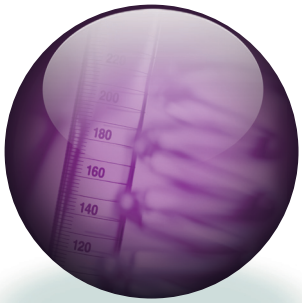

LGC Standards - Newsletter

Analytical products for pharmaceutical laboratories

In addition to the pharmacopoeia reference materials and impurities supplied by LGC Standards, we have a wide range of analytical laboratory materials and physical reference standards applicable to pharmaceutical laboratories.

Please contact your local office for further information on the products (see reverse).

LGC Standards

Excellence through measurement

USP 467 test mixtures for the GC analysis of residual solvents

These mixtures are used in US Pharmacopeia Method 467 to determine residual solvents in pharmaceutical preparations. The latest revision (July 2008) uses a risk-based system to classify solvents. Class 1 solvents are known or strongly suspected carcinogens that pose a risk to both the consumer and the environment and are are to be avoided. Class 2 solvents are non-genotoxic animal carcinogens or compounds suspected of other significant but reversible toxicities.

Code	Product	Unit
U-USPM-467J-1	USP 467 Class 1 Residual Solvents Mixture - July 2008 Revision Solvent: Dimethyl sulfoxide (DMSO) Benzene ... 10 mg/mL Carbon tetrachloride ... 20 mg/mL 1,2-Dichloroethane ... 25 mg/mL 1,1-Dichloroethene ... 40 mg/mL 1,1,1-Trichloroethane ... 50 mg/mL	1 x 1 mL
U-USPM-467J	USP 467 Class 1 Residual Solvents Mixture - July 2008 Revision	4 x 1 mL
U-USPM-467K-1	USP 467 Class 2 Residual Solvents Mixture A - July 2008 Revision Sovent: Dimethyl sulfoxide (DMSO) Acetonitrile ... 2.05 mg/mL Chlorobenzene ... 1.8 mg/mL Cyclohexane ... 19.4 mg/mL cis-1,2-Dichloroethene ... 4.7 mg/mL trans-1,2-Dichloroethene ... 4.7 mg/mL 1,4-Dioxane ... 1.9 mg/mL Ethylbenzene ... 1.84 mg/mL Methanol ... 15 mg/mL Methylcyclohexane ... 5.9 mg/mL Methylene chloride (Dichloromethane) ... 3 mg/mL Tetrahydrofuran (THF) ... 3.6 mg/mL Toluene ... 4.45 mg/mL o-Xylene ... 0.98 mg/mL m-Xylene ... 6.51 mg/mL p-Xylene ... 1.52 mg/mL	1 x 1 mL
U-USPM-467K	USP 467 Class 2 Residual Solvents Mixture A - July 2008 Revision	4 x 1 mL
U-USPM-467M-1	USP 467 Class 2 Residual Solvents Mixture C - July 2008 Revision Solvent: Dimethyl sulfoxide (DMSO) N,N-Dimethylacetamide ... 5450 µg/mL N,N-Dimethylformamide ... 4400 µg/mL 2-Ethoxyethanol ... 800 µg/mL Ethylene glycol ... 3100 µg/mL Formamide ... 1100 µg/mL 2-Methoxyethanol (methyl cellosolve) ... 250 µg/mL N-Methylpyrrolidone (1-Methyl-2-pyrrolidinone) ... 2650 µg/mL Sulfolane (tetramethylene sulfone) ... 800 µg/mL	1 x 1 mL
U-USPM-467M	USP 467 Class 2 Residual Solvents Mixture C - July 2008 Revision	4 x 1 mL
U-USPM-467N-1	USP 467 Class 2 Residual Solvents Mixture B (low) - July 2008 Revision Solvent: Dimethyl sulfoxide (DMSO) Chloroform ... 60 µg/mL 1,2-Dimethoxyethane (DME) ... 100 µg/mL n-Hexane ... 290 µg/mL 2-Hexanone ... 50 µg/mL Nitromethane ... 50 µg/mL Pyridine ... 200 µg/mL 1,2,3,4-Tetrahydronaphthalene ... 100 µg/mL Trichloroethene ... 80 µg/mL	1 x 1 mL
U-USPM-467N	USP 467 Class 2 Residual Solvents Mixture B (low) - July 2008 Revision	4 x 1 mL

Solvents for GC headspace techniques

Analysis of volatile organic impurities using the GC headspace technique has become an important quality control tool in pharmaceutical and food related industries. The International Conference on Harmonization (ICH) of technical requirements for registration of pharmaceuticals for human use has issued recommendations concerning the safe levels of residual solvents in pharmaceutical compounds. These solvents are divided into 3 classes according to their toxicity. Limit values of residual solvents in pharmaceutical products are specified by the United States and European Pharmacopeia. The quality of the solvent used to dissolve the sample for residual solvent analysis is of prime importance. It must be of the highest purity and show virtually no background signal with both polar and non-polar GC capillary columns. The new headspace solvents are high boiling point solvents, specifically developed, analysed and packed for the headspace analysis of volatile solvent impurities.

Code	Product	Unit
SO-3240-B010	N,N-Dimethylacetamide Headspace Grade	1 L

CAS number 127-19-5

C_4H_9NO

Assay (GC, on anhydrous basis) ..... 99.99 % min.

Acidity (as acetic acid) ..... 0.05 % max.

Water (KF) ..... 0.03 % max.

UV cutoff wavelength ..... 190-268 nm

Transmission

at 268 nm ..... 10 % min.
at 275 nm ..... 55 % min.
at 300 nm ..... 85 % min.
at 350 nm ..... 98 % min.
at 400 nm ..... 99 % min.

Headspace test for O.V.I. ..... passes test

SO-3230-B010	N,N-Dimethylformamide Headspace Grade	1 L

UN 2265

CAS number 68-12-2

C_3H_7NO

Assay (GC, on anhydrous basis) ..... 99.99 % min.

Refractive index (20 °C) 1.430-1.440

Water (KF) ..... 0.03 % max.

UV cutoff wavelength ..... 190-268 nm

Transmission

at 270 nm ..... 30 % min.
at 275 nm ..... 60 % min.
at 300 nm ..... 90 % min.
at 320 nm ..... 97 % min.

Headspace test for O.V.I. ..... passes test

SO-3260-B005	1,3-Dimethyl-2-imidazolidinon (DMI) Headspace Grade	500 mL

Assay (GC, on anhydrous basis) ..... 99.5 % min.

Refractive index (20 °C) 1.470-1473

Water (KF) ..... 0.1 % max.

UV cutoff wavelength ..... 190-270 nm

Transmission

at 275 nm ..... 40 % min.
at 300 nm ..... 85 % min.
at 325 nm ..... 95 % min.
at >350 nm ..... 98 % min.

Headspace test for O.V.I. ..... passes test

Code	Product	Unit
SO-3210-B010	Dimethylsulfoxide Headspace Grade	1 L

CAS-Nr 67-68-5
Assay (GC, on anhydrous basis) ..... 99.99 % min.
Refractive index (20 °C)..... 1.477-1.480
Water (KF) ..... 0.04 % max.
UV cutoff wavelength..... 190-265 nm
Transmission
at 268 nm ..... 30 % min.
at 275 nm ..... 60 % min.
at 300 nm ..... 85 % min.
at 350 nm ..... 95 % min.
at 400 nm ..... 98 % min.
Headspace test for O.V.I..... passes test

Sorbents - Florisil®

Florisil® - Selective Adsorbents

FLORISIL® is a highly selective adsorbent which has found extensive use in preparative and analytical chromatography. This adsorbent is unique because it is an extremely white, hard powdered magnesium-silica gel, frequently referred to as a magnesium silicate.

Typical chemical composition:

SiO_2 (Silicon dioxide)	84.0%
MgO (Magnesium oxide)	15.5%
$Na_2 SO_4$ (Sodium sulfate)	0.5%

LGC Standards offers the following FLORISIL® grade under the Promochem® range:
Standard activation grade, activated at 650°C

Common pharmaceutical applications:

- General column chromatography
- Isolation of steroids, sex hormones and related compounds
- Isolations of antibiotics
- Separation of lipids
- Isolation of alkaloids
- Purification of pharmaceuticals
- Decolorisation of oils, fats and waxes by percolation or contact treatment

FLORISIL® is a registered trademark of U.S. SILICA COMPANY.
Promochem® is a registered trademark of LGC Standards.

