfur in synthetic diesel	0,0025 % (25 ppm)	100 ml	99231.180
Sulfur in synthetic diesel	0,0050 % (50 ppm)	100 ml	99232.180
Sulfur in synthetic diesel	0,0100 % (100 ppm)	100 ml	99233.180
Sulfur in synthetic diesel	0,0250 % (250 ppm)	100 ml	99234.180
Sulfur in synthetic diesel	0,0300 % (300 ppm)	100 ml	99235.180
Sulfur in synthetic diesel	0,0500 % (500 ppm)	100 ml	99236.180
Sulfur in synthetic diesel	0,0700 % (700 ppm)	100 ml	99237.180
Sulfur in synthetic diesel	0,0750 % (750 ppm)	100 ml	99238.180
Sulfur in synthetic diesel	0,1000 % (1000 ppm)	100 ml	99239.180

Description	Concentration	Pk	Cat. No.
Sulfur in synthetic diesel	0,2500 % (2500 ppm)	100 ml	99240.180
Sulfur in synthetic diesel	0,3000 % (3000 ppm)	100 ml	99241.180
Sulfur in synthetic diesel	0,5000 % (5000 ppm)	100 ml	99242.180
Sulfur in synthetic diesel	1,0000 % (10000 ppm)	100 ml	99243.180
Sulfur in synthetic diesel	1,5000 % (15000 ppm)	100 ml	99244.180
Sulfur in synthetic diesel	2,0000 % (20000 ppm)	100 ml	99245.180
Sulfur in synthetic diesel	3,0000 % (30000 ppm)	100 ml	99246.180
Sulfur in synthetic diesel	4,0000 % (40000 ppm)	100 ml	99247.180
Sulfur in synthetic diesel	5,0000 % (50000 ppm)	100 ml	99248.180
Sulfur in synthetic diesel	0 % (0 ppm) / Blank	100 ml	99249.180

Description	Concentration	Test method	Packed	Pk	Cat. No.
Sulfur in synthetic diesel, calibration set A	Blank, 5 ppm, 10 ppm, 100 ppm, 250 ppm, 500 ppm, 750 ppm, 1000 ppm	ASTM D2622	8x100 ml	1 SET	99286.001
Sulfur in synthetic diesel, calibration set B	1000 ppm, 2500 ppm, 5000 ppm, 10000 ppm	ASTM D2622	4x100 ml	1 SET	99287.001
Sulfur in synthetic diesel, calibration set C	10000 ppm, 20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	ASTM D2622	5x100 ml	1 SET	99288.001
Sulfur in synthetic diesel, calibration set A	Blank, 5 ppm, 10 ppm, 100 ppm, 250 ppm, 500 ppm, 750 ppm, 1000 ppm	ASTM D4294	8x100 ml	1 SET	99289.001
Sulfur in synthetic diesel, calibration set B	1000 ppm, 2500 ppm, 5000 ppm, 10000 ppm	ASTM D4294	4x100 ml	1 SET	99290.001
Sulfur in synthetic diesel, calibration set C	10000 ppm, 20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	ASTM D4294	5x100 ml	1 SET	99291.001
Sulfur in synthetic diesel, calibration set A	Blank, 5 ppm, 50 ppm, 250 ppm, 500 ppm	ASTM D7039	5x100 ml	1 SET	99292.001
Sulfur in synthetic diesel, calibration set B	Blank, 25 ppm, 100 ppm, 500 ppm, 1000 ppm, 3000 ppm	ASTM D7039	6x100 ml	1 SET	99293.001
Sulfur in synthetic diesel, calibration set A	Blank, 5 ppm, 10 ppm, 25 ppm, 50 ppm	ASTM D7220	5x100 ml	1 SET	99294.001
Sulfur in synthetic diesel, calibration set B	50 ppm, 100 ppm, 250 ppm, 500 ppm, 750 ppm, 1000 ppm	ASTM D7220	6x100 ml	1 SET	99295.001
Sulfur in synthetic diesel, calibration set A	Blank, 300 ppm, 500 ppm, 700 ppm, 1000 ppm	IP 336	5x100 ml	1 SET	99296.001
Sulfur in synthetic diesel, calibration set B	Blank, 1000 ppm, 3000 ppm, 5000 ppm	IP 336	4x100 ml	1 SET	99297.001
Sulfur in synthetic diesel, calibration set C	5000 ppm, 10000 ppm, 15000 ppm, 20000 ppm	IP 336	4x100 ml	1 SET	99298.001
Sulfur in synthetic diesel, calibration set D	20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	IP 336	4x100 ml	1 SET	99299.001
Sulfur in synthetic diesel, calibration set E	Blank, 300 ppm, 500 ppm, 700 ppm, 1000 ppm, 3000 ppm, 5000 ppm	IP 336	7x100 ml	1 SET	99300.001
Sulfur in synthetic diesel, calibration set F	5000 ppm, 10000 ppm, 15000 ppm, 20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	IP 336	7x100 ml	1 SET	99301.001
Sulfur in synthetic diesel, calibration set A	Blank, 100 ppm, 300 ppm, 500 ppm, 700 ppm, 1000 ppm	IP 496	6x100 ml	1 SET	99302.001
Sulfur in synthetic diesel, calibration set A	Blank, 50 ppm, 100 ppm, 250 ppm, 300 ppm, 500 ppm	IP 497	6x100 ml	1 SET	99303.001

SULFUR, CERTIFIED REFERENCE MATERIALS, IN ODOURLESS KEROSENE

Sulfur CRMs are suitable for calibration, verification or for use in quality control procedures used for analysing Sulfur content in petroleum products.

- Certified in strict accordance to ISO 17025 and ISO 17034 under UKAS accreditation.
- Highest level of accreditation guarantee, providing the most credible certified data available worldwide.
- Suitable for but not limited to internationally recognised test methods and protocol: ASTM D2622, ASTM D3120, ASTM D4294, ASTM D5453, ASTM D7039, IP 336, IP 496, IP 497.
- Fully traceable to International Standards and low levels of uncertainty achieves maximum accuracy of data.
- Supplied in 100 ml volume, tamper-evident glass packaging, providing assurance of sample integrity

Quantitative analysis of Sulfur in crude oil, petroleum products and feedstock is extremely important to ensure compliance with regulatory bodies and legislation, failure to do so can result in costly fines. Analysis techniques for Sulfur content measurement include wet chemistry, X-ray fluorescence, atomic spectroscopy and various thermal combustion methods with different detection limits. Regardless of the technique employed for measurement, robust analytical data is paramount, calibration and/or verification.

Convenient sets, are available for different testing criteria.

UKAS ISO 17025 & ISO 17034



New Standards for
Petrochemistry brochure

Description	Concentration	Pk	Cat. No.
Sulfur in odourless kerosene	0,0005 % (5 ppm)	100 ml	99304.180
Sulfur in odourless kerosene	0,0010 % (10 ppm)	100 ml	99305.180
Sulfur in odourless kerosene	0,0025 % (25 ppm)	100 ml	99306.180
Sulfur in odourless kerosene	0,0050 % (50 ppm)	100 ml	99307.180
Sulfur in odourless kerosene	0,0100 % (100 ppm)	100 ml	99308.180
Sulfur in odourless kerosene	0,0250 % (250 ppm)	100 ml	99309.180
Sulfur in odourless kerosene	0,0300 % (300 ppm)	100 ml	99310.180
Sulfur in odourless kerosene	0,0500 % (500 ppm)	100 ml	99311.180
Sulfur in odourless kerosene	0,0700 % (700 ppm)	100 ml	99312.180
Sulfur in odourless kerosene	0,0750 % (750 ppm)	100 ml	99313.180
Sulfur in odourless kerosene	0,1000 % (1000 ppm)	100 ml	99314.180

Description	Concentration	Pk	Cat. No.
Sulfur in odourless kerosene	0,2500 % (2500 ppm)	100 ml	99315.180
Sulfur in odourless kerosene	0,3000 % (3000 ppm)	100 ml	99316.180
Sulfur in odourless kerosene	0,5000 % (5000 ppm)	100 ml	99317.180
Sulfur in odourless kerosene	1,0000 % (10000 ppm)	100 ml	99318.180
Sulfur in odourless kerosene	1,5000 % (15000 ppm)	100 ml	99319.180
Sulfur in odourless kerosene	2,0000 % (20000 ppm)	100 ml	99320.180
Sulfur in odourless kerosene	3,0000 % (30000 ppm)	100 ml	99321.180
Sulfur in odourless kerosene	4,0000 % (40000 ppm)	100 ml	99322.180
Sulfur in odourless kerosene	5,0000 % (50000 ppm)	100 ml	99323.180
Sulfur in odourless kerosene	0 % (0 ppm) / Blank	100 ml	99324.180

Description	Concentration	Test method	Packed	Pk	Cat. No.
Sulfur in kerosene (odourless), calibration set A	Blank, 5 ppm, 10 ppm, 100 ppm, 250 ppm, 500 ppm, 750 ppm, 1000 ppm	ASTM D2622	8x100 ml	1 SET	99325.001
Sulfur in kerosene (odourless), calibration set B	1000 ppm, 2500 ppm, 5000 ppm, 10000 ppm	ASTM D2622	4x100 ml	1 SET	99326.001
Sulfur in kerosene (odourless), calibration set C	10000 ppm, 20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	ASTM D2622	5x100 ml	1 SET	99327.001
Sulfur in kerosene (odourless), calibration set A	Blank, 5 ppm, 10 ppm, 100 ppm, 250 ppm, 500 ppm, 750 ppm, 1000 ppm	ASTM D4294	8x100 ml	1 SET	99328.001
Sulfur in kerosene (odourless), calibration set B	1000 ppm, 2500 ppm, 5000 ppm, 10000 ppm	ASTM D4294	4x100 ml	1 SET	99329.001
Sulfur in kerosene (odourless), calibration set C	10000 ppm, 20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	ASTM D4294	5x100 ml	1 SET	99330.001
Sulfur in kerosene (odourless), calibration set A	Blank, 5 ppm, 50 ppm, 250 ppm, 500 ppm	ASTM D7039	5x100 ml	1 SET	99331.001
Sulfur in kerosene (odourless), calibration set B	Blank, 25 ppm, 100 ppm, 500 ppm, 1000 ppm, 3000 ppm	ASTM D7039	6x100 ml	1 SET	99332.001
Sulfur in kerosene (odourless), calibration set A	Blank, 5 ppm, 10 ppm, 25 ppm, 50 ppm	ASTM D7220	5x100 ml	1 SET	99333.001
Sulfur in kerosene (odourless), calibration set B	50 ppm, 100 ppm, 250 ppm, 500 ppm, 750 ppm, 1000 ppm	ASTM D7220	6x100 ml	1 SET	99334.001
Sulfur in kerosene (odourless), calibration set A	Blank, 300 ppm, 500 ppm, 700 ppm, 1000 ppm	IP 336	5x100 ml	1 SET	99335.001
Sulfur in kerosene (odourless), calibration set B	Blank, 1000 ppm, 3000 ppm, 5000 ppm	IP 336	4x100 ml	1 SET	99336.001
Sulfur in kerosene (odourless), calibration set C	5000 ppm, 10000 ppm, 15000 ppm, 20000 ppm	IP 336	4x100 ml	1 SET	99337.001
Sulfur in kerosene (odourless), calibration set D	20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	IP 336	4x100 ml	1 SET	99338.001
Sulfur in kerosene (odourless), calibration set E	Blank, 300 ppm, 500 ppm, 700 ppm, 1000 ppm, 3000 ppm, 5000 ppm	IP 336	7x100 ml	1 SET	99339.001
Sulfur in kerosene (odourless), calibration set F	5000 ppm, 10000 ppm, 15000 ppm, 20000 ppm, 30000 ppm, 40000 ppm, 50000 ppm	IP 336	7x100 ml	1 SET	99340.001
Sulfur in kerosene (odourless), calibration set A	Blank, 100 ppm, 300 ppm, 500 ppm, 700 ppm, 1000 ppm	IP 496	6x100 ml	1 SET	99341.001
Sulfur in kerosene (odourless), calibration set A	Blank, 50 ppm, 100 ppm, 250 ppm, 300 ppm, 500 ppm	IP 497	6x100 ml	1 SET	99342.001

ORGANIC REFERENCE STANDARDS

Organic standards, typically used as a reference material for gas chromatography, across a wide range of applications.

Substance	Concentration	Pk (ml)	Cat. No.
Aroclor 1260 (PCB-mixture, 60% chlorinated)	35 µg/ml in isooctane	1	122732H
Aroclor 1242 (PCB-mixture, 42% chlorinated)	1,000 µg/ml in hexane	1	122792T
Benzo[a]pyrene	50 µg/ml in toluene	1	122932N
Benzene	200 µg/ml in methanol	1	123152U
Bromomethane	200 µg/ml in methanol	1	123472K
Chloroethylene	200 µg/ml in methanol	1	123462Y
Chloroethane	200 µg/ml in methanol	1	123482M
Chlorpyrifos	100 µg/ml in methanol	1	123692U
Diazinon	100 µg/ml in methanol	1	123972C

Substance	Concentration	Pk (ml)	Cat. No.
Imidazole	1000 mg/ml in water	1	87345.290
Malathion (1,2-Bis(ethoxycarbonyl) ethyl O,O-dimethyl phosphorodithioate)	100 µg/ml in methanol	100	87345.180
Morpholine	100 µg/ml in methanol	1	124312W
	1000 mg/l in aqueous solution for ion chromatography	500	87732.260
		5x1	87496.005
		10x1	87496.010
		1x10	87496.011
Stearyl stearate	2,000 µg/ml in hexane	1x1	87496.030



SECONDARY REFERENCE STANDARDS FOR GAS CHROMATOGRAPHY, PESTINORM®

VWR offers a wide range of secondary GC solvent reference standards for various chromatographic and analytical applications.

- Purity and the specific impurity profile is determined by GC-MS and reported in the Certificate of Analysis
- Traceability data to specific current lot of primary standard
- Completely synthetic and typically over 99,9% pure by GC-FID

Assay values are reported by mass balance according to ISO/IEC 17025 which allows the secondary standard to be used as reference material for qualitative or quantitative use.

The FDA, USP and EP all recognise the use of secondary standards and working standards that are established with reference to the corresponding primary standard. PESTINORM® secondary GC standards provide a convenient and cost effective alternative to pharmacopoeia primary standards, and allow laboratories to focus resources on their core activities rather than preparing internal working standards. These standards are traceable to the current lots of USP, and if available to Ph. Eur.

VWR Certificates of Analysis will show the analytical methods for determining the purity and assay, together with the handling and storage conditions and manufacturing plus expiry dates.

Supplied in 100 ml packs

Standard for GC	Cat. No.
1,2-Dichloroethane	85657.180
1,4-Dioxan	85664.180
1-Propanol	85675.180
2,2,4-Trimethylpentane	85674.180
2-Propanol	85676.180
Acetone	85653.180
Acetonitrile	85654.180
Butyl acetate	85655.180
Cyclohexane	85656.180
Dichloromethane (DCM)	85658.180
Di-iso- propyl ether	85659.180
Dimethylsulphoxide (DMSO)	85663.180

Standard for GC	Cat. No.
Ethanol	85665.180
Ethyl acetate	85666.180
iso-Butyl methyl ketone	85673.180
Methanol	85670.180
N,N-Dimethylacetamide	85661.180
N,N-Dimethylformamide	85662.180
n-Heptane	85667.180
n-Hexane	85668.180
tert-Butyl methyl ether	85671.180
Tetrahydrofuran (THF)	85677.180
Toluene	85678.180

EXTRACTION SOLVENT STOCK SOLUTION IN AMPOULES

- Mixture of C10 (20 µl/l) and C40 (20 mg/l)
- Solvent: Hexane - petroleum ether (1:1)

Description	Pk	Cat. No.
Hydrocarbon mixture standard C10 + C40	5x1 ml	87501.005
Hydrocarbon mixture standard C10 + C40	10x1 ml	87501.010
Hydrocarbon mixture standard C10 + C40	10 ml	87501.011
Extraction solvent stock solution mixture of C10 (20 µl/l) and C40 (20 mg/l) (1x1 ml)	1 ml	87501.030



HYDROCARBON OIL INDEX DETERMINATION STANDARDS

- Designed for analysis of water and ground samples, according to the ISO 9377-2 norm
- Delivered with Certificate of Analysis, reference and batch number of source materials
- Produced in compliance with ISO 9001/2000 norm
- Packed in 1,5 and 4,5 ml Certan® bottles or 1 and 10 ml glass ampoules

Certan® bottles provide the advantage of a sealed ampoule with the flexibility of a Screw-cap bottle or a septum vial. These unique, screw-cap sample containers with a 1,2x28 mm height capillary opening are designed for the storage of volatile samples and reference standards.

Hydrocarbon oil index determination standards according to ISO 93772-2	Pk (ml)	Cat. No.	Pk (ml)	Cat. No.
	Glass ampoules		Certan® bottles	
Standard mixture of mineral oil stock	5x1	87495.005	1x1.5	87502.001
	10x1	87495.010	1x4.5	87502.002
	1x10	87495.011	3x1.5	87502.003
	1x1	87495.030	3x4.5	87502.004
Organic reference standard, Stearyl stearate 2,000 µg/ml in hexane	5x1	87496.005	1x1.5	87507.001
	10x1	87496.010	1x4.5	87507.002
	1x10	87496.011	3x1.5	87507.003
	1x1	87496.030	3x4.5	87507.004
Quality control standard mixture of mineral oils	5x1	87497.005	1x1.5	87503.001
	10x1	87497.010	1x4.5	87503.002
	1x10	87497.011	3x1.5	87503.003
	1x1	87497.030	3x4.5	87503.004
Cartridge quality control standard mixture	5x1	87498.005	1x1.5	87504.001
	10x1	87498.010	1x4.5	87504.002
	1x10	87498.011	3x1.5	87504.003
	1x1	87498.030	3x4.5	87504.004
Standard mixture of 16 n-alkanes, C ₁₀ -C ₄₀ all even for system performance test	5x1	87499.005	1x1.5	87505.001
	10x1	87499.010	1x4.5	87505.002
	1x10	87499.011	3x1.5	87505.003
	1x1	87499.030	3x4.5	87505.004
Standard mixture of 4 n-alkanes in ampoules for determination of oil index according to ISO9377-2	10x1	87500.010	1x1.5	87506.001
	1x1	87500.030	1x4.5	87506.002
	1x10	87500.011	3x1.5	87506.003
	5x1	87500.005	3x4.5	87506.004

RESIDUAL SOLVENTS STANDARDS ACCORDING TO ICH GUIDELINES

The level of volatile organic solvents in pharmaceutical raw materials or finished product is defined and monitored in accordance with ICH guidelines. Residual solvents are classified according to their risk assessment as Class 1, Class 2 or Class 3.

A selection of residual solvent standards is now available from VWR.

- Conforms to the latest Ph. Eur. edition
- Conforms to ICH guidelines
- Delivered with comprehensive Certificate of Analysis
- Packed in 1 ml or 1,5 ml glass ampoules