Code	Product	Unit
SC-4181-B005	Florisil® (Standard), 60 - 100 mesh (150 - 250 µm)	500 g
SC-4181-S010	Florisil® (Standard), 60 - 100 mesh (150 - 250 µm)	10 kg

Standards for TOC and TIC

Total Organic Carbon (TOC) detection is an important measurement because of the effects it may have on the environment, human health, and manufacturing processes. TOC detection is a highly sensitive, non-specific measurement of all organics present in a sample. Low TOC can confirm the absence of potentially harmful organic chemicals in water used to manufacture pharmaceutical products or to regulate the organic chemical discharge to the environment in a manufacturing plant. Total Inorganic Carbon (TIC) is measured as part of the equation to determine TOC: TOC=TC (Total Carbon)-TIC.

Code	Product	Unit
U-IQC-111	Total Organic Carbon (TOC) Standard 0.5 mg/L	250 mL
U-IQC-111-5	Total Organic Carbon (TOC) Standard 0.5 mg/L	500 mL
U-IQC-107	Total Organic Carbon (TOC) Standard 1 mg/L	250 mL
U-IQC-107-5	Total Organic Carbon (TOC) Standard 1 mg/L	500 mL
U-IQC-108	Total Organic Carbon (TOC) Standard 10 mg/L	250 mL
U-IQC-108-5	Total Organic Carbon (TOC) Standard 10 mg/L	500 mL
U-IQC-101	Total Organic Carbon (TOC) Standard in Water 25 mg/L	250 mL
U-IQC-101-5	Total Organic Carbon (TOC) Standard in Water 25 mg/L	500 mL

Code	Product	Unit
U-IQC-102	Total Organic Carbon (TOC) Standard in Water 50 mg/L	250 mL
U-IQC-102-5	Total Organic Carbon (TOC) Standard in Water 50 mg/L	500 mL
U-IQC-103	Total Organic Carbon (TOC) Standard in Water 100 mg/L	250 mL
U-IQC-103-5	Total Organic Carbon (TOC) Standard in Water 100 mg/L	500 mL
U-IQC-104	Total Organic Carbon (TOC) Standard in Water 250 mg/L	250 mL
U-IQC-104-5	Total Organic Carbon (TOC) Standard in Water 250 mg/L	500 mL
U-IQC-105	Total Organic Carbon (TOC) Standard in Water 500 mg/L	250 mL
U-IQC-105-5	Total Organic Carbon (TOC) Standard in Water 500 mg/L	500 mL
U-IQC-106	Total Organic Carbon (TOC) Standard in Water 1000 mg/L	250 mL
U-IQC-106-5	Total Organic Carbon (TOC) Standard in Water 1000 mg/L	500 mL
U-ICC-033	Total Inorganic Carbon (TIC) Standard in Water 1000 mg/L	250 mL
U-ICC-033-5	Total Inorganic Carbon (TIC) Standard in Water 1000 mg/L	500 mL
U-ICC-033-L	Total Inorganic Carbon (TIC) Standard in Water 1000 mg/L	1000 mL

USP TOC System Suitability Kits

U-IQCK-601-40	TOC Pharmaceutical System Suitability Kit (Hydrochloric acid preserved) Preserved in hydrochloric acid 1 x 40 mL vial of each individual standard in Low TOC Water Low TOC Water..... < 50 ppb USP Sucrose ..... 0.500 ppm USP Benzoquinone ..... 0.500 ppm	40 mL Kit
U-IQCK-601-125	TOC Pharmaceutical System Suitability Kit (Hydrochloric acid preserved) Preserved in hydrochloric acid 1 x 125 mL vial of each individual standard in Low TOC Water Low TOC Water..... < 50 ppb USP Sucrose ..... 0.500 ppm USP Benzoquinone ..... 0.500 ppm	125 mL Kit
U-IQCK-602-40	TOC Pharmaceutical System Suitability Kit (Phosphoric acid preserved) Preserved in phosphoric acid 1 x 40 mL vial of each individual standard in Low TOC Water Low TOC Water..... < 50 ppb USP Sucrose ..... 0.500 ppm USP Benzoquinone ..... 0.500 ppm	40 mL Kit
U-IQCK-602-125	TOC Pharmaceutical System Suitability Kit (Phosphoric acid preserved) Preserved in phosphoric acid 1 x 125 mL vial of each individual standard in Low TOC Water Low TOC Water..... < 50 ppb USP Sucrose ..... 0.500 ppm USP Benzoquinone ..... 0.500 ppm	125 mL Kit

All USP TOC Pharmaceutical System Suitability Kits components are packaged in low TOC vials.

Physical property standards

Melting, freezing and triple points

Code	Product	Unit
LGC2411	Phenyl salicylate - Melting point This certified reference material is intended for use in checking and calibrating apparatus used for determining melting points of samples in glass tubes. Certified values Thermodynamic melting point..... 41.50 °C Dynamic melting points (0.2 °C/min heating rate): Onset of melting..... 41.55 °C Meniscus point..... 41.70 °C Liquefaction point..... 41.85 °C	500 mg
LGC2401	4-Nitrotoluene - Melting point This certified reference material is intended for use in checking and calibrating apparatus used for determining melting points of samples in glass tubes. Certified values Dynamic melting points (0.2 °C/min heating rate): Onset of melting..... 51.36 °C Meniscus point..... 51.58 °C Liquefaction point..... 51.71 °C	2 x 250 mg
LGC2402	Naphthalene - Melting point This certified reference material is intended for use in checking and calibrating apparatus used for determining melting points of samples in glass tubes. Certified values Thermodynamic melting point..... 80.11 °C Dynamic melting points (0.2 °C/min heating rate): Onset of melting..... 80.20 °C Meniscus point..... 80.37 °C Liquefaction point..... 80.71 °C	500 mg
LGC2403	Benzil - Melting point This certified reference material is intended for use in checking and calibrating apparatus used for determining melting points of samples in glass tubes. Certified values Thermodynamic melting point..... 94.55 °C Dynamic melting points (0.2 °C/min heating rate): Onset of melting..... 94.43 °C Meniscus point..... 94.77 °C Liquefaction point..... 95.08 °C	500 mg
LGC2404	Acetanilide - Melting point This certified reference material is intended for use in checking and calibrating apparatus used for determining melting points of samples in glass tubes. Certified values Thermodynamic melting point..... 113.94 °C Dynamic melting points (0.2 °C/min heating rate): Onset of melting..... 113.46 °C Meniscus point..... 113.88 °C Liquefaction point..... 114.27 °C	500 mg
LGC2405	Benzoic acid - Melting point This certified reference material is intended for use in checking and calibrating apparatus used for determining melting points of samples in glass tubes. Certified values Dynamic melting point (0.2 °C/min heating rate) Onset of melting..... 121.80 °C Meniscus point..... 122.10 °C Liquefaction point..... 122.37 °C	2 x 0.25 g
LGC2406	Diphenylacetic acid - Melting point This certified reference material is intended for use in checking and calibrating apparatus used for determining melting points of samples in glass tubes.^ Certified values Thermodynamic melting point..... 147.05 °C Dynamic melting points (0.2 °C/min heating rate): Onset of melting..... 147.12 °C Meniscus point..... 147.21 °C Liquefaction point..... 147.29 °C	500 mg

Code	Product	Unit
LGC2407	Anisic acid - Melting point This certified reference material is intended for use in checking and calibrating apparatus used for determining melting points of samples in glass tubes. Certified values Thermodynamic melting point..... 183.09 °C Dynamic melting points (0.2 °C/min heating rate): Onset of melting..... 183.11 °C Meniscus point..... 183.29 °C Liquefaction point..... 183.72 °C	500 mg
LGC2408	2-Chloroanthraquinone - Melting point This certified reference material is intended for use in checking and calibrating apparatus used for determining melting points of samples in glass tubes. Certified values Thermodynamic melting point..... 209.12 °C Dynamic melting points (0.2 °C/min heating rate): Onset of melting..... 209.18 °C Meniscus point..... 209.50 °C Liquefaction point..... 209.78 °C	500 mg
LGC2409	Carbazole - Melting point This certified reference material is intended for use in checking and calibrating apparatus used for determining melting points of samples in glass tubes. Certified values Thermodynamic melting point..... 245.4 °C Dynamic melting points (0.2 °C/min heating rate): Onset of melting..... 244.71 °C Meniscus point..... 244.23 °C Liquefaction point..... 245.58 °C	500 mg
NCS AS93109	Azobenzol - Melting point Certified melting point..... 68.34 °C	2 g
NCS AS93102B	Naphthalene - Melting point Certified melting point..... 80.08 °C	2 g
NCS AS93110	Methylprotocatechuic - Melting point Certified melting point..... 81.85 °C	2 g
NCS AS93111	Acetanil - Melting point Certified melting point..... 114.55 °C	2 g
NCS AS93103B	Benzoic acid - Melting point Certified melting point..... 122.35 °C	2 g
NCS AS93112	p-Acetophenetidine - Melting point Certified melting point..... 134.96 °C	2 g
NCS AS93104B	1,6-Adipic acid - Melting point Certified melting point..... 151.62 °C	2 g
NCS AS93113	Albexan - Melting point Certified melting point..... 164.70 °C	2 g
NCS AS93105A	Anisic acid - Melting point Certified melting point..... 183.28 °C	2 g
NCS AS93114	Amber acid - Melting point Certified melting point..... 184.02 °C	2 g
NCS AS93115	Sulfadimidine - Melting point Certified melting point..... 198.32 °C	2 g
NCS AS93116	Cyanoguanidine - Melting point Certified melting point..... 208.62 °C	2 g
NCS AS93106	Anthracene - Melting point Certified melting point..... 215.88 °C	2 g
NCS AS93117	Saccharin - Melting point Certified melting point..... 228.41 °C	2 g
NCS AS93118	Coffeine - Melting point Certified melting point..... 236.26 °C	2 g
NCS AS93107B	p-Nitrobenzoic acid - Melting point Certified melting point..... 239.58 °C	2 g

Melting, freezing and triple points

Code	Product	Unit
NCS AS93101B	4-Nitrotoluene - Melting point Certified melting point ..... 51.61 °C	2 g
NCS AS93119	Chocolax - Melting point Certified melting point ..... 261.43 °C	2 g
NCS AS93108C	Anthraquinone - Melting point Certified melting point ..... 284.62 °C	2 g

Particle size calibration standards from Whitehouse Scientific

Whitehouse Scientific has been producing precision glass microspheres for calibration for 25 years and is the highest ranking European certification laboratory for primary methods of particle size analysis. Having filled over 1 million bottles using a unique 100 stage spinning riffler system, they are now the world's leading manufacturer of single-shot glass microsphere standards.
The references, nearly all NIST traceable range in size from 0.1µm - 5.0mm and are available as single sizes or broad distribution standards.

Whether calibrating a particle sizing instrument or any aperture in the range 0.1 - 10,000 microns, Whitehouse Scientific has a standard for every application.

Polydisperse particle standards

WS-PS180	Polydisperse particle standard - Nominal size: 0.1 - 1 µm	0.01 g
WS-PS181	Polydisperse particle standard - Nominal size: 0.1 - 1 µm	0.02 g
WS-PS190	Polydisperse particle standard - Nominal size: 1 - 10 µm	0.025 g
WS-PS191	Polydisperse particle standard - Nominal size: 1 - 10 µm	0.05 g
WS-PS192	Polydisperse particle standard - Nominal size: 1 - 10 µm	0.10 g
WS-PS193	Polydisperse particle standard - Nominal size: 1 - 10 µm	0.25 g
WS-PS194	Polydisperse particle standard - Nominal size: 1 - 10 µm	0.50 g
WS-PS200	Polydisperse particle standard - Nominal size: 3 - 30 µm	0.025 g
WS-PS201	Polydisperse particle standard - Nominal size: 3 - 30 µm	0.05 g
WS-PS202	Polydisperse particle standard - Nominal size: 3 - 30 µm	0.10 g
WS-PS203	Polydisperse particle standard - Nominal size: 3 - 30 µm	0.25 g
WS-PS204	Polydisperse particle standard - Nominal size: 3 - 30 µm	0.50 g
WS-PS205	Polydisperse particle standard - Nominal size: 3 - 30 µm	1.0 g
WS-PS211	Polydisperse particle standard - Nominal size: 10 - 100 µm	0.05 g
WS-PS212	Polydisperse particle standard - Nominal size: 10 - 100 µm	0.10 g
WS-PS213	Polydisperse particle standard - Nominal size: 10 - 100 µm	0.25 g
WS-PS214	Polydisperse particle standard - Nominal size: 10 - 100 µm	0.50 g
WS-PS215	Polydisperse particle standard - Nominal size: 10 - 100 µm	1.0 g
WS-PS222	Polydisperse particle standard - Nominal size: 50 - 350 µm	0.10 g
WS-PS223	Polydisperse particle standard - Nominal size: 50 - 350 µm	0.25 g
WS-PS224	Polydisperse particle standard - Nominal size: 50 - 350 µm	0.50 g
WS-PS225	Polydisperse particle standard - Nominal size: 50 - 350 µm	1.0 g
WS-PS226	Polydisperse particle standard - Nominal size: 50 - 350 µm	2.5 g
WS-PS227	Polydisperse particle standard - Nominal size: 50 - 350 µm	5.0 g
WS-PS232	Polydisperse particle standard - Nominal size: 150 - 650 µm	0.25 g
WS-PS233	Polydisperse particle standard - Nominal size: 150 - 650 µm	0.50 g
WS-PS234	Polydisperse particle standard - Nominal size: 150 - 650 µm	1.0 g
WS-PS235	Polydisperse particle standard - Nominal size: 150 - 650 µm	2.5 g
WS-PS236	Polydisperse particle standard - Nominal size: 150 - 650 µm	5.0 g
WS-PS237	Polydisperse particle standard - Nominal size: 150 - 650 µm	7.0 g
WS-PS240	Polydisperse particle standard - Nominal size: 500 - 2000 µm	7.0 g

NIST traceable monodisperse particle standards

WS-MS0009	Monodisperse particle standard (9.18 µm)	0.1 g
WS-MS0012	Monodisperse particle standard (11.58 µm)	0.1 g
WS-MS0023	Monodisperse particle standard (22.81 µm)	0.1 g
WS-MS0026	Monodisperse particle standard (25.6 µm)	0.1 g

Code	Product	Unit
WS-MS0028	Monodisperse particle standard (28.41 µm)	0.15 g
WS-MS0031	Monodisperse particle standard (31.33 µm)	0.15 g
WS-MS0036	Monodisperse particle standard (35.65 µm)	0.2 g
WS-MS0037	Monodisperse particle standard (37.36 µm)	0.2 g
WS-MS0038	Monodisperse particle standard (38.38 µm)	0.2 g
WS-MS0040	Monodisperse particle standard (40.15 µm)	0.2 g
WS-MS0042	Monodisperse particle standard (42.68 µm)	0.2 g
WS-MS0049	Monodisperse particle standard (49.21 µm)	0.2 g
WS-MS0053	Monodisperse particle standard (52.47 µm)	0.2 g
WS-MS0056	Monodisperse particle standard (56.28 µm)	0.2 g
WS-MS0060	Monodisperse particle standard (59.63 µm)	0.2 g
WS-MS0064	Monodisperse particle standard (63.86 µm)	0.2 g
WS-MS0065	Monodisperse particle standard (65.02 µm)	0.2 g
WS-MS0066	Monodisperse particle standard (66.29 µm)	0.2 g
WS-MS0071	Monodisperse particle standard (70.89 µm)	0.2 g
WS-MS0074	Monodisperse particle standard (73.8 µm)	0.2 g
WS-MS0076	Monodisperse particle standard (76.39 µm)	0.2 g
WS-MS0083	Monodisperse particle standard (83.43 µm)	0.2 g
WS-MS0090	Monodisperse particle standard (89.8 µm)	0.2 g
WS-MS0091	Monodisperse particle standard (91.21 µm)	0.2 g
WS-MS0114	Monodisperse particle standard (114.4 µm)	0.3 g
WS-MS0128	Monodisperse particle standard (127.5 µm)	0.3 g
WS-MS0156	Monodisperse particle standard (155.8 µm)	0.3 g
WS-MS0177	Monodisperse particle standard (177 µm)	0.3 g
WS-MS0180	Monodisperse particle standard (180 µm)	0.3 g
WS-MS0193	Monodisperse particle standard (192.8 µm)	0.4 g
WS-MS0197	Monodisperse particle standard (197.3 µm)	0.4 g
WS-MS0201	Monodisperse particle standard (200.9 µm)	0.4 g
WS-MS0210	Monodisperse particle standard (210.6 µm)	0.4 g
WS-MS0225	Monodisperse particle standard (224.8 µm)	0.4 g
WS-MS0236	Monodisperse particle standard (236.2 µm)	0.5 g
WS-MS0259	Monodisperse particle standard (258.6 µm)	0.6 g
WS-MS0269	Monodisperse particle standard (268.5 µm)	0.6 g
WS-MS0292	Monodisperse particle standard (292.5 µm)	0.8 g
WS-MS0298	Monodisperse particle standard (297.9 µm)	0.8 g
WS-MS0305	Monodisperse particle standard (304.6 µm)	0.8 g
WS-MS0315	Monodisperse particle standard (315.3 µm)	1 g
WS-MS0362	Monodisperse particle standard (361.6 µm)	1 g
WS-MS0406	Monodisperse particle standard (405.9 µm)	1.5 g
WS-MS0451	Monodisperse particle standard (451 µm)	2 g
WS-MS0555	Monodisperse particle standard (555 µm)	2.5 g
WS-MS0589	Monodisperse particle standard (589 µm)	2.5 g