Residual solvent standards according to ICH guidelines	Pk(ml)	Cat. No.
Residual Solvents Class 3 acc. to Ph Eur Ver 10 and USP 467 MIX A: 23 components; 5000 mg/l each of n-Heptane; Acetone; Acetic acid-isobutyl ester; Anisole; Acetic acid-isopropyl ester; 1-Butanol; Methyl acetate; 2-Butanol; Isoamyl alcohol; n-Butylacetate; 2-Butanone; Methyl-tert.butylether; 2-Methyl-1-propanol; Dimethylsulfoxide; n-Pentane; Ethanol; 1-Pentanol; Ethyl Acetate; 1-Propanol; Diethylether; 2- Propanol; Ethyl formate; Acetic acid n-propyl ester in Dimethylformamide	1 ml	88210.001
Residual Solvents Class 3 acc. to Ph Eur Ver 10 and USP 467 MIX B: 2 components; 5000 mg/l each of Acetic acid and Formic acid in Dimethylformamide	1 ml	88211.001
Residual Solvents Class 3 acc. to Ph Eur Ver 10 and USP 467 MIX C: Triethylamine 5000 mg/l in Water	1 ml	88213.001
Residual solvents (0861): Class 3 acc. to Ph Ch MIX A: 25 components: 5000 mg/l each of Acetone; Anisole; 1-Butanol; 2-Butanol; 2-Butanone; n-Butylacetate; Diethylether; Dimethyl sulphoxide; Ethanol; Ethyl Acetate; Ethyl formate; n-Heptane; 2-Methyl-1-propanol; Acetic acid-isobutyl ester; Acetic acid-isopropyl ester; Methyl acetate; Isoamyl alcohol; 4-Methyl-2-pentanone; Methyl-tert.butylether; n-Pentane; 1-Pentanol; 1-Propanol; 2- Propanol; Acetic acid n-propyl ester; Isopropylbenzene in Dimethylformamide	1 ml	88220.001
Residual solvents (0861): Class 3 acc. to Ph Ch MIX B: 2 components: 5000 mg/l each of Acetic acid and Formic acid in Dimethylformamide	1 ml	88221.001
Residual Solvents Class 2 acc. to Ph Eur Ver 10 MIX A: 14 components: Chlorobenzene 360 mg/l; Cyclohexane 3880 mg/l; cis-1,2-Dichloroethene 1870 mg/l; Dichloromethane 600 mg/l; Ethylbenzene 369 mg/l; n-Hexane 290 mg/l; Methylcyclohexane 1180 mg/l; N,N - Dimethylformamide 880 mg/l; Toluene 890 mg/l; 1,1,2-Trichloroethene 80 mg/l; m-Xylene 1302 mg/l; o-Xylene 195 mg/l; p-Xylene 304 mg/l; Tetrahydrofuran 720 mg/l in Dimethylsulphoxide	1 ml	88216.001
Residual Solvents Class 2 acc. to Ph Eur Ver 10 MIX A: 13 components: Chlorobenzene 360 mg/l; Cyclohexane 3880 mg/l; cis-1,2-Dichloroethene 1870 mg/l; Dichloromethane 600 mg/l; N,N Dimethylformamide 880 mg/l; Ethylbenzene 369 mg/l; n-Hexane 290 mg/l; Methylcyclohexane 1180 mg/l; Toluene 890 mg/l; 1,1,2-Trichloroethene 80 mg/l; m-Xylene 1302 mg/l; o-Xylene 195 mg/l; p-Xylene 304 mg/l in Dimethylsulphoxide	1 ml	88207.001
Residual Solvents Class 2 acc. to Ph Eur Ver 10 MIX B: 10 components; Acetonitrile 410 mg/l; Chloroform 60 mg/l; 1,2-Dimethoxyethane 100 mg/l; N,N-Dimethylacetamide 1090 mg/l; Dioxan 380 mg/l; 2-Hexanone 50 mg/l; Methanol 3000 mg/l; Nitromethane 50 mg/l; Pyridine 200 mg/l; 1,2,3,4-Tetrahydronaphthalene 100 mg/l in Dimethylsulphoxide / Water (%)	1.5 ml	88207.015
Residual Solvents Class 2 acc. to Ph Eur Ver 10 MIX B: 10 components; Acetonitrile 410 mg/l; Chloroform 60 mg/l; 1,2-Dimethoxyethane 100 mg/l; N,N-Dimethylacetamide 1090 mg/l; Dioxan 380 mg/l; 2-Hexanone 50 mg/l; Methanol 3000 mg/l; Nitromethane 50 mg/l; Pyridine 200 mg/l; 1,2,3,4-Tetrahydronaphthalene 100 mg/l; Isopropylbenzene 70 mg/l in Dimethylsulphoxide / Water (%)	1 ml	88217.001
Residual Solvents Class 2 acc. to Ph Eur Ver 10 Mix C: 7 components; 2-Ethoxyethanol 160 mg/l; Ethylene glycol 620 mg/l; Formamide 220 mg/l; 2-Methoxyethanol 50 mg/l; N-Methyl Pyrrolidone 530 mg/l; Sulfolan 160 mg/l; 4-Methyl-2-pentanone 4500 mg/l in Water	1 ml	88218.001
"Residual Solvents Class 2 acc to Ph Eur Ver 8.8 MIX C: 6 components 2-Ethoxyethanol 160 mg/l; Ethyleneglycol 620 mg/l; Formamide 220 mg/l; 2-Methoxyethanol 50 mg/l; 1-Methyl-2-pyrrolidon 4840 mg/l; Sulfolan 160 mg/l in Water"	1 ml	88219.001
Residual Solvents Class 2 acc. to Ph Eur Ver 10 Mix C: 6 components; 2-Ethoxyethanol 160 mg/l; Ethylene glycol 620 mg/l; Formamide 220 mg/l; 2-Methoxyethanol 50 mg/l; N-Methyl Pyrrolidone 4840 mg/l; Sulfolan 160 mg/l in Water	1 ml	88209.001
Residual Solvents Class 2 acc. to Ph Eur Ver 10 Mix C: 6 components; 2-Ethoxyethanol 160 mg/l; Ethylene glycol 620 mg/l; Formamide 220 mg/l; 2-Methoxyethanol 50 mg/l; N-Methyl Pyrrolidone 4840 mg/l; Sulfolan 160 mg/l in Water	1.5 ml	88209.015
Residual Solvents Class 1 acc. to Ph Eur Ver 10: 5 components; Benzene 2 mg/l; Carbon tetrachloride 4 mg/l; 1,2-Dichloroethane 5 mg/l; 1,1-Dichloroethene 8 mg/l; 1,1,1-Trichloroethane 1500 mg/l in Dimethylsulphoxide	1 ml	88214.001
Residual Solvents Class 1 acc to Ph Eur Ver 8.8: 5 components; Benzene 4 mg/l; 1,2-Dichloroethane 10 mg/l; Tetrachloromethane 8 mg/l; 1,1-Dichloroethene 16 mg/l; 1,1,1-Trichloroethane 20 mg/l in Dimethylsulphoxide	1 ml	88215.001
Residual Solvents Class 1 acc to Ph Eur Ver 8.8: 5 components; Benzene 2 mg/l; 1,2-Dichloroethane 5 mg/l; Tetrachloromethane 4 mg/l; 1,1-Dichloroethene 8 mg/l; 1,1,1-Trichloroethane 10 mg/l in Dimethylsulphoxide	1 ml	88206.001
	1.5 ml	88206.015



VWR Chemicals PESTINORM® solvents

A complete range of solvents for detection of trace organic substances in the environment. The range offers extremely low halogenated and other organic compounds to prevent sample contamination.

- High quality guaranteed, specifically for use in pesticide analysis
- Filtered at 0,2 µm, bottled under nitrogen, fitted with caps which have PTFE liners to prevent contamination
- Evaporation residue less than 5 ppm (<3 ppm for SUPRA TRACE grade)



MORE
DETAILS

COD CALIBRATION STANDARDS

These standards are ideal to use as control standards for COD (Chemical Oxygen Demand) measurements to verify that correct analysis for COD has taken place.

Achieving an acceptable result for the Control Standard will improve confidence in sample readings for this important environmental parameter. Available in 500 ml packs.

Description	Pack type	Pk	Cat. No.
COD calibration standard 10 mg/l solution	Plastic bottles	500 ml	85050.260
COD calibration standard 20 mg/l solution	Plastic bottles	500 ml	85053.260
COD calibration standard 50 mg/l solution	Plastic bottles	500 ml	85063.260
COD calibration standard 100 mg/l solution	Plastic bottles	500 ml	85059.260
COD calibration standard 200 mg/l solution	Plastic bottles	500 ml	85062.260
COD calibration standard 500 mg/l solution	Plastic bottles	500 ml	85064.260
COD calibration standard 600 mg/l solution	Plastic bottles	500 ml	85066.260
COD calibration standard 1000 mg/l solution	Plastic bottles	500 ml	85060.260
COD calibration standard 1300 mg/l solution	Plastic bottles	500 ml	85051.260
COD calibration standard 1500 mg/l solution	Plastic bottles	500 ml	85052.260
COD calibration standard 2000 mg/l solution	Plastic bottles	500 ml	85054.260
COD calibration standard 5000 mg/l solution	Plastic bottles	500 ml	85065.260
COD calibration standard 6000 mg/l solution	Plastic bottles	500 ml	85057.260
COD calibration standard 10 000 mg/l solution	Plastic bottles	500 ml	85061.260
COD calibration standard 20 000 mg/l solution	Plastic bottles	500 ml	85055.260
COD calibration standard 30 000 ppm solution	Plastic bottles	500 ml	85056.260
COD calibration standard 60 000 mg/l solution	Plastic bottles	500 ml	85058.260



TOC CALIBRATION STANDARDS

Complete range of standards to perfectly calibrate all TOC (Total Organic Carbon) meters.

Description	Pack size	Cat. No.
TOC standard solution 5 mg/l	100 ml	88223.180
TOC standard solution 5 mg/l	500 ml	88223.260
TOC standard solution 10 mg/l	100 ml	88224.180
TOC standard solution 10 mg/l	500 ml	88224.260
TOC standard solution 25 mg/l as potassium hydrogen phthalate.	100 ml	88229.180
TOC standard solution 50 mg/l	100 ml	88225.180
TOC standard solution 50 mg/l	500 ml	88225.260
TOC standard solution 100 mg/l (standard solution acc. to EN 1484)	100 ml	88226.180
TOC standard solution 100 mg/l (standard solution acc. to EN 1484)	500 ml	88226.260
TOC standard solution 200 mg/l	100 ml	88227.180
TOC standard solution 200 mg/l	500 ml	88227.260
TOC standard solution 500 mg/l	100 ml	88228.180
TOC standard solution 500 mg/l	500 ml	88228.260
TOC standard solution 1000 mg/l (stock solution acc. to EN 1484)	100 ml	88222.180
TOC standard solution 1000 mg/l (stock solution acc. to EN 1484)	500 ml	88222.260
TOC standard solution 2000 mg/l	100 ml	88230.180
TOC standard solution 2000 mg/l	500 ml	88230.260

TURBIDITY STANDARDS

Turbidity standards in kit form or alternatively as formazine stock solutions which allows users to create their own defined standards.

- Set of standards designed for use with turbidity meters with a measuring range from 0,01 to 1100 NTU
- Ideal for units that measure scattered light at an angle of 90°, as stipulated in EN ISO 7027
- Kit supplied in handy case

Description	Pk	Cat. No.
Set of turbidity standards TSK (<0,1; 20; 200; 800 NTU)	1 KIT	84209.600
Formazine stock solution, 4000 NTU	100 ml	84210.180
Formazine stock solution, 4000 NTU	250 ml	84211.230



INNOVATIONS - visit vwr.com and search Cat. No. **88231.180** to learn about formazin turbidity standards.



CERTIFIED REFERENCE MATERIALS FOR ENVIRONMENTAL ANALYSIS

Certified reference materials (CRMs), produced by VKI, are designed to provide appropriate homogenous stable reference materials for quality control of environmental analyses. Certification is carried out in accordance with ISO guide 30, 31, 33, 34, 35, ISO 5725 and ISO/REMCO N 37. All CRMs are traceable to a national standard, or verified by a group of internationally recognised laboratories, and come with a Certificate of Analysis which states the certified value and the uncertainty at a stated level of confidence.