Image analysis standards

WS-XX015	Image analysis standard - Calibration range: 50 - 250 µm	50 g
WS-XX025	Image analysis standard - Calibration range: 170 - 710 µm	100 g
WS-XX030	Image analysis standard - Calibration range: 500 - 2000 µm	200 g
WS-XX035	Image analysis standard - Calibration range: 1400 - 5000 µm	500 g

Code	Product	Unit
NIST traceable sieve standards		
WS-SS391	Sieve standard - For sieve size: 20 µm Mesh ..... 635 Calibration range..... 18.8 - 23.7 µm	0.8 g
WS-SS392	Sieve standard - For sieve size: 25 µm Mesh ..... 500 Calibration range..... 21.7 - 30.2 µm	0.8 g
WS-SS393	Sieve standard - For sieve size: 32 µm Mesh ..... 450 Calibration range..... 27.8 - 34.1 µm	1.0 g
WS-SS394	Sieve standard - For sieve size: 36, 38, 40 µm Mesh ..... 400 Calibration range..... 33.5 - 41.6 µm	1.0 g
WS-SS395	Sieve standard - For sieve size: 45, 50 µm Mesh ..... 325 Calibration range..... 42.0 - 50.8 µm	1.0 g
WS-SS396	Sieve standard - For sieve size: 53, 56 µm Mesh ..... 270 Calibration range..... 48.4 - 59.5 µm	1.0 g
WS-SS397	Sieve standard - For sieve size: 63 µm Mesh ..... 230 Calibration range..... 56.6 - 70.4 µm	1.0 g
WS-SS398	Sieve standard - For sieve size: 71, 75, 80 µm Mesh ..... 200 Calibration range..... 67.1 - 82.8 µm	1.0 g
WS-SS399	Sieve standard - For sieve size: 90 µm Mesh ..... 170 Calibration range..... 78.8 - 97.6 µm	1.0 g
WS-SS400	Sieve standard - For sieve size: 100, 106, 112 µm Mesh ..... 140 Calibration range..... 91.4 - 117 µm	1.0 g
WS-SS401	Sieve standard - For sieve size: 125 µm Mesh ..... 120 Calibration range..... 112 - 139 µm	1.0 g
WS-SS402	Sieve standard - For sieve size: 140, 150, 160 µm Mesh ..... 100 Calibration range..... 134 - 167 µm	2.5 g
WS-SS403	Sieve standard - For sieve size: 180 µm Mesh ..... 80 Calibration range..... 161 - 199 µm	2.5 g
WS-SS404	Sieve standard - For sieve size: 200, 212, 224 µm Mesh ..... 70 Calibration range..... 191 - 237 µm	2.5 g
WS-SS405	Sieve standard - For sieve size: 250, 280 µm Mesh ..... 60 Calibration range..... 226 - 281 µm	2.5 g
WS-SS406	Sieve standard - For sieve size: 300, 315 µm Mesh ..... 50 Calibration range..... 270 - 333 µm	2.5 g
WS-SS407	Sieve standard - For sieve size: 355 µm Mesh ..... 45 Calibration range..... 322 - 398 µm	2.5 g
WS-SS408	Sieve standard - For sieve size: 400, 425, 450 µm Mesh ..... 40 Calibration range..... 377 - 470 µm	2.5 g
WS-SS409	Sieve standard - For sieve size: 500 µm Mesh ..... 35 Calibration range..... 440 - 557 µm	2.5 g
WS-SS410	Sieve standard - For sieve size: 560, 600, 630 µm Mesh ..... 30 Calibration range..... 526 - 657 µm	2.5 g

Code	Product	Unit
WS-SS411	Sieve standard - For sieve size: 710 µm Mesh ..... 25 Calibration range ..... 658 - 809 µm	2.5 g
WS-SS412	Sieve standard - For sieve size: 800, 850, 900 µm Mesh ..... 20 Calibration range ..... 774 - 951 µm	2.5 g
WS-SS413	Sieve standard - For sieve size: 1000 µm Mesh ..... 18 Calibration range ..... 910 - 1106 µm	7.0 g
WS-SS414	Sieve standard - For sieve size: 1120, 1180, 1250 µm Mesh ..... 16 Calibration range ..... 1091- 1335 µm	10.0 g
WS-SS415	Sieve standard - For sieve size: 1400, 1550 µm Mesh ..... 14 Calibration range ..... 1292 - 1609 µm	15.0 g
WS-SS416	Sieve standard - For sieve size: 1600, 1700, 1800 µm Mesh ..... 12 Calibration range ..... 1515 - 1866 µm	15.0 g
WS-SS417	Sieve standard - For sieve size: 2000 µm Mesh ..... 10 Calibration range ..... 1836 - 2236 µm	20.0 g
WS-SS418	Sieve standard - For sieve size: 2240, 2360, 2500 µm Mesh ..... 8 Calibration range ..... 2148 - 2661 µm	20.0 g
WS-SS419	Sieve standard - For sieve size: 2800, 3150 µm Mesh ..... 7 Calibration range ..... 2555 - 3232 µm	25.0 g
WS-SS420	Sieve standard - For sieve size: 3350, 3550 µm Mesh ..... 6 Calibration range ..... 3072 - 3783 µm	25.0 g

General purpose glass microspheres

WS-GP0042	General purpose glass microspheres - Sieve fraction: 38 - 45 µm	100 g
WS-GP0049	General purpose glass microspheres - Sieve fraction: 45 - 53 µm	100 g
WS-GP0069	General purpose glass microspheres - Sieve fraction: 63 - 75 µm	100 g
WS-GP0083	General purpose glass microspheres - Sieve fraction: 75 - 90 µm	100 g
WS-GP0098	General purpose glass microspheres - Sieve fraction: 90 - 106 µm	100 g
WS-GP0116	General purpose glass microspheres - Sieve fraction: 106 - 125 µm	200 g
WS-GP0138	General purpose glass microspheres - Sieve fraction: 125 - 150 µm	200 g
WS-GP0165	General purpose glass microspheres - Sieve fraction: 150 - 180 µm	200 g
WS-GP0196	General purpose glass microspheres - Sieve fraction: 180 - 212 µm	200 g
WS-GP0231	General purpose glass microspheres - Sieve fraction: 212 - 250 µm	200 g
WS-GP0275	General purpose glass microspheres - Sieve fraction: 250 - 300 µm	200 g
WS-GP0328	General purpose glass microspheres - Sieve fraction: 300 - 355 µm	200 g
WS-GP0335	General purpose glass microspheres - Sieve fraction: 315 - 355 µm	200 g
WS-GP0375	General purpose glass microspheres - Sieve fraction: 350 - 400 µm	200 g
WS-GP0390	General purpose glass microspheres - Sieve fraction: 355 - 425 µm	200 g
WS-GP0463	General purpose glass microspheres - Sieve fraction: 425 - 500 µm	200 g
WS-GP0475	General purpose glass microspheres - Sieve fraction: 450 - 500 µm	200 g
WS-GP0530	General purpose glass microspheres - Sieve fraction: 500 - 560 µm	200 g
WS-GP0550	General purpose glass microspheres - Sieve fraction: 500 - 600 µm	200 g
WS-GP0580	General purpose glass microspheres - Sieve fraction: 560 - 600 µm	200 g
WS-GP0615	General purpose glass microspheres - Sieve fraction: 600 - 630 µm	200 g
WS-GP0650	General purpose glass microspheres - Sieve fraction: 600 - 710 µm	200 g
WS-GP0780	General purpose glass microspheres - Sieve fraction: 710 - 850 µm	200 g
WS-GP0925	General purpose glass microspheres - Sieve fraction: 850 - 1000 µm	200 g
WS-GP1090	General purpose glass microspheres - Sieve fraction: 1000 - 1180 µm	400 g

Melting, freezing and triple points

Code	Product	Unit
WS-GP1150	General purpose glass microspheres - Sieve fraction: 1120 - 1180 µm	400 g
WS-GP1215	General purpose glass microspheres - Sieve fraction: 1180 - 1250 µm	400 g
WS-GP1325	General purpose glass microspheres - Sieve fraction: 1250 - 1400 µm	400 g
WS-GP1500	General purpose glass microspheres - Sieve fraction: 1400 - 1600 µm	400 g
WS-GP1550	General purpose glass microspheres - Sieve fraction: 1400 - 1700 µm	400 g
WS-GP1700	General purpose glass microspheres - Sieve fraction: 1600 - 1800 µm	400 g
WS-GP1750	General purpose glass microspheres - Sieve fraction: 1700 - 1800 µm	400 g
WS-GP1900	General purpose glass microspheres - Sieve fraction: 1800 - 2000 µm	400 g
WS-GP2200	General purpose glass microspheres - Sieve fraction: 2000 - 2240 µm	400 g
WS-GP3000	General purpose glass microspheres - Sieve fraction: 2800 - 3200 µm	400 g
WS-GP3455	General purpose glass microspheres - Sieve fraction: 3360 - 3550 µm	400 g
WS-GP3775	General purpose glass microspheres - Sieve fraction: 3350 - 4000 µm	400 g