- Liquid references supplied in packs of glass ampoules ready for easy dilution

Type	Description	Pk	Cat. No.
Waste water			
QC WW1B	NO ₃ -N 5,0 mg/l; NH ₄ -N 1,0 mg/l; PO ₄ -P 0,5 mg/l	10	QCWW1B-10
QC WW1B	NO ₃ -N 5,0 mg/l; NH ₄ -N 1,0 mg/l; PO ₄ -P 0,5 mg/l	50	QCWW1B-50
QC WW2.1	NH ₄ -N 10 mg/l; PO ₄ -P (Ortho) 5 mg/l	10	QCWW2.1-10
QC WW2.1	NH ₄ -N 10 mg/l; PO ₄ -P (Ortho) 5 mg/l	50	QCWW2.1-50
QC WW2.2	NO ₃ -N 1 mg/l	10	QCWW2.2-10
QC WW2.2	NO ₃ -N 1 mg/l	50	QCWW2.2-50
QC WW3	N (total) 7,5 mg/l; P (total) 1,5 ppm	10	QCWW3-10
QC WW3	N (total) 7,5 mg/l; P (total) 1,5 ppm	50	QCWW3-50
QC WW4	COD 500 mg/l; TOC 200 mg/l	10	QCWW4-10
QC WW4	COD 500 mg/l; TOC 200 mg/l	50	QCWW4-50
QC WW4A	COD 50 mg/l; TOC 20 mg/l	10	QCWW4A-10
QC WW4A	COD 50 mg/l; TOC 20 mg/l	50	QCWW4A-50
QC WW5	BOD 200 mg/l	10	QCWW5-10
QC WW5	BOD 200 mg/l	50	QCWW5-50
QC WW6	Suspended solids 240 mg/l	10	QCWW6-10
QC WW6	Suspended solids 240 mg/l	50	QCWW6-50
Surface and fresh water rivers			
QC RW1	NO ₃ -N 100 mg/l; NH ₄ -N 100 mg/l; PO ₄ -P 100 mg/l	10	QCRW1-10
QC RW1	NO ₃ -N 100 mg/l; NH ₄ -N 100 mg/l; PO ₄ -P 100 mg/l	50	QCRW1-50
QC RW2	N (total) 250 mg/l; P (total) 200 mg/l	10	QCRW2-10
QC RW2	N (total) 250 mg/l; P (total) 200 mg/l	50	QCRW2-50
Sea water			
QC SW3.1	NH ₄ 2 µM; NO ₂ 1 µM; NO ₂ +NO ₃ 10 µM; N (total) 15 µM; Coastal water	10	QCSW3.1B
QC SW3.2	PO ₄ 2 µM; P (total) 2 µM; SiO ₄ 20 µM; Coastal water	10	QCSW3.2B
QC SW4.1	NH ₄ 2 µM; NO ₂ 0,2 µM; NO ₂ +NO ₃ 5 µM; N (total) 12 µM; Seawater	10	QCSW4.1B
QC SW4.2	PO ₄ 1 µM; P (total) 1 µM; SiO ₄ 5 µM; Seawater	10	QCSW4.2B
Soil			
QC LOAM SOIL B	As, Pb, Cd, Cr, Cu, Hg, Ni, Zn, K, N (tot), P (tot)	200 g	QCLOAMSOILB200
QC OIL IN SOIL	Oil fractions nC ₁₀ - C ₂₅ ; nC ₂₅ - C ₃₅ ; total carbohydrate, all as mg/kg dry weight	100 g	QCOILINSOIL100
QC OIL IN SOIL	Oil fractions nC ₁₀ - C ₂₅ ; nC ₂₅ - C ₃₅ ; total carbohydrate, all as mg/kg dry weight	500 g	QCOILINSOIL500
Sludge			
QC ENDOCRDISUP	Endocrine disruptors in sludge, including DEHP, NPE, nonylphenol	100 g	QCENDOCRDISUP
QC ORGSLUDGE	Organic components: 14xPAH, DEHP, C10-C12LAS, 3xNPE	100 g	QCORGSLUD100
QC ORGSLUDGE	Organic components: 14xPAH, DEHP, C10-C12LAS, 3xNPE	500 g	QCORGSLUD5X100
Drinking and groundwater			
QC DW4	TOC	10	QCDW4-10
QC DW4	TOC	50	QCDW4-50
QC DWB	Na, K, Ca, Mg, Cl, F, SO ₄ , HCO ₃ , dry matter, pH, conductivity (K25)	10 KIT	QCDWB
QC METALCOMBI	QC METAL LL1, QC METAL LL2, QC METAL HL1, QC METAL HL2	4	QCMETALCOMBI
QC METAL HL1	Al, Fe, Mn, Pb, Zn mg/l-level	1	QCMETALHL1
QC METAL HL2	Ag, Ba, Cd, Co, Cr, Cu, Ni, Sr mg/l-level	1	QCMETALHL2
QC METAL LL1	Al, As, Cr, Cu, Mo, Ni, Sn, V, Zn µg/l-level	1	QCMETALL1
QC METAL LL2	Ag, Ba, Cd, Co, Fe, Mn, Pb, Sb, Se, Sr µg/l-level	1	QCMETALL2
QC METAL LL3	Hg 5 µg/l	1	QCMETALL3
QC METAL LL3A	Hg: 0,5 µg/l	1	QCMETALL3A

Equipment **Services**

Keep your laboratory in compliance
and in operation



Providing a carefree equipment lifecycle with Avantor Services

- Installation
- Preventive maintenance
- Warranty and repair
- Calibration
- Qualification, validation and certification (IQ/OQ/PQ)
- Equipment management
- Training

[VWR.COM/EIS](https://www.vwr.com/eis)



LIGHT METER, DUAL DISPLAY, TRACEABLE®

Dual displays show lux or foot-candles, or percent differential from a reference point, and the selected light source (daylight, tungsten, fluorescent, or mercury). Traceable® light meter has computer output that allows it to be connected to a computer or data logger for monitoring and keeping results. To ensure accuracy an individually serial numbered Traceable® certificate is provided from ISO 17025 calibration laboratory accredited by A2LA. It indicates traceability to standards provided by NIST (National Institute of Standards and Technology).

- Two displays show lux or foot-candles
- Computer output
- Data hold button 'freezes' the display

Readings in lux and foot-candles: Dual display meter measures lux in three ranges: 0 to 1999 (1 lux resolution), 2000 to 19990 (10 lux resolution), and 20000 to 50000 (100 lux resolution). Readings in foot-candles: 0 to 199,9 (0,1 Fc resolution), 200 to 1999 (1 Fc resolution), 2000 to 5000 (10 Fc resolution). Unit has zero reference settings for all light sources.

Monitor and store results: Data hold button freezes the display to capture readings. Precise photodiode and colour-correction filter provide cosine- and colour-corrected measurements.

Supplied with round photocell, Traceable® certificate, 9 volt alkaline battery, and computer output.

Accuracy	±4,5%
Display	LCD
Resolution	1 lux/10 lux/100 lux or 0,1 Fc/1Fc/10Fc
Weight (g)	240
WxDxH (mm)	76x32x178

Description	Pk	Cat. No.
Dual-display light meter, Traceable®	1	662-0940



ROOM CLIMATE MONITOR, AM 100

This device measures and displays the air temperature and humidity as well as the CO₂ concentration, simultaneously.

- Three different LEDs (green, yellow, red) indicate the CO₂ value in the air as good, medium or bad
- Acoustic alarm when CO₂ limit is exceeded
- Helps to improve room climate and prevent mould formation
- Large LCD with backlight for easy reading in the dark
- MUTE button for alarm on/off
- For bench top or wall mounting

This smart, compact and easy to use device was designed to help people taking care of Indoor Air Quality. The AM 100 can be widely used in office buildings, schools, exhibition halls, shopping malls, meeting rooms, fitness centres, restaurants and other public places where personal comfort and a healthy environment is important.

Supplied with AC/DC adapter and factory calibration certificate

Description	Range (l)	Weight (g)	Pk	Cat. No.
Room climate monitor, AM 100	0...+50 °C / 20 - 90% RH / 0 - 3000 ppm (CO ₂)	200	1	620-2624



DIGITAL CALIPERS

Made from stainless steel. Battery life is about 10 000 hours.

- Ergonomic body and friction thumb roller make readings fast
- Easy to read, jumbo digit display
- Moisture and dust resistant steel

Zero button instantly sets closed jaws or any reference point to zero. Floating zero may also be set mid-measurement to read difference results without calculations.

Weight: 255 g

A serial numbered certificate is provided from an ISO 17025 calibration laboratory accredited by A2LA to indicate instrument traceability to standards provided by NIST.

Description	Range (mm)	Resolution (mm)	Accuracy	Pk	Cat. No.
Digital caliper	0 - 150	0,01	±0,03 mm	1	819-0012
Digital caliper	0 - 200	0,01	±0,03 mm	1	819-0013



SIEVE STANDARDS, NIST AND NPL TRACEABLE

Unique microsphere method of sieve calibration applicable to all sieves from 20 to 3350 µm.

- Method analyses over 80% of the sieve surface
- Results independent of sieve shaking method
- No need to send sieves away for calibration
- Typical calibration time of about one minute
- Single-use bottles remove operator bias

Accuracy and repeatability better than 1 µm.

Mean aperture size traceable to NIST and NPL.

Description	For	Calibration range	Pk	Cat. No.
Sieve standards	Sieve size 20 µm	19 - 24 µm	5	510-0166
Sieve standards	Sieve size 25 µm	22 - 30 µm	5	510-0167
Sieve standards	Sieve size 32 µm	28 - 34 µm	5	510-0168
Sieve standards	Sieve size 38 µm	34 - 41 µm	5	510-0169
Sieve standards	Sieve size 45 µm	42 - 50 µm	5	510-0170
Sieve standards	Sieve size 53 µm	48 - 59 µm	5	510-0171
Sieve standards	Sieve size 63 µm	57 - 70 µm	5	510-0172
Sieve standards	Sieve size 75 µm	67 - 83 µm	5	510-0173
Sieve standards	Sieve size 90 µm	79 - 97 µm	5	510-0174
Sieve standards	Sieve size 106 µm	91 - 117 µm	5	510-0175
Sieve standards	Sieve size 125 µm	112 - 140 µm	5	510-0176
Sieve standards	Sieve size 150 µm	134 - 167 µm	5	510-0177
Sieve standards	Sieve size 180 µm	161 - 200 µm	5	510-0178
Sieve standards	Sieve size 212 µm	191 - 237 µm	5	510-0179
Sieve standards	Sieve size 250 µm	226 - 281 µm	5	510-0180
Sieve standards	Sieve size 300 µm	270 - 333 µm	5	510-0181
Sieve standards	Sieve size 355 µm	322 - 398 µm	5	510-0182
Sieve standards	Sieve size 425 µm	377 - 470 µm	5	510-0183
Sieve standards	Sieve size 500 µm	440 - 557 µm	5	510-0184
Sieve standards	Sieve size 600 µm	526 - 657 µm	5	510-0185
Sieve standards	Sieve size 710 µm	648 - 809 µm	5	510-0186
Sieve standards	Sieve size 850 µm	774 - 950 µm	5	510-0187
Sieve standards	Sieve size 1,00 mm	0,91 -1,11 mm	5	510-0377
Sieve standards	Sieve size 1,18 mm	1,09 - 1,33 mm	5	510-0378
Sieve standards	Sieve size 1,40 mm	1,29 - 1,61 mm	5	510-0379
Sieve standards	Sieve size 1,70 mm	1,51 - 1,87 mm	5	510-0380
Sieve standards	Sieve size 2,00 mm	1,84 - 2,24 mm	5	510-0381
Sieve standards	Sieve size 2,36 mm	2,15 - 2,66 mm	5	510-0382
Sieve standards	Sieve size 2,80 mm	2,56 - 3,23 mm	5	510-0383
Sieve standards	Sieve size 3,35 mm	3,07 - 3,78 mm	5	510-0384
Sieve standards	Sieve size 100 mm	100 - 112 µm	5	510-2089
Sieve standards	Sieve size 100 mm	250 - 280 µm	5	510-2090