General purpose basalt microspheres

WS-BM0083	General purpose basalt microspheres - Sieve fraction: 75 - 90 µm	100 g
WS-BM0098	General purpose basalt microspheres - Sieve fraction: 90 - 106 µm	100 g
WS-BM0116	General purpose basalt microspheres - Sieve fraction: 106 - 125 µm	100 g
WS-BM0138	General purpose basalt microspheres - Sieve fraction: 125 - 150 µm	100 g
WS-BM0165	General purpose basalt microspheres - Sieve fraction: 150 - 180 µm	100 g
WS-BM0196	General purpose basalt microspheres - Sieve fraction: 180 - 212 µm	100 g
WS-BM0231	General purpose basalt microspheres - Sieve fraction: 212 - 250 µm	100 g
WS-BM0275	General purpose basalt microspheres - Sieve fraction: 250 - 300 µm	100 g
WS-BM0328	General purpose basalt microspheres - Sieve fraction: 300 - 355 µm	100 g
WS-BM0390	General purpose basalt microspheres - Sieve fraction: 355 - 425 µm	100 g
WS-BM0463	General purpose basalt microspheres - Sieve fraction: 425 - 500 µm	100 g
WS-BM0550	General purpose basalt microspheres - Sieve fraction: 500 - 600 µm	100 g
WS-BM0650	General purpose basalt microspheres - Sieve fraction: 600 - 710 µm	100 g
WS-BM0780	General purpose basalt microspheres - Sieve fraction: 710 - 850 µm	100 g
WS-BM0925	General purpose basalt microspheres - Sieve fraction: 800 - 1000 µm	100 g
WS-BM1090	General purpose basalt microspheres - Sieve fraction: 1000 - 1200 µm	100 g
WS-BM1300	General purpose basalt microspheres - Sieve fraction: 1200 - 1400 µm	100 g
WS-BM1500	General purpose basalt microspheres - Sieve fraction: 1400 - 1600 µm	100 g
WS-BM1700	General purpose basalt microspheres - Sieve fraction: 1600 - 1800 µm	100 g
WS-BM1900	General purpose basalt microspheres - Sieve fraction: 1800 - 2000 µm	100 g
WS-BM2200	General purpose basalt microspheres - Sieve fraction: 2000 - 2400 µm	100 g

Optical properties

Molecular absorption and luminescence

Code	Product	Unit
ERM-FB020	UV-Visible wavelength standard for HPLC detectors - Holmium/neodymium oxides solution The certified reference material is intended for use in the verification and calibration of the wavelength scale of ultra-violet/visible HPLC detectors. Certified values UV/visible wavelength location of 7 peaks in the spectral range 241 to 797 nm at four spectral bandwidths (1, 4, 7 and 10 nm).	2 x 3 mL
ERM-FB021	UV-Visible absorbance standard for HPLC detectors - Sodium nitrate/cobalt chloride/nickel chloride solution This certified reference material is intended for checking the linearity of the absorbance scales of UV/Visible HPLC detectors Certified values 7 standard + 1 blank UV/visible absorbance for four wavelengths (299, 395, 512 and 719 nm) at 4 bandwidths (1, 4, 7, and 10 nm).	8 x 3 mL
NIST-1921b	Polystyrene film - IR transmission wavelength This Standard Reference Material® (SRM®) is intended primarily for use in calibrating the wavelength (wavenumber) scale of spectrophotometers in the infrared (IR) spectral region from 3.2 µm to 18.5 µm (540 cm-1 to 3125 cm-1). SRM 192lb is a matt finish polystyrene film approximately 38 µm thick with a 25 mm diameter exposed area, centered 38 mm from the bottom of a cardboard holder, which is 5 cm × 11 cm × 0.2 cm in size.	1 card
STRM-0660HLKCTX	E.P. 5.2 Pharmacopoeia kit Each set consists of STRM-06 + STRM-60 + STRM-HL + STRM-KC + STRM-TX STRM-06 Potassium dichromate - UV absorbance and linearity Set of 2 cells: Each set consists of one blank (0.001M perchloric acid) and a solution with a nominal value of 60 mg/L. STRM-60 Potassium dichromate - UV absorbance and linearity Set of 2 cells: Each set consists of one blank (0.001M perchloric acid) and a solution with a nominal value of 600 mg/L STRM-HL Holmium oxide - UV and visible wavelength (Holmium oxide (4% m/v) in 10% v/v perchloric acid) Consists of one sealed cell, with certified peak at spectral bandwidth values of 0.10 nm,0.25 nm, 0.50 nm, 1.00 nm, 1.50 nm, 2.00 nm and 3.00 nm. STRM-KC Inorganic cut-off filter (potassium chloride; 1.2% aqueous) - UV stray light (cut-off at 200 nm) STRM-TX Toluene in hexane - Resolution (0.020% v/v solution of toluene in hexane)	set

Refractive index

PRG 7.21	Water Refractive index ..... 1.333 at 20 °C	10 mL
PRG 7.1	2,2,4-Trimethylpentane Refractive index ..... 1.391 at 20 °C	10 mL
PRG 7.11	Methylsilicone oil Refractive index ..... 1.405 at 20 °C	10 mL
PRG 7.2	Methylcyclohexane Refractive index ..... 1.423 at 20 °C	10 mL
PRG 7.12	Silicone oil DC 556 Refractive index ..... 1.462 at 20 °C	10 mL
PRG 7.20	Paraffin oil Refractive index ..... 1.475 at 20 °C	10 mL
PRG 7.5	Toluene Refractive index ..... 1.496 at 20 °C	10 mL
PRG 7.6	Chlorobenzene Refractive index ..... 1.524 at 20 °C	10 mL
PRG 7.8	1-Bromonaphthalene Refractive index ..... 1.657 at 20 °C	10 mL

Code	Product	Unit

Optical rotation

NIST-17F	Sucrose - Optical rotation Intended for use as a saccharimetry standard in calibrating polarimetric systems. Certified purity.....99.303 ± 0.004 % Reference values are given for optical rotation at 3 wavelengths	60 g
GUM 8.1	Sucrose (Saccharose) Certified values Optical rotation at 20 ºC 546 nm.....78.34 ° 589 nm ..... 66.52 °	100 g

Ion activity

pH calibration

Code	Product	Unit
NIST-185h	Potassium hydrogen phthalate This Standard Reference Material (SRM) is intended for use in preparing solutions for calibrating electrodes for pH measuring systems. Certified value pH (25 °C)..... 4.003 Certified values of the pH at other temperatures are given in the CoA.	60 g
NIST-186g	pH Standards Potassium dihydrogen phosphate (186-I-g) Disodium hydrogen phosphate (186-II-g) NIST-186g is intended for use in preparing solutions for calibrating electrodes for pH measuring systems. NIST-186 g consists of two components, each prepared to ensure high purity and uniformity: KH_2PO_4, potassium dihydrogen phosphate (186-I-g) and Na_2HPO_4, disodium hydrogen phosphate (186-II-g). A unit of NIST-186g consists of 30 g of potassium dihydrogen phosphate (186-I-g) and 45 g of disodium hydrogen phosphate (186-II-g), each contained in its respective clear glass bottle.	set
NIST-187e	Sodium tetraborate decahydrate (Borax) This Standard Reference Material (SRM) is intended for use in preparing solutions for calibrating electrodes for pH measuring systems.	30 g
NIST-2193a	Calcium carbonate pH standard This Standard Reference Material® (SRM®) is intended for use in preparing solutions for calibrating electrodes for pH measuring systems at pH values above 11.0. This lot of calcium carbonate ($CaCO_3$) was selected for its low level of alkali metal impurities. However, this SRM® is certified ONLY as a pH standard, NOT as a pure substance. Before use for pH calibrations, a freshly filtered, saturated (at 25 °C) solution of $Ca(OH)_2$ must be prepared from NIST-2193a. The certified pH(S) and U of this solution as a function of temperature are given below.	30 g

t/°C	pH(S)	uc(measurement)	uc(y)	k	U
5	13.232	0.0030	0.0058	2.0	0.011
10	13.026	0.0025	0.0056	2.0	0.011
15	12.830	0.0025	0.0056	2.0	0.011
20	12.645	0.0024	0.0056	2.0	0.011
25	12.469	0.0024	0.0055	2.0	0.011
30	12.303	0.0071	0.0087	2.0	0.017
35	12.145	0.0071	0.0087	2.0	0.017
37	12.084	0.0071	0.0087	2.0	0.017
40	11.995	0.0071	0.0087	2.0	0.017
45	11.853	0.0072	0.0087	2.0	0.017
50	11.717	0.0074	0.0089	2.0	0.017