Timers selector guide



Timing capacity	Accuracy	Count	Memory		Alarm		Cat. No.
Mechanical model							
60 min	3 min	↓	No	Yes	No	No	609-0127
Digital single channel models without clock, supplied with calibration certificate							
99 min, 59 sec	±0,01%	↓	Yes	Loud	No	No	609-0185
		↑	No	Yes	No	No	609-0203
	3 sec	↑	Yes	Yes	No	No	609-0128
	±0,01%	↓	Yes	Loud	No	No	609-0184
		↑	Yes	No	No	No	609-0197
	±5 sec/day (res ,01)	↑	Yes	Yes	Yes	Indicates time elapsed since alarm	609-0206
		↑	Yes	Yes	No		609-0189
		±0,01%	↓	3 countdown memories	Adjustable	Flashing LED	
19 h, 59 min or 99 min, 59 sec	±5 sec/day (res ,01)	↓	Yes	Yes	No	Indicates time elapsed since alarm	609-0190
		↑	Yes	Yes	Yes	Vibration	609-0207
99 h, 59 min, 59 sec	±0,01%	↓	Yes	Yes	No	No	609-0205
Digital, two channels with clock							
23 h, 59 min, 59 sec	±0,01%	↓	Yes	Yes	Yes	No	609-0090
Digital, two channels without clock							
99 h, 59 min, 59 sec	±0,01%	↓	Yes	Adjustable	Green LED flashes while counting down // RED LED flashes once zero has been reached	No	609-0199
Digital, three channels with clock							
99 h, 59 min, 59 sec	±0,01%	↓	Yes	Yes	No	No	609-0204
Digital, four channels with clock							
99 h, 59 min, 59 sec	(±3 sec/day) ±0,01 sec	↓	Yes	Loud	No	No	609-0181
	±0,01%	↑	Yes	Yes	No	Indicates time elapsed since start	609-0195
Switchable timing capacity: 23 h, 59 min or 59 min, 59 sec	±5 sec/day (res ,01)	↓	Yes	Yes	No	Indicates time elapsed since alarm	609-0208



BULB PIPETTES, ONE MARK, CLASS AS

Borosilicate 3.3 glass.

- Calibrated to deliver, total delivery
- Ring mark and inscriptions in high contrast amber stain
- Not available with individual certificate

DIN EN ISO 648

Dated batch identification and batch certificate included.

Capacity (ml)	Tolerance ($\pm$ ml)	Length (mm)	Pk	Cat. No.
1	0,007	300	3	612-4129
2	0,010	330	3	612-4130
3	0,010	350	3	612-4131
4	0,015	410	3	612-4132
5	0,015	410	3	612-4133
10	0,020	450	3	612-4134
20	0,030	520	2	612-4135
25	0,030	530	2	612-4136
50	0,050	550	2	612-4137
100	0,080	600	2	612-4138



BULB PIPETTES, TWO MARKS, CLASS AS

Borosilicate 3.3 glass.

- Calibrated to deliver (TD, Ex)
- Ring mark and inscriptions in high contrast amber stain

DIN EN ISO 648

Dated batch identification and batch certificate.

Capacity (ml)	Tolerance ($\pm$ ml)	Length (mm)	Pk	Cat. No.
1	0,007	300	3	612-4775
2	0,010	330	3	612-4776
3	0,010	350	3	612-4777
4	0,015	410	3	612-4778
5	0,015	410	3	612-4779
10	0,020	450	3	612-4780
20	0,030	520	2	612-4781
25	0,030	530	2	612-4782
50	0,050	550	2	612-4783
100	0,080	600	2	612-4784



GRADUATED PIPETTES, TYPE 3, CLASS AS

Borosilicate 3.3 glass.

- Calibrated to deliver (TD, Ex)
- Marks and inscriptions in amber stain
- Cotton plug ending (cotton plugs not included)

DIN 12696, ISO 835

Includes a lot certificate.

Capacity (ml)	Division (ml)	Tolerance ($\pm$ ml)	Pk	Cat. No.
0,5	0,01	0,0075	3	612-4767
1	0,01	0,01	3	612-4768
2	0,02	0,015	3	612-4769
5	0,1	0,045	3	612-4770
10	0,1	0,075	3	612-4771
20	0,1	0,15	2	612-4772
25	0,1	0,15	2	612-4773
50	0,2	0,3	2	612-4774



MEASURING CYLINDERS

Borosilicate 3.3 glass, class A, tall form.

- Calibrated to contain (TC, In)
- Hexagonal glass base with spout
- Blue graduations with ring marks at major graduations

DIN 12680

Batch number and enclosed batch certificate.

Capacity (ml)	Division (ml)	Tolerance ($\pm$ ml)	Pk	Cat. No.
5	0,1	0,05	2	612-3832
10	0,2	0,1	2	612-3833
25	0,5	0,25	2	612-3834
50	1	0,5	2	612-3835
100	1	0,5	2	612-3836
250	2	1	2	612-3837
500	5	2,5	2	612-3838
1000	10	5	1	612-3839
2000	20	10	1	612-3840



MIXING MEASURING CYLINDERS

Borosilicate 3.3 glass, class A.

- Calibrated to contain (TC, In)
- Hexagonal glass base, NS ground and PE stopper
- Ring marks at major graduations, marks and inscriptions in blue colour

DIN EN ISO 4788

Batch certificate included.

Capacity (ml)	Division (ml)	Height (mm)	Pk	Cat. No.
10	0,2	160	2	612-5771
25	0,5	190	2	612-5772
50	1,0	220	2	612-5773
100	1,0	285	2	612-5774
250	2,0	350	2	612-5775
500	5,0	395	2	612-5776
1000	10,0	500	1	612-5777



VOLUMETRIC FLASKS

Borosilicate 3.3 glass, amber, class A.

- Red PE stopper
- Marks and inscriptions in white enamel
- Calibrated to contain (TC, In)

DIN EN ISO 1042

Batch number and enclosed batch certificate.

Capacity (ml)	NS	Tolerance ($\pm$ ml)	Pk	Cat. No.
5	10/19	0,04	2	612-3821
10	10/19	0,04	2	612-3822
20	10/19	0,04	2	612-3823
25	10/19	0,04	2	612-3824
50	12/21	0,06	2	612-3825
100	14/23	0,10	2	612-3826
200	14/23	0,15	2	612-3827
250	14/23	0,15	2	612-3828
500	19/26	0,25	2	612-3829
1000	24/29	0,40	1	612-3830
2000	29/32	0,60	1	612-3831



VOLUMETRIC FLASKS

Borosilicate 3.3 glass, class A.

- PP white stopper
- Marks in white and inscriptions in blue enamel
- Calibrated to contain (TC, In)

DIN EN ISO 1042.

Batch number and enclosed batch certificate.

Capacity (ml)	NS	Tolerance (± ml)	Pk	Cat. No.
5	10/19	0,040	2	612-3738
10	10/19	0,040	2	612-3740
20	10/19	0,040	2	612-3741
25	10/19	0,040	2	612-3742
50	12/21	0,060	2	612-3743
100	14/23	0,100	2	612-3744
200	14/23	0,150	2	612-3745
250	14/23	0,150	2	612-3746
500	19/26	0,250	2	612-3818
1000	24/29	0,400	1	612-3819
2000	29/32	0,600	1	612-3820



WEIGHING BOTTLES

Borosilicate 3.3 glass, low form.

- Interchangeable knobbed lid with ground joint
- Writing area in white
- Resistant against chemicals and thermal shock

Capacity (ml)	ØxH (mm)	NS	Pk	Cat. No.
6	25x25	24/12	1	611-3817
15	35x30	34/12	1	611-3818
15	40x25	40/12	1	611-3819
30	50x30	50/12	1	611-3820
45	60x30	60/12	1	611-3821
80	80x30	80/12	1	611-3822



CALIBRATION WEIGHTS E1 WITH CALIBRATION CERTIFICATE

Individual E1 OIML class weights are intended to ensure traceability between the national mass standards (with values derived from the International Prototype of the kilogram) and Class E2 and lower weights. They are also used with microbalances. Anti-magnetic, cobalt alloy weights are available from 1 to 500 mg. Packed in a plastic case, the wire weights are easy to store. Anti-magnetic, corrosion resistant, highly polished stainless steel knob weights are available from 1 to 200 g. Packed in a plastic case the weights are easy to store. Sets of weights are also available in either cobalt alloy or stainless steel with a choice of a plastic or wooden storage box.

- Identification number guarantees traceability for weights from 1 g upwards
- Laser engraving improves legibility of the markings
- Supplied with COFRAC certificate

Conform to OIML R111 recommendations.

Set		Weights included													
		1 mg	2 mg	5 mg	10 mg	20 mg	50 mg	100 mg	200 mg	500 mg					
1 - 500 mg		1	2	1	1	2	1	1	2	1					
	Includes 1 - 500 mg set +	1 g	2 g	5 g	10 g	20 g	50 g	100 g	200 g	500 g	1 kg	2 kg	5 kg	10 kg	
1 mg - 50 g	1	1	2	1	1	2	1								
1 mg - 100 g	1	1	2	1	1	2	1	1							
1 mg - 200 g	1	1	2	1	1	2	1	1	2						
1 mg - 500 g	1	1	2	1	1	2	1	1	2	1					
1 mg - 1 kg	1	1	2	1	1	2	1	1	2	1	1				
1 mg - 2 kg	1	1	2	1	1	2	1	1	2	1	1	2			
1 mg - 5 kg	1	1	2	1	1	2	1	1	2	1	1	2	1		
1 mg - 10 kg	1	1	2	1	1	2	1	1	2	1	1	2	1	1	
1 g - 50 g		1	2	1	1	2	1								
1 g - 100 g		1	2	1	1	2	1	1							
1 g - 200 g		1	2	1	1	2	1	1	2						
1 g - 500 g		1	2	1	1	2	1	1	2	1					
1 g - 1 kg		1	2	1	1	2	1	1	2	1	1				
1 g - 2 kg		1	2	1	1	2	1	1	2	1	1	2			
1 g - 5 kg		1	2	1	1	2	1	1	2	1	1	2	1		
1 g - 10 kg		1	2	1	1	2	1	1	2	1	1	2	1	1	

Weight	Weight set	No. of weights	Tolerance	Total weight (g)	Type	Pk	Cat. No.
E1 cobalt alloy weights in plastic box with COFRAC certificate							
1 mg			±3 µg		Wire weight	1	611-3635
2 mg			±3 µg		Wire weight	1	611-3636
5 mg			±3 µg		Wire weight	1	611-3637
10 mg			±3 µg		Wire weight	1	611-3638
20 mg			±3 µg		Wire weight	1	611-3639
50 mg			±4 µg		Wire weight	1	611-3640
100 mg			±5 µg		Wire weight	1	611-3641
200 mg			±6 µg		Wire weight	1	611-3642
500 mg			±8 µg		Wire weight	1	611-3643
Set of 12 cobalt alloy weights in plastic box with COFRAC certificate							
	1 - 500 mg	12		1,11		1 SET	611-3652
Set of 12 cobalt alloy weights in wooden box with COFRAC certificate							
	1 - 500 mg	12		1,11		1 SET	611-3653
Set of 21 stainless steel weights in plastic box with COFRAC certificate							
	1 mg - 100 g	21		211,11		1 SET	611-3654
Set of 21 stainless steel weights in plastic box with COFRAC certificate							
	1 mg - 100 g	21		211,11		1 SET	611-3655
Set of 23 stainless steel weights in plastic box with COFRAC certificate							
	1 mg - 200 g	23		611,11		1 SET	611-3656
Set of 23 stainless steel weights in plastic box with COFRAC certificate							
	1 mg - 200 g	23		611,11		1 SET	611-3657



CALIBRATION WEIGHTS, CLASS E2

Weights made from solid, anti-magnetic, polished stainless steel.