NIST-188	Potassium hydrogen tartrate Certified value pH (25 °C)..... 3.557 Other certified values of pH at different temperatures are given in the CoA.	60 g
NIST-191c	pH Standards (Carbonate buffers; sodium bicarbonate and sodium carbonate) This Standard Reference Material® (SRM®) is intended for use in preparing solutions for calibrating electrodes for pH measuring systems. NIST-191c consists of two components, each prepared to ensure high purity and uniformity: Sodium bicarbonate, $NaHCO_3$ (191-I-c) and sodium carbonate, Na_2CO_3 (191-II-c).A unit of NIST-191c consists of 25 g of sodium bicarbonate (191-I-c) and 30 grams of sodium carbonate (191-II-c), each contained in its respective clear glass bottle. Certified value pH (25 °C)..... 10.012 Certified values of pH at 15 °C, 20 °C and 35 °C are given in the CoA.	25 g

Code	Product	Unit
NIST-RM 8040	Sodium oxalate - Reductometric This Reference Material (RM) was prepared to provide material of uniform, high purity for use as a working standard for oxidation-reduction reactions. Reference value Reductometric assay (mass fraction) ..... 99.951 % ± 0.038 %	60 g

Biological buffer systems

NIST-2181 - NIST-2184

These materials are intended for use in preparing a standard solution for calibrating clinical instruments (e.g. blood pH measurements), in the physiologically important range of pH 7-8. They are based on a biological buffer system for clinical pH measurements and are certified for use as an admixture only. The pH values for the buffer solutions are certified at 0.05 and 0.08 M with respect to the free acid and the sodium salt admixture as a function of temperature. The certified temperature range is from 0-50 °C.

NIST-2181	HEPES free acid Certified values 0.05M pH (0-50 °C)..... 7.832-7.216 0.08M pH (0-50 °C)..... 7.853-7.222	60 g
NIST-2182	HEPES Sodium Salt Certified values 0.05M pH (0-50 °C)..... 7.832-7.216 0.08M pH (0-50 °C)..... 7.853-7.222	60 g
NIST-2183	MOPSO free acid Certified values 0.05M pH (0-50 °C)..... 7.260-6.528 0.08M pH (0-50 °C)..... 7.268-6.528	50 g
NIST-2184	NaMOPSOate Certified values 0.05M pH (0-50 °C)..... 7.260-6.528 0.08M pH (0-50 °C)..... 7.268-6.524	50 g

Electrolytic conductivity

NIST-3199	KCl in n-propanol/de-ionised water Certified value Electrolytic conductivity (25 °C) ..... 15.36 µS/cm	500 mL
NIST-3192	KCl in de-ionised water Certified value Electrolytic conductivity (25 °C) ..... 496.73 µS/cm	8 x 50 mL
NIST-3193	KCl in de-ionised water Certified value Electrolytic conductivity (25°C) ..... 996.70 µS/cm	8 x 50 mL

GUM 5.1 - GUM 5.6

These Reference Materials have been certified by the Physical Chemistry Division of the Central Office of Measures in Poland. They are intended for calibration of conductivity cells or use in electrolytic conductivity measurement as a control sample. These RMs are certified in conformity with standard reference data published by the International Organisation of Legal Metrology (OIML). All Reference Materials are supplied with a certificate.

GUM 5.1	KCl solution Certified value Electrolytic conductivity..... 11.13 S/m at 25 ºC	100 mL
GUM 5.2	KCl Solution Certified value Electrolytic conductivity..... 1.285 S/m at 25 ºC	100 mL

Ion activity

Code	Product	Unit
GUM 5.3	KCl solution Certified value Electrolytic conductivity.....0.1410 S/m at 25 ºC	100 mL
GUM 5.4	KCl solution Certified value Electrolytic conductivity..... 0.01483 S/m at 25 °C	100 mL
GUM 5.5	KCl solution Certified value Electrolytic conductivity.....0.0720 S/m 25 °C	100 mL
GUM 5.6	KCl solution Certified value Electrolytic conductivity.....0.0293 S/m at 25 ºC	100 mL

Reagecon electrolytic conductivity standards

Standard values

REACSKC84	Conductivity standard Electrolytic conductivity.....84 µS/cm at 25°C	500 mL
REACSKCS	Conductivity standard Electrolytic conductivity.....147 µS/cm at 25°C	500 mL
REACSKCL	Conductivity standard Electrolytic conductivity.....1413 µS/cm at 25°C	500 mL
REACSKC12880	Conductivity standard Electrolytic conductivity.....12880 µS/cm at 25°C	500 mL
REACSKC13	Conductivity standard Electrolytic conductivity.....1.30 µS/cm at 25°C	250 mL
REACSKC136	Conductivity standard Electrolytic conductivity.....1.30 µS/cm at 25°C	6 x 250 mL
REACSKC5	Conductivity standard Electrolytic conductivity.....5 µS/cm at 25°C	500 mL
REACSKC10	Conductivity standard Electrolytic conductivity.....10 µS/cm at 25°C	500 mL
REACSKC20	Conductivity standard Electrolytic conductivity.....20 µS/cm at 25°C	500 mL
REACSKC50	Conductivity standard Electrolytic conductivity.....50 µS/cm at 25°C	500 mL
REACSKC100	Conductivity standard Electrolytic conductivity.....100 µS/cm at 25°C	500 mL
REACSKC200	Conductivity standard Electrolytic conductivity.....200 µS/cm at 25°C	500 mL
REACSKC500	Conductivity standard Electrolytic conductivity.....500 µS/cm at 25°C	500 mL
REACSKC1000	Conductivity standard Electrolytic conductivity.....1000 µS/cm at 25°C	500 mL
REACSKC5M	Conductivity standard Electrolytic conductivity.....5000 µS/cm at 25°C	500 mL
REACSKC10M	Conductivity standard Electrolytic conductivity.....10000 µS/cm at 25°C	500 mL
REACSKC20M	Conductivity standard Electrolytic conductivity.....20000 µS/cm at 25°C	500 mL
REACSKC50M	Conductivity standard Electrolytic conductivity.....50000 µS/cm at 25°C	500 mL
REACSKC100M	Conductivity standard Electrolytic conductivity.....100000 µS/cm at 25°C	500 mL
REACSKC150M	Conductivity standard Electrolytic conductivity.....150000 µS/cm at 25°C	500 mL

Code	Product	Unit
REACSKC200M	Conductivity standard Electrolytic conductivity..... 200000 µS/cm at 25°C	500 mL
REACSKC300M	Conductivity standard Electrolytic conductivity..... 300000 µS/cm at 25°C	500 mL
REACSKC350M	Conductivity standard Electrolytic conductivity..... 350.000 µS/cm at 25°C	500 mL
REACSKC450M	Conductivity standard Electrolytic conductivity..... 450000 µS/cm at 25°C	500 mL
REACSKC500M	Conductivity standard Electrolytic conductivity..... 500000 µS/cm at 25°C	500 mL
REAEP1330	Conductivity standard Electrolytic conductivity..... 1330 µS/cm at 20°C Resistivity..... 752 Ω·cm	500 mL
REAEP133	Conductivity standard Electrolytic conductivity..... 133 µS/cm at 20°C Resistivity..... 7519 Ω·cm	500 mL
REAEP266	Conductivity standard Electrolytic conductivity..... 26.6 µS/cm at 20°C Resistivity..... 37594 Ω·cm	500 mL

Viscosity oil standards

PSL2700V01 - PSL2700V19

These standards are calibrated by the PSL Calibration ISO 17025 Accredited Laboratory. The standards will be supplied complete with UKAS calibration certificates and have direct traceability to NIST and other international laboratories. Uncertainties of measurement are stated on the calibration certificates. Long shelf lives are provided by using stable base oils.The viscosity oil standards are suitable for the calibration and verification of the following:

- Glass Capillary viscometers
- Automated Kinematic Viscometer Systems
- Rotational/Cone & Plate Viscometers
- Low Temperature Viscometer Systems
- Cold Cranking Simulators
- Flow Cups

Code	Product	Unit
PSL2700V01	N4 - Viscosity oil standard Kinematic viscosity (nominal) 0.47 mm^2/s,cSt (20 °C) 0.45 mm^2/s,cSt (25 °C) 0.40 mm^2/s,cSt (40 °C) Dynamic viscosity (nominal) 0.31 mPa.s,cP (20 °C) 0.29 mPa.s,cP (25 °C) 0.26 mPa.s,cP (40°C)	500 mL
PSL2700V02	N8 - Viscosity oil standard Kinematic viscosity (nominal) 1. mm^2/s,cSt (20 °C) 0.89 mm^2/s,cSt (25 °C) 0.75 mm^2/s,cSt (40 °C) Dynamic viscosity (nominal) 0.77 mPa.s,cP (20 °C) 0.72 mPa.s,cP (25 °C) 0.56 mPa.s,cP (40 °C)	500 mL
PSL2700V03	N1.0 - Viscosity oil standard Kinematic viscosity (nominal) 1.3 mm^2/s,cSt (20 °C) 1.2 mm^2/s,cSt (25 °C) 0.97 mm^2/s,cSt (40 °C) Dynamic viscosity (nominal) 1.0 mPa.s,cP (20 °C) 0.93 mPa.s,cP (25 °C) 0.76 mPa.s,cP (40 °C)	500 mL
PSL2700V04	S3 - Viscosity oil standard Kinematic viscosity (nominal) 5.0 mm^2/s,cSt (20 °C) 2.9 mm^2/s,cSt (40 °C) 1.3 mm^2/s,cSt (100 °C) 4.4 mm^2/s,cSt (25 °C) 2.6 mm^2/s,cSt (50 °C) Dynamic viscosity (nominal) 4.1 mPa.s,cP (20 °C) 2.4 mPa.s,cP (40 °C) 0.98 mPa.s,cP (100 °C) 3.6 mPa.s,cP (25 °C) 2.1 mPa.s,cP (50 °C)	500 mL

Viscosity oil standards

Code	Product			Unit
PSL2700V05	S6 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	11 mm^2/s,cSt (20 °C)	5.7 mm^2/s,cSt (40 °C)	1.9 mm^2/s,cSt (100 °C)	
	8.9 mm^2/s,cSt (25 °C)	4.6 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	8.8 mPa.s,cP (20 °C)	4.8 mPa.s,cP (40 °C)	1.5 mPa.s,cP (100 °C)	
	7.4 mPa.s,cP (25 °C)	3.7 mPa.s,cP (50 °C)		
PSL2700V06	N10 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	21 mm^2/s,cSt (20 °C)	10 mm^2/s,cSt (40 °C)	2.7 mm^2/s,cSt (100 °C)	
	17 mm^2/s,cSt (25 °C)	7.5 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	17 mPa.s,cP (20 °C)	9.0 mPa.s,cP (40 °C)	2.1 mPa.s,cP (100 °C)	
	14 mPa.s,cP (25 °C)	6.2 mPa.s,cP (50 °C)		
PSL2700V07	S20 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	47 mm^2/s,cSt (20 °C)	18 mm^2/s,cSt (40 °C)	4.0 mm^2/s,cSt (100 °C)	
	37 mm^2/s,cSt (25 °C)	13 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	40 mPa.s,cP (20 °C)	16 mPa.s,cP (40 °C)	3.2 mPa.s,cP (100 °C)	
	31 mPa.s,cP (25 °C)	11 mPa.s,cP (50 °C)		
PSL2700V08	N35 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	95 mm^2/s,cSt (20 °C)	32 mm^2/s,cSt (40 °C)	5.8 mm^2/s,cSt (100 °C)	
	72 mm^2/s,cSt (25 °C)	23 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	82 mPa.s,cP (20 °C)	27 mPa.s,cP (40 °C)	4.7 mPa.s,cP (100 °C)	
	62 mPa.s,cP (25 °C)	19 mPa.s,cP (50 °C)		
PSL2700V09	S60 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	160 mm^2/s,cSt (20 °C)	54 mm^2/s,cSt (40 °C)	7.7 mm^2/s,cSt (100 °C)	
	120 mm^2/s,cSt (25 °C)	35 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	140 mPa.s,cP (20 °C)	47 mPa.s,cP (40 °C)	6.3 mPa.s,cP (100 °C)	
	104 mPa.s,cP (25 °C)	30 mPa.s,cP (50 °C)		
PSL2700V10	N100 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	320 mm^2/s,cSt (20 °C)	97 mm^2/s,cSt (40 °C)	11.0 mm^2/s,cSt (100 °C)	
	230 mm^2/s,cSt (25 °C)	59 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	280 mPa.s,cP (20 °C)	84 mPa.s,cP (40 °C)	9.1 mPa.s,cP (100 °C)	
	200 mPa.s,cP (25 °C)	51 mPa.s,cP (50 °C)		
PSLN140	N140 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	400 mm^2/s,cSt (20 °C)	140 mm^2/s,cSt (40 °C)	18.0 mm^2/s,cSt (100 °C)	
	300 mm^2/s,cSt (25 °C)	90 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	350 mPa.s,cP (20 °C)	120 mPa.s,cP (40 °C)	15.0 mPa.s,cP (100 °C)	
	260 mPa.s,cP (25 °C)	77 mPa.s,cP (50 °C)		
PSL2700V11	S200 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	660 mm^2/s,cSt (20 °C)	180 mm^2/s,cSt (40 °C)	17 mm^2/s,cSt (100 °C)	
	460 mm^2/s,cSt (25 °C)	110 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	590 mPa.s,cP (20 °C)	150 mPa.s,cP (40 °C)	14 mPa.s,cP (100 °C)	
	410 mPa.s,cP (25 °C)	91 mPa.s,cP (50 °C)		
PSL2700V12	N350 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	1400 mm^2/s,cSt (20 °C)	310 mm^2/s,cSt (40 °C)	24 mm^2/s,cSt (100 °C)	
	920 mm^2/s,cSt (25 °C)	180 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	1200 mPa.s,cP (20 °C)	270 mPa.s,cP (40 °C)	20 mPa.s,cP (100 °C)	
	790 mPa.s,cP (25 °C)	150 mPa.s,cP (50 °C)		

Code	Product			Unit
PSL2700-V12A	N415 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	1900 mm^2/s,cSt (20 °C)	415 mm^2/s,cSt (40 °C)	34 mm^2/s,cSt (100 °C)	
	1240 mm^2/s,cSt (25 °C)	240 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	1630 mPa.s,cP (20 °C)	360 mPa.s,cP (40 °C)	28.0 mPa.s,cP (100 °C)	
	1065 mPa.s,cP (25 °C)	200 mPa.s,cP (50 °C)		
PSL2700V13	S600 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	2400 mm^2/s,cSt (20 °C)	520 mm^2/s,cSt (40 °C)	35 mm^2/s,cSt (100 °C)	
	1600 mm^2/s,cSt (25 °C)	290 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	2100 mPa.s,cP (20 °C)	450 mPa.s,cP (40 °C)	29 mPa.s,cP (100 °C)	
	1400 mPa.s,cP (25 °C)	240 mPa.s,cP (50 °C)		
PSL2700V14	N1000 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	4800 mm^2/s,cSt (20 °C)	940 mm^2/s,cSt (40 °C)	55 mm^2/s,cSt (100 °C)	
	3100 mm^2/s,cSt (25 °C)	520 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	4100 mPa.s,cP (20 °C)	800 mPa.s,cP (40°C)	45 mPa.s,cP (100 °C)	
	2700 mPa.s,cP (25 °C)	450 mPa.s,cP (50°C)		
PSLN1300	N1300 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	6760 mm^2/s,cSt (20 °C)	1320 mm^2/s,cSt (40 °C)	77 mm^2/s,cSt (100 °C)	
	4365 mm^2/s,cSt (25 °C)	730 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	5775 mPa.s,cP (20 °C)	1120 mPa.s,cP (40 °C)	63.0 mPa.s,cP (100 °C)	
	3800 mPa.s,cP (25 °C)	630 mPa.s,cP (50 °C)		
PSL2700V15	S2000 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	8600 mm^2/s,cSt (20 °C)	1700 mm^2/s,cSt (40 °C)	81 mm^2/s,cSt (100 °C)	
	5600 mm^2/s,cSt (25 °C)	880 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	7500 mPa.s,cP (20 °C)	1500 mPa.s,cP (40 °C)	68 mPa.s,cP (100 °C)	
	4800 mPa.s,cP (25 °C)	760 mPa.s,cP (50 °C)		
PSL2700V16	N4000 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	18000 mm^2/s,cSt (20 °C)	3400 mm^2/s,cSt (40 °C)	130 mm^2/s,cSt (100 °C)	
	11000 mm^2/s,cSt (25 °C)	1700 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	16000 mPa.s,cP (20 °C)	2900 mPa.s,cP (40 °C)	112 mPa.s,cP (100 °C)	
	10000 mPa.s,cP (25 °C)	1500 mPa.s,cP (50 °C)		
PSL2700V17	S8000 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	35000 mm^2/s,cSt (20 °C)	6700 mm^2/s,cSt (40 °C)	220 mm^2/s,cSt (100 °C)	
	22000 mm^2/s,cSt (25 °C)	3200 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	31000 mPa.s,cP (20 °C)	5900 mPa.s,cP (40 °C)	190 mPa.s,cP (100 °C)	
	20000 mPa.s,cP (25 °C)	2700 mPa.s,cP (50 °C)		
PSL2700V18	N15000 - Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	65000 mm^2/s,cSt (20 °C)	13000 mm^2/s,cSt (40 °C)	370 mm^2/s,cSt (100 °C)	
	41000 mm^2/s,cSt (25 °C)	5800 mm^2/s,cSt (50 °C)		
	Dynamic viscosity (nominal)			
	58000 mPa.s,cP (20 °C)	11000 mPa.s,cP (40 °C)	320 mPa.s,cP (100 °C)	
	37000 mPa.s,cP (25 °C)	5100 mPa.s,cP (50 °C)		
PSL2700V19	S30000-Viscosity oil standard			500 mL
	Kinematic viscosity (nominal)			
	82000 mm^2/s,cSt (25 °C)	11000 mm^2/s,cSt (50 °C)		
	23000 mm^2/s,cSt (40 °C)	670 mm^2/s,cSt (100 °C)		
	Dynamic viscosity (nominal)			
	74000 mPa.s,cP (25 °C)	9900 mPa.s,cP (50 °C)		
	21000 mPa.s,cP (40 °C)	580 mPa.s,cP (100 °C)		