- Wire weights up to 500 mg in cobalt alloy
- Identification number guarantees traceability for weights from 1 g upwards
- Laser engraving improves legibility of the markings
- Available with or without COFRAC certificate

Suitable for high resolution electronic balances.

Conform to OILM R111 recommendations.

All weights from 1 mg to 20 kg are available with or without COFRAC certificate - please visit vwr.com or contact your local VWR sales office. A range of weight sets are also available - please search for product 'Calibration weight sets, class E2'.

Weight	Tolerance (± mg)	Pk	Cat. No.
1 mg	0,006	1	611-8131
2 mg	0,006	1	611-8132
5 mg	0,006	1	611-8133
10 mg	0,008	1	611-8134
20 mg	0,010	1	611-8135
50 mg	0,012	1	611-8136
100 mg	0,016	1	611-8137
200 mg	0,020	1	611-8138
500 mg	0,025	1	611-8139
1 g	0,03	1	611-8140
2 g	0,04	1	611-8141
5 g	0,05	1	611-8142
10 g	0,06	1	611-8143
20 g	0,08	1	611-8144
50 g	0,10	1	611-8145
100 g	0,16	1	611-8146
200 g	0,30	1	611-8147
500 g	0,75	1	611-8148
1 kg	1,6	1	611-8149
2 kg	3,0	1	611-8150
5 kg	7,5	1	611-8151
10 kg	16,0	1	611-8152
20 kg	30,0	1	611-8428
E2 weights in wooden boxes with COFRAC certificate			
500 g	0,75	1	611-8399
1 kg	1,6	1	611-8400
2 kg	3	1	611-8423
5 kg	7,5	1	611-8424
10 kg	16	1	611-8425
20 kg	30	1	611-8426
50 kg	50	1	611-8427

Weight	Tolerance (± mg)	Pk	Cat. No.
E2 weights in plastic cases without certificate			
1 mg	0,006	1	611-8101
2 mg	0,006	1	611-8102
5 mg	0,006	1	611-8103
10 mg	0,008	1	611-8104
20 mg	0,010	1	611-8105
50 mg	0,012	1	611-8106
100 mg	0,016	1	611-8107
200 mg	0,020	1	611-8108
500 mg	0,025	1	611-8109
1 g	0,03	1	611-8110
2 g	0,04	1	611-8111
5 g	0,05	1	611-8112
10 g	0,06	1	611-8113
20 g	0,08	1	611-8114
50 g	0,10	1	611-8115
100 g	0,16	1	611-8116
200 g	0,30	1	611-8117
500 g	0,75	1	611-8118
1 kg	1,6	1	611-8119
2 kg	3,0	1	611-8120
5 kg	7,5	1	611-8121
10 kg	16,0	1	611-8122
20 kg	30,0	1	611-8398
E2 weights in wooden boxes without certificate			
500 g	0,75	1	611-8391
1 kg	1,6	1	611-8392
2 kg	3	1	611-8393
5 kg	7,5	1	611-8394
10 kg	16	1	611-8395
20 kg	30	1	611-8396
50 kg	50	1	611-8397



CALIBRATION WEIGHT SETS, CLASS E2

Weights made from solid, anti-magnetic, polished stainless steel. Suitable for high resolution electronic balances.

- Wire weights up to 500 mg in cobalt alloy
- Identification number guarantees traceability for weights from 1 g upwards
- Laser engraving improves legibility of the markings
- Available with or without COFRAC certificate

Conform to OILM R111 recommendations.

All weight sets listed in the 'set contents' table are available with or without COFRAC certificate - please visit vwr.com or contact your local VWR sales office. Weights are also available individually - please search for product 'Calibration weights, class E2'.

Set		Weights included													
		1 mg	2 mg	5 mg	10 mg	20 mg	50 mg	100 mg	200 mg	500 mg					
1 - 500 mg		1	2	1	1	2	1	1	2	1					
	Includes 1 - 500 mg set +	1 g	2 g	5 g	10 g	20 g	50 g	100 g	200 g	500 g	1 kg	2 kg	5 kg	10 kg	
1 mg - 50 g	1	1	2	1	1	2	1								
1 mg - 100 g	1	1	2	1	1	2	1	1							
1 mg - 200 g	1	1	2	1	1	2	1	1	2						
1 mg - 500 g	1	1	2	1	1	2	1	1	2	1					
1 mg - 1 kg	1	1	2	1	1	2	1	1	2	1	1				
1 mg - 2 kg	1	1	2	1	1	2	1	1	2	1	1	2			
1 mg - 5 kg	1	1	2	1	1	2	1	1	2	1	1	2	1		
1 mg - 10 kg	1	1	2	1	1	2	1	1	2	1	1	2	1	1	
1 g - 50 g		1	2	1	1	2	1								
1 g - 100 g		1	2	1	1	2	1	1							
1 g - 200 g		1	2	1	1	2	1	1	2						
1 g - 500 g		1	2	1	1	2	1	1	2	1					
1 g - 1 kg		1	2	1	1	2	1	1	2	1	1				
1 g - 2 kg		1	2	1	1	2	1	1	2	1	1	2			
1 g - 5 kg		1	2	1	1	2	1	1	2	1	1	2	1		
1 g - 10 kg		1	2	1	1	2	1	1	2	1	1	2	1	1	

Weight set	No. of weights	Total weight (g)	Pk	Cat. No.
1 mg - 500 mg	12	1,11	1	611-8742
1 mg - 50 g	20	111,11	1	611-8743
1 mg - 100 g	21	211,11	1	611-8744
1 mg - 200 g	23	611,11	1	611-8745
1 mg - 500 g	24	1111,11	1	611-8746
1 mg - 1 kg	25	2111,11	1	611-8747
1 mg - 2 kg	27	6111,11	1	611-8748
1 mg - 5 kg	28	11111,11	1	611-8749
1 mg - 10 kg	29	21111,11	1	611-8750
1 g - 50 g	8	110	1	611-8751
1 g - 100 g	9	210	1	611-8752
1 g - 200 g	11	610	1	611-8753
1 g - 500 g	12	1110	1	611-8754
1 g - 1 kg	13	2110	1	611-8755
1 g - 2 kg	15	6110	1	611-8756
1 g - 5 kg	16	11110	1	611-8757
1 g - 10 kg	17	21110	1	611-8758
E2 weight sets in plastic cases with certificate				
1 mg - 500 mg	12	1,11	1	611-8454
1 mg - 100 g	21	211,11	1	611-8455
1 mg - 200 g	23	611,11	1	611-8456
1 mg - 500 g	24	1111,11	1	611-8457

Weight set	No. of weights	Total weight (g)	Pk	Cat. No.
E2 weight sets in wooden boxes with certificate				
1 g - 100 g	9	210	1	611-8458
1 g - 200 g	11	610	1	611-8459
1 g - 500 g	12	1110	1	611-8460
E2 weight sets in wooden boxes without certificate				
1 mg - 500 mg	12	1,11	1	611-8722
1 mg - 50 g	20	111,11	1	611-8723
1 mg - 100 g	21	211,11	1	611-8724
1 mg - 200 g	23	611,11	1	611-8725
1 mg - 500 g	24	1111,11	1	611-8726
1 mg - 1 kg	25	2111,11	1	611-8727
1 mg - 2 kg	27	6111,11	1	611-8728
1 mg - 5 kg	28	11111,11	1	611-8729
1 mg - 10 kg	29	21111,11	1	611-8730
1 g - 50 g	8	110	1	611-8731
1 g - 100 g	9	210	1	611-8732
1 g - 200 g	11	610	1	611-8733
1 g - 500 g	12	1110	1	611-8734
1 g - 1 kg	13	2110	1	611-8735
1 g - 2 kg	15	6110	1	611-8736
1 g - 5 kg	16	11110	1	611-8737
1 g - 10 kg	17	21110	1	611-8738



CALIBRATION WEIGHTS, CLASS F1

Weights made from anti-magnetic, polished stainless steel. Suitable for medium resolution precision electronic balances. Weights have adjustment cavities for weights of more than 20 g.

- Wire weights up to 500 mg in cobalt alloy
- Identification number guarantees traceability for weights from 1 g upwards
- Laser engraving improves legibility of the markings
- Available with or without COFRAC certificate

Conform to OILM R111 recommendations.

All weights from 1 mg to 20 kg are available with or without COFRAC certificate - please visit vwr.com or contact your local VWR sales office. A range of sets of weights are also available - please search for product 'Calibration weight sets, class F1'.

Weight	Tolerance (± mg)	Pk	Cat. No.
F1 weights in plastic cases with certificate			
1 mg	0,020	1	611-8231
2 mg	0,020	1	611-8232
5 mg	0,020	1	611-8233
10 mg	0,025	1	611-8234
20 mg	0,03	1	611-8235
50 mg	0,04	1	611-8236
100 mg	0,05	1	611-8237
200 mg	0,06	1	611-8238
500 mg	0,08	1	611-8239
1 g	0,10	1	611-8240
2 g	0,12	1	611-8241
5 g	0,15	1	611-8242
10 g	0,20	1	611-8243
20 g	0,25	1	611-8244
50 g	0,30	1	611-8245
100 g	0,50	1	611-8246
200 g	1,0	1	611-8247
500 g	2,5	1	611-8248
1 kg	5	1	611-8249
2 kg	10	1	611-8250
5 kg	25	1	611-8251
10 kg	50	1	611-8252
20 kg	100	1	611-8094
F1 weights in wooden boxes with certificate			
500 g	2,5	1	611-8040
1 kg	5	1	611-8041
2 kg	10	1	611-8042
5 kg	25	1	611-8049
10 kg	50	1	611-8058
20 kg	100	1	611-8071
50 kg	250	1	611-8093

Weight	Tolerance (± mg)	Pk	Cat. No.
F1 weights in plastic cases without certificate			
1 mg	0,020	1	611-8201
2 mg	0,020	1	611-8202
5 mg	0,020	1	611-8203
10 mg	0,025	1	611-8204
20 mg	0,03	1	611-8205
50 mg	0,04	1	611-8206
100 mg	0,05	1	611-8207
200 mg	0,06	1	611-8208
500 mg	0,08	1	611-8209
1 g	0,10	1	611-8210
2 g	0,12	1	611-8211
5 g	0,16	1	611-8212
10 g	0,20	1	611-8213
20 g	0,25	1	611-8214
50 g	0,30	1	611-8215
100 g	0,50	1	611-8216
200 g	1,0	1	611-8217
500 g	2,5	1	611-8218
1 kg	5	1	611-8219
2 kg	10	1	611-8220
5 kg	25	1	611-8221
10 kg	50	1	611-8222
20 kg	100	1	611-8039
F1 weights in wooden boxes without certificate			
500 g	2,5	1	611-8028
1 kg	2,5	1	611-8029
2 kg	10	1	611-8033
5 kg	25	1	611-8035
10 kg	50	1	611-8036
20 kg	100	1	611-8037
50 kg	150	1	611-8038



CALIBRATION WEIGHT SETS, CLASS F1

Weights made from anti-magnetic, polished stainless steel. Suitable for medium resolution, precision electronic balances. Weights of more than 20 g have adjustment cavities.

- Wire weights up to 500 mg in cobalt alloy
- Identification number guarantees traceability for weights from 1 g upwards
- Laser engraving improves legibility of the markings
- Available with or without COFRAC certificate

Conform to OILM R111 recommendations.

All weight sets listed in the 'set contents' table are available with or without COFRAC certificate - please visit vwr.com or contact your local VWR sales office. Weights are also available individually - please search for product 'Calibration weights, class F1'.

Set	Weights included													
		1 mg	2 mg	5 mg	10 mg	20 mg	50 mg	100 mg	200 mg	500 mg				
1 - 500 mg		1	2	1	1	2	1	1	2	1				
	Includes 1 - 500 mg set +	1 g	2 g	5 g	10 g	20 g	50 g	100 g	200 g	500 g	1 kg	2 kg	5 kg	10 kg
1 mg - 100 g	1	1	2	1	1	2	1	1						
1 mg - 200 g	1	1	2	1	1	2	1	1	2					
1 mg - 500 g	1	1	2	1	1	2	1	1	2	1				
1 mg - 1 kg	1	1	2	1	1	2	1	1	2	1	1			
1 mg - 2 kg	1	1	2	1	1	2	1	1	2	1	1	2		
1 mg - 5 kg	1	1	2	1	1	2	1	1	2	1	1	2	1	
1 mg - 10 kg	1	1	2	1	1	2	1	1	2	1	1	2	1	1
1 g - 100 g		1	2	1	1	2	1	1						
1 g - 200 g		1	2	1	1	2	1	1	2					
1 g - 500 g		1	2	1	1	2	1	1	2	1				
1 g - 1 kg		1	2	1	1	2	1	1	2	1	1			
1 g - 2 kg		1	2	1	1	2	1	1	2	1	1	2		
1 g - 5 kg		1	2	1	1	2	1	1	2	1	1	2	1	
1 g - 10 kg		1	2	1	1	2	1	1	2	1	1	2	1	1

Weight set	No. of weights	Total weight (g)	Pk	Cat. No.
F1 weight sets in wooden boxes with certificate				
1 mg - 500 mg	12	1,11	1	611-8632
1 mg - 50 g	20	111,11	1	611-8633
1 mg - 100 g	21	211,11	1	611-8634
1 mg - 200 g	23	611,11	1	611-8635
1 mg - 500 g	24	1111,11	1	611-8636
1 mg - 1 kg	25	2111,11	1	611-8637
1 mg - 2 kg	27	6111,11	1	611-8638
1 mg - 5 kg	28	11111,11	1	611-8639
1 mg - 10 kg	29	21111,11	1	611-8640
1 g - 50 g	8	110	1	611-8641
1 g - 100 g	9	210	1	611-8642
1 g - 200 g	11	610	1	611-8643
1 g - 500 g	12	1110	1	611-8644
1 g - 1 kg	13	2110	1	611-8645
1 g - 2 kg	15	6110	1	611-8646
1 g - 5 kg	16	11110	1	611-8647
1 g - 10 kg	17	21110	1	611-8648
F1 weight sets in plastic cases with certificate				
1 mg - 500 mg	12	1,11	1	611-8461
1 mg - 100 g	21	211,11	1	611-8462
1 mg - 200 g	23	611,11	1	611-8463
1 mg - 500 g	24	1111,11	1	611-8464
1 mg - 2 kg	27	6111,11	1	611-8469
1 mg - 5 kg	28	11111,11	1	611-8650
1 g - 100 g	9	210	1	611-8465
1 g - 200 g	11	610	1	611-8466

Weight set	No. of weights	Total weight (g)	Pk	Cat. No.
1 g - 500 g	12	1110	1	611-8467
1 g - 2 kg	15	6110	1	611-8651
1 g - 5 kg	16	11110	1	611-8652
F1 weight sets in wooden boxes without certificate				
1 mg - 500 mg	12	1,11	1	611-8602
1 mg - 50 g	20	111,11	1	611-8603
1 mg - 100 g	21	211,11	1	611-8292
1 mg - 200 g	23	611,11	1	611-8604
1 mg - 500 g	24	1111,11	1	611-8605
1 mg - 1 kg	25	2111,11	1	611-8606
1 mg - 2 kg	27	6111,11	1	611-8607
1 mg - 5 kg	28	11111,11	1	611-8608
1 mg - 10 kg	29	21111,11	1	611-8609
1 g - 50 g	8	110	1	611-8610
1 g - 100 g	9	210	1	611-8611
1 g - 200 g	11	610	1	611-8612
1 g - 500 g	12	1110	1	611-8613
1 g - 1 kg	13	2110	1	611-8614
1 g - 2 kg	15	6110	1	611-8615
1 g - 5 kg	16	11110	1	611-8616
1 g - 10 kg	17	21110	1	611-8617
F1 weight sets in plastic cases without certificate				
1 mg - 2 kg	27	6111,11	1	611-8618
1 mg - 5 kg	28	11111,11	1	611-8619
1 g - 2 kg	15	6110	1	611-8620
1 g - 5 kg	16	11110	1	611-8621



CALIBRATION WEIGHTS, CLASS F1, CALBOX, CERTIFIED

An economical range of calibration sets, with only three stainless steel weights, to meet routine calibration requirements of precision and analytical balances.

- Individual serial number and calibration certificate
- Each weight, from 1 g upwards, has a unique identification number for traceability
- Laser engraving improves legibility of the markings

Weights supplied in modern aluminium case with tweezers and balance brush.

Weight set	No. of weights	Type	Pk	Cat. No.
200 mg; 5 g; 50 g	3	With certificate	1	611-2428
200 mg; 10 g; 100 g	3	With certificate	1	611-2429
200 mg; 20 g; 200 g	3	With certificate	1	611-2430
200 mg; 50 g; 500 g	3	With certificate	1	611-2432
2 g; 20 g; 200 g	3	With certificate	1	611-2431

Weight set	No. of weights	Type	Pk	Cat. No.
2 g; 50 g; 500 g	3	With certificate	1	611-2433
2 g; 100 g; 1 kg	3	With certificate	1	611-2434
20 g; 100 g; 1 kg	3	With certificate	1	611-2435
20 g; 200 g; 2 kg	3	With certificate	1	611-2436
20 g; 500 g; 5 kg	3	With certificate	1	611-2437



CALIBRATION WEIGHTS, CLASS F2

Stainless steel Class F2 weights for users who require moderate levels of tolerance values in their calibration and day-to-day weighing.

- Wire weights up to 500 mg in cobalt alloy
- Identification number guarantees traceability for weights from 1 g upwards
- Laser engraving improves legibility of the markings
- Available with or without COFRAC certificate

Conform to OILM R111 recommendations.

All weights from 1 mg to 20 kg are available with or without COFRAC certificate - please visit vwr.com or contact your local VWR sales office. A range of sets of weights are also available - please search for product 'Calibration weight sets, class F2'.

Weight	Tolerance (± mg)	Pk	Cat. No.
F2 weights in plastic cases with certificate			
1 mg	0,06	1	611-8179
2 mg	0,06	1	611-8180
5 mg	0,06	1	611-8181
10 mg	0,08	1	611-8182
20 mg	0,10	1	611-8183
50 mg	0,12	1	611-8184
100 mg	0,16	1	611-8185
200 mg	0,20	1	611-8186
500 mg	0,25	1	611-8187
1 g	0,3	1	611-8188
2 g	0,4	1	611-8189
5 g	0,5	1	611-8190
10 g	0,6	1	611-8195
20 g	0,8	1	611-8196
50 g	1,0	1	611-8197
100 g	1,6	1	611-8198
200 g	3,0	1	611-8199
500 g	7,5	1	611-8200
1 kg	15	1	611-8223
2 kg	30	1	611-8224
5 kg	75	1	611-8225
10 kg	150	1	611-8226
20 kg	300	1	611-8227
F2 weights in wooden boxes with certificate			
500 g	7,5	1	611-8172
1 kg	15	1	611-8173
2 kg	30	1	611-8174
5 kg	75	1	611-8175
10 kg	150	1	611-8176
20 kg	300	1	611-8177
50 kg	750	1	611-8178

Weight	Tolerance (± mg)	Pk	Cat. No.
F2 weights in plastic cases without certificate			
1 mg	0,06	1	611-8126
2 mg	0,06	1	611-8127
5 mg	0,06	1	611-8128
10 mg	0,08	1	611-8129
20 mg	0,10	1	611-8130
50 mg	0,12	1	611-8154
100 mg	0,16	1	611-8155
200 mg	0,20	1	611-8156
500 mg	0,25	1	611-8157
1 g	0,3	1	611-8158
2 g	0,4	1	611-8159
5 g	0,5	1	611-8160
10 g	0,6	1	611-8161
20 g	0,8	1	611-8162
50 g	1,0	1	611-8163
100 g	1,6	1	611-8164
200 g	3,0	1	611-8165
500 g	7,5	1	611-8166
1 kg	15	1	611-8167
2 kg	30	1	611-8168
5 kg	75	1	611-8169
10 kg	150	1	611-8170
20 kg	300	1	611-8171
F2 weights in wooden boxes without certificate			
500 g	7,5	1	611-8095
1 kg	15	1	611-8096
2 kg	30	1	611-8097
5 kg	75	1	611-8098
10 kg	150	1	611-8099
20 kg	300	1	611-8100
50 kg	750	1	611-8125



CALIBRATION WEIGHT SETS, CLASS F2

Stainless steel. Wire weights up to 500 mg in cobalt alloy.

- Identification number guarantees traceability for weights from 1 g upwards
- Laser engraving improves legibility of the markings
- Available with or without COFRAC certificate

Conform to OILM R111 recommendations.