Certified liquids for viscosity measurements in the European Pharmacopoeia

Newtonian liquids with a certified viscosity are supplied by Van Swinden Laboratorium BV and are distributed by LGC Standards.

Liquids are available with kinematic viscosities up to 48000 $mm^2 \cdot s^{-1}$ and certified at temperatures between 15°C and 140°C.

Viscosities are certified in $mm^2 \cdot s^{-1}$ (kinematic viscosity, v) or in mPa·s (dynamic viscosity,η)

1 mPa·s = 1 cps (centipoise) 1 $mm^2 \cdot s^{-1}$= 1 cst (centistoke)

Standard liquids are available from stock, in 250 ml packs and certified at 20°C to following viscosities:

v = 0,6 ; 1,0 ; 2,2; 4,9 ; 1; 20 ; 31 ; 56 ; 67 ; 85 ; 100 ; 132 ; 167 ; 217 ; 262; 340 ; 423 ; 537 ; 644 ; 783 ; 1000 ; 1260 ; 1800 ; 3650 ; 5075 ; 10175 ; 18400 ; 46500

η= 0,4 ; 1,0 ; 1,8; 4,0 ; 8,9 ; 17,0 ; 26,0 ; 48,0 ; 58,0 ; 74,0 ; 87,0 ; 116,0 ; 146,0 ; 191,0 ; 230,0 ; 300,0 ; 375,0 ; 474,0 ; 572,0 ; 700,0 ; 862,0 ; 1085 ; 1560 ; 3175 ; 4430 ; 8935 ; 16300 ; 41300

All viscosities are calibrated relative to the viscosity of pure water. Stated values are nominal values, certified values will not deviate more than 10% from the nominal value.

The uncertainty of the certified viscosities is at least 0.3% at the lowest viscosity, increasing up to 0.5% at 48000 $mm^2 \cdot s^{-1}$.

Shelf life

Standards up to 500 mPa·s are mineral oil based, and have a shelf life of 12 months from date of certification. Above 500 mPa·s Polyisobutylene is used; these materials have a shorter shelf life, and should be ordered as needed.

Liquids can be prepared and certified to any viscosity between 0.6 $mm^2 \cdot s^{-1}$ and 80,000 $mm^2 \cdot s^{-1}$.

The price depends on the viscosity required, the degree of precision between nominal viscosity required and certified viscosity achieved, and temperature of certification.

Additional charges are applied for extra certification temperatures and for certification of dynamic viscosity. Please ask for a quotation.

Liquids supplied by customers may be certified for viscosity, charges vary: please ask for a quotation.

Relative humidity

HM11 - HM90

Please specify the type of hygrometer to be used to enable the appropriate adapter to be supplied.

Code	Product	Unit
HM11	Relative humidity standard Nominal relative humidity..... 11 %	unit
HM22	Relative humidity standard Nominal relative humidity..... 22 %	unit
HM33	Relative humidity standard Nominal relative humidity..... 33 %	unit
HM54	Relative humidity standard Nominal relative humidity..... 54 %	unit
HM75	Relative humidity standard Nominal relative humidity..... 75 %	unit
HM80	Relative humidity standard Nominal relative humidity..... 80 %	unit
HM90	Relative humidity standard Nominal relative humidity..... 90 %	unit

LGC Standards office contact details:

Bulgaria

LGC Standards Sp. z o.o.
Офис 102
Бул. "Г.М. Димитров" 52А
1125 София, България
BULGARIA

Tel: +359(0) 2 971 4955
Fax: +359(0) 894 780 154
bg@lgcstandards.com

China

LGC Beijing Representative Office
Rm 1908 Bldg. 6 Wanda Plaza
No. 93 Jianguo Rd.,
Beijing 100022
CHINA

Tel: +86 (10) 5820 8373
Fax: +86 (10) 5820 8376
hong.chen@lgcstandards.com

Czech Republic

LGC Standards Sp. z o.o.
Hnêvkovského 65
Brno
617 00
CZECH REPUBLIC

Tel: +420 543 529 205
Fax: +420 543 529 205
cz@lgcstandards.com

Finland

LGC Standards AB
Albanoliden 5, 4 trappor
Box 1737
SE-501 17 Borås
SWEDEN

Tel: +46 (0)33 20 90 60
Fax: +46 (0)33 20 90 79
se@lgcstandards.com

France

LGC Standards S.a.r.l
6, rue Alfred Kastler
BP 83076
67123 Molsheim Cedex
FRANCE

Tel: +33 (0)3 88 04 82 82
Fax: +33 (0)3 88 04 82 90
fr@lgcstandards.com

Germany

LGC Standards GmbH
Mercatorstr. 51
46485 Wesel
GERMANY

Tel: +49 (0)281 9887 250
Fax: +49 (0)281 9887 259
de@lgcstandards.com

Hungary

LGC Standards GmbH
Magyarországi Közvetlen
Kereskedelmi Képviselet
H-2000 Szentendre, Körte u. 4.
HUNGARY

Tel: +36 (06) 26 314 891
Fax: +36 (06) 26 314 891
hu@lgcstandards.com

Ireland

4 Manor Lodge
Magherafelt
County Derry BT45 6QL
IRELAND

Tel: +44 (0)28 7930 0078
Mbl: +44 (0)7921 872595
patrick.henry@lgcstandards.com

India

LGC Promochem India Private Ltd.
Fourth Floor, VITC Model Export Bhavan
14th Cross, IV Phase
Peenya Industrial Area
Bangalore 560 058
INDIA

Tel: +91 (0)80 6701 2000
Fax: +91 (0)80 6701 2046
in@lgcpromochem.com

Italy

LGC Standards S.r.l.
Via Venezia, 23
20099 Sesto San Giovanni (MI)
ITALY

Tel: +39 02 2412 6830
Fax: +39 02 2412 6831
it@lgcstandards.com

Poland

LGC Standards Sp. z o.o.
ul. M. Konopnickiej 1
Dziekanów Lesny
05-092 Lomianki
POLAND

Tel: +48 (0)22 751 31 40
Fax: +48 (0)22 751 58 45
pl@lgcstandards.com

Romania

LGC Standards GmbH
Str. Muncitorilor nr.1/2
400424 Cluj-Napoca
ROMANIA

Tel/Fax +40 364 116890
Mbl: +40 749 255121
ro@lgcstandards.com

Spain

LGC Standards S.L.U
C/Salvador Espriu 59, 2º planta
08005 Barcelona
SPAIN

Tel: +34 93 308 4181
Fax: +34 93 307 3612
es@lgcstandards.com

Sweden

LGC Standards AB
Albanoliden 5, 4 trappor
Box 1737
SE-501 17 Borås
SWEDEN

Tel: +46 (0)33 20 90 60
Fax: +46 (0)33 20 90 79
se@lgcstandards.com

Turkey

Meltem Torlakoglu Atmaca
Diirector of Turkish Office
Göztepe Mah. Gülden Sk. Nurten
Apt. No: 26 K:2 D:4
Çiftehavuzlar - Kadiköy /Ist.
TURKEY

Tel/Fax: +90 216 360 0870
Mbl: +90 530 880 3390
meltem.torlakoglu@lgcstandards.com

United Kingdom

LGC Standards
Queens Road
Teddington
Middlesex TW11 0LY
UK

Tel: +44 (0)20 8943 8480
Fax: +44 (0)20 8943 7554
uksales@lgcstandards.com

USA

LGC Standards
5853 Post Road, Suite 201B
East Greenwich, RI 02818
USA

Tel: +1 401 398 7892
Fax: +1 401 398 7893
David.Krost@lgcstandards.com

www.lgcstandards.com