Set		Weights included													
		1 mg	2 mg	5 mg	10 mg	20 mg	50 mg	100 mg	200 mg	500 mg					
1 - 500 mg		1	2	1	1	2	1	1	2	1					
20 - 500 mg						2	1	1	2	1					
	Includes 1 - 500 mg set +	1 g	2 g	5 g	10 g	20 g	50 g	100 g	200 g	500 g	1 kg	2 kg	5 kg	10 kg	
1 mg - 100 g	1	1	2	1	1	2	1	1							
1 mg - 200 g	1	1	2	1	1	2	1	1	2						
1 mg - 500 g	1	1	2	1	1	2	1	1	2	1					
1 mg - 1 kg	1	1	2	1	1	2	1	1	2	1	1				
1 mg - 2 kg	1	1	2	1	1	2	1	1	2	1	1	2			
1 mg - 5 kg	1	1	2	1	1	2	1	1	2	1	1	2	1		
1 mg - 10 kg	1	1	2	1	1	2	1	1	2	1	1	2	1	1	
1 g - 100 g		1	2	1	1	2	1	1							
1 g - 200 g		1	2	1	1	2	1	1	2						
1 g - 500 g		1	2	1	1	2	1	1	2	1					
1 g - 1 kg		1	2	1	1	2	1	1	2	1	1				
1 g - 2 kg		1	2	1	1	2	1	1	2	1	1	2			
1 g - 5 kg		1	2	1	1	2	1	1	2	1	1	2	1		
1 g - 10 kg		1	2	1	1	2	1	1	2	1	1	2	1	1	

Weight set	No. of weights	Total weight (g)	Pk	Cat. No.
F2 weight sets in wooden boxes with certificate				
1 mg - 500 mg	12	1,11	1	611-8692
1 mg - 50 g	20	111,11	1	611-8693
1 mg - 100 g	21	211,11	1	611-8694
1 mg - 200 g	23	611,11	1	611-8695
1 mg - 500 g	24	1111,11	1	611-8696
1 mg - 1 kg	25	2111,11	1	611-8697
1 mg - 2 kg	27	6111,11	1	611-8698
1 mg - 5 kg	28	11111,11	1	611-8699
1 mg - 10 kg	29	21111,11	1	611-8700
1 g - 50 g	8	110	1	611-8701
1 g - 100 g	9	210	1	611-8702
1 g - 200 g	11	610	1	611-8703
1 g - 500 g	12	1110	1	611-8704
1 g - 1 kg	13	2110	1	611-8705
1 g - 2 kg	15	6110	1	611-8706
1 g - 5 kg	16	11110	1	611-8707
1 g - 10 kg	17	21110	1	611-8708
F2 weight sets in plastic cases with certificate				
1 mg - 2 kg	27	6111,11	1	611-8709
1 mg - 5 kg	28	11111,11	1	611-8710
1 g - 2 kg	15	6110	1	611-8711
1 g - 5 kg	16	11110	1	611-8712

Weight set	No. of weights	Total weight (g)	Pk	Cat. No.
F2 weight sets in wooden boxes without certificate				
1 mg - 500 mg	12	1,11	1	611-8662
1 mg - 50 g	20	111,11	1	611-8663
1 mg - 100 g	21	211,11	1	611-8664
1 mg - 200 g	23	611,11	1	611-8665
1 mg - 500 g	24	1111,11	1	611-8666
1 mg - 1 kg	25	2111,11	1	611-8667
1 mg - 2 kg	27	6111,11	1	611-8668
1 mg - 5 kg	28	11111,11	1	611-8669
1 mg - 10 kg	29	21111,11	1	611-8670
1 g - 50 g	8	110	1	611-8671
1 g - 100 g	9	210	1	611-8672
1 g - 200 g	11	610	1	611-8673
1 g - 500 g	12	1110	1	611-8674
1 g - 1 kg	13	2110	1	611-8675
1 g - 2 kg	15	6110	1	611-8676
1 g - 5 kg	16	11110	1	611-8677
1 g - 10 kg	17	21110	1	611-8678
F2 weight sets in plastic cases without certificate				
1 mg - 2 kg	27	6111,11	1	611-8679
1 mg - 5 kg	28	11111,11	1	611-8680
1 g - 2 kg	15	6110	1	611-8681
1 g - 5 kg	16	11110	1	611-8682

CALIBRATION WEIGHTS, CLASS 1

Stainless steel masses adjusted to class 1 for precise checking and adjustment of electronic balances.

- ASTM
- Individual weights are supplied without certificate.

Weight (g)	Tolerance (± mg)	Pk	Cat. No.
50	120	1	611-8759
100	250	1	611-8760
200	500	1	611-8761
500	1200	1	611-8762
1000	2500	1	611-8763
2000	5000	1	611-8764
5000	12000	1	611-8765
10000	25000	1	611-8766



CALIBRATION WEIGHTS, CLASS M1

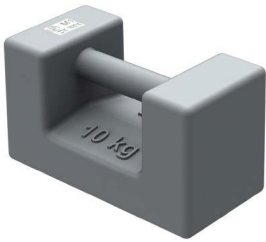
Weights from 1 g to 50 g are monobloc weights, with larger weights having an adjusting cavity.

All weights are supplied in plastic cases.



Weight	Tolerance (± mg)	Pk	Cat. No.
Aluminium sheet weights with certificate, M1			
1 mg	0,2	1	611-8272
2 mg	0,2	1	611-8273
5 mg	0,2	1	611-8274
10 mg	0,25	1	611-8275
20 mg	0,3	1	611-8276
50 mg	0,4	1	611-8277
100 mg	0,5	1	611-8278
200 mg	0,6	1	611-8279
500 mg	0,8	1	611-8280
Stainless steel weights with certificate, M1			
1 g	1,0	1	611-8281
2 g	1,2	1	611-8282
5 g	1,6	1	611-8283
10 g	2,0	1	611-8284
20 g	2,5	1	611-8285
50 g	3,0	1	611-8286
100 g	5	1	611-8287
200 g	10	1	611-8288
500 g	25	1	611-8289
1 kg	50	1	611-8294
2 kg	100	1	611-8295
5 kg	250	1	611-8296
10 kg	500	1	611-8297

Weight	Tolerance (± mg)	Pk	Cat. No.
Aluminium sheet weights without certificate, M1			
1 mg	0,2	1	611-8228
2 mg	0,2	1	611-8229
5 mg	0,2	1	611-8230
10 mg	0,25	1	611-8253
20 mg	0,3	1	611-8254
50 mg	0,4	1	611-8255
100 mg	0,5	1	611-8256
200 mg	0,6	1	611-8257
500 mg	0,8	1	611-8258
Stainless steel weights without certificate, M1			
1 g	1,0	1	611-8259
2 g	1,2	1	611-8260
5 g	1,6	1	611-8261
10 g	2,0	1	611-8262
20 g	2,5	1	611-8263
50 g	3,0	1	611-8264
100 g	5	1	611-8265
200 g	10	1	611-8266
500 g	25	1	611-8267
1 kg	50	1	611-8268
2 kg	100	1	611-8269
5 kg	250	1	611-8270
10 kg	500	1	611-8271



BLOCK WEIGHTS, CLASS M1

Rectangular weights made from cast iron (density 7,2 g/cm³).

- Indelible unique identification number guarantees traceability

Colour: Grey

Conforms to OILM, COFRAC accredited.

Weight (kg)	Tolerance (± mg)	Type	Pk	Cat. No.
5	250	Without certificate	1	611-8298
10	500	Without certificate	1	611-8299
20	1000	Without certificate	1	611-8300
50	2500	Without certificate	1	611-8323
5	250	With certificate	1	611-8324
10	500	With certificate	1	611-8325
20	1000	With certificate	1	611-8326
50	2500	With certificate	1	611-8327



BLOCK WEIGHTS, IRON, CLASS M2

Rectangular weights made from cast iron, permanently magnetised.

- Indelible unique identification number guarantees traceability
- Painted grey
- Adjustment cavity sealed with a lead plug

Conforms to OILM, COFRAC accredited.

Weight (kg)	Tolerance (± mg)	Pk	Cat. No.
5	750	1	611-8387
10	1600	1	611-8388
20	3000	1	611-8389
50	7500	1	611-8390
Block weights without certificate			
5	750	1	611-8383
10	1600	1	611-8384
20	3000	1	611-8385
50	7500	1	611-8386



BALANCE AND WEIGHT CLEANING KIT

Cleaning kit containing a puffer brush (lens cleaning brush), cotton cloth and pair of nitrile gloves.

In a resealable plastic bag.

Description	Pk	Cat. No.
Cleaning kit for weights and balances	1 KIT	611-2886

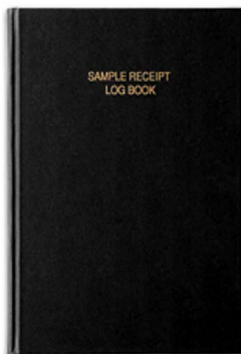


SCHOOL WEIGHTS

Brass weights which are ideal for schools introducing the concepts of weights and forces.

Set	Weights included								
	1 g	2 g	5 g	10 g	20 g	50 g	100 g	200 g	500 g
500 g	1	2	1	2	1	1	2	1	
1 kg	1	2	1	2	1	1	2	1	1

Weight (g)	Tolerance	Pk	Cat. No.
Single weight			
1	0.03	1	611-1843
2	0.03	1	611-1844
5	0.03	1	611-1845
10	0.03	1	611-1846
20	0.03	1	611-1847
50	0.03	1	611-1848
100	0.03	1	611-1849
200	0.03	1	611-1850
500	0.03	1	611-1851
Set of weights in plastic case			
1 - 500		1	611-1852
1 - 1000		1	611-1853



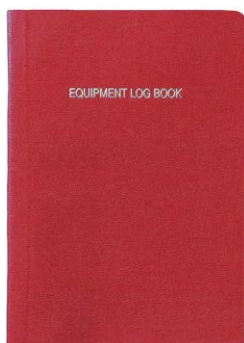
LABORATORY LOG BOOKS

Imitation leather cover with coating, for durability in laboratory environments. Acidfree, archive-safe paper (90 gsm). Used to record and log data relating to laboratory equipment, temperature, balance calibration, reagents, animal maintenance and sample receipts.

- All pages for logging documentation have specific column headings for easy data entry
- Pages sewn in sections, books have round binding so that they lay flat
- Waterproof and tough

GLP, GMP and GCP guidelines.

Description	Colour	No. of pages	Pk	Cat. No.
Log book, laboratory equipment	Red	96	1	818-0102
Log book, animal maintenance	Black	168	1	818-0103
Log book, balance calibration	Green	168	1	818-0104
Log book, reagents	Dark red	168	1	818-0105
Log book, sample receipt	Red	168	1	818-0106
Log book, temperature	White	168	1	818-0107



MINI EQUIPMENT LOG BOOKS

'FLEX' covers with coating, for durability in laboratory environments. Acid-free, archive-safe paper (90 gsm).

- Pages specifically designed for logging and recording equipment data
- Tough coated cover

Format: A5 (14,8×21 cm) or A6 (10,5×14,8 cm), 96 pages, numbered.

All books made in accordance with GLP, GMP and GCP guidelines.

Description	Colour	No. of pages	Pk	Cat. No.
Mini equipment log book, A5	Red	96	1	818-0108
Mini equipment log book, A6	Red	96	1	818-0109

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