

Purification and preparation Auxiliaries for purification and sample preparation



Purifying, enriching and separating samples for analytical purposes are routine processes in laboratories. Solid, liquid and gaseous substances must also be purified in production. A wide range of methods can be used for this, including: Absorption, adsorption, distillation, extraction, filtration, crystallization and drying.

In the product range of reagents for sample preparation, Merck Millipore offers many laboratory chemicals for a wide variety of purification methods. Many of these products, however, are not only suitable for purification, but can also be used for example as reaction auxiliaries, filtration aids, fillers, additives or active ingredient carriers.

The final part of the Merck Millipore product range is classic laboratory aids – such as heating bath media, joint greases or boiling chips – which are indispensable for many reactions and distillations. You can find chemical and physical data on our reagents in the Merck Millipore Chemicals and Reagents catalog and on our website: www.merckmillipore.com

Safety and environment

Merck Millipore pays attention to ensure that chemical reagents for sample preparation are manufactured in an eco-friendly way, without potentially harmful additives.

In the manufacture of Merck Millipore decalcification solution, for example, the use of surfactants and any potentially allergenic aromas or colorings is consciously avoided.

In contrast to other mineral oil heating baths, the Merck Millipore heating bath fluid is toxicologically harmless and biodegradable.

Our range of selected natural products such as quartz sand and kaolin, a natural, fine and well-crystallized clay material, underlines our strategic goal of protecting people and the environment sustainably. The selected natural product is tested for organic impurities and various anions and cations in the Merck Millipore chemical analysis laboratory and specified in laboratory quality.

Benefits

- **Reliable:** Above all thanks to their reproducible results, the premium Merck Millipore reagents for purification, separation and enrichment offer extremely high batch consistency and thus great reliability for the implementation of your application.
- **Convenient:** The comprehensive Merck Millipore product range is easy to order, all from one place.
- **Economical:** Merck Millipore offers packaging sizes for the smallest laboratories and larger packages for testing and production facilities, so that the exact quantity required can be easily obtained.



Further information about sustainable protection

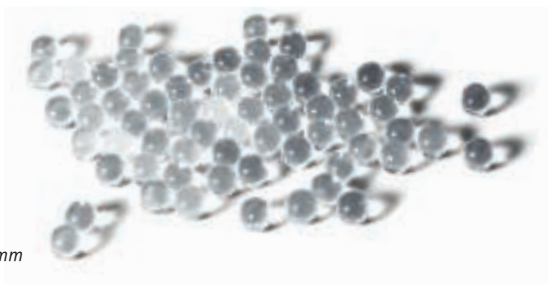
www.merckmillipore.com/protection
www.merckmillipore.com/preparation-purification

Ordering information **Sample preparation and product purification**

Boiling chips [Distillation]	CAS No.	Content	Packaging	Ord. No.
Boiling chips granules ~ 1 – 2 mm	–	250 g	Plastic bottle	1.07912.0250
Boiling chips granules ~ 2 – 8 mm	–	100 g	Plastic bottle	1.07913.0100
		500 g	Plastic bottle	1.07913.0500
Application advice	In liquids, for example during distillation, boiling chips prevent »superheating«, which occurs when the liquid is heated above its boiling point.			
Additional information	Boiling chips made from aluminium oxide or silicate ceramics are available in different grain sizes, depending on the medium and requirements.			
Boiling chips granules ~ 1 – 2 mm				
Application advice	Boiling chips with a grain size of under 2 mm are used for heating liquids in very small vessels.			
Boiling chips granules ~ 2 – 8 mm				
Application advice	Due to their porous structure, boiling chips made from silicate ceramics are best for use in watery solutions and solvents.			

BTS catalyst [Cleaning]	CAS No.	Content	Packaging	Ord. No.
BTS catalyst (about 5 x 3 mm) for gas purification	–	1 kg	Glass bottle	1.04182.1000
Application advice	A BTS catalyst is used for the removal of oxidizing or reducing contaminants from gases and mixtures thereof, for example for cleaning noble gases, nitrogen, hydrogen, oxygen, carbon monoxide, carbon dioxide, methane, ethane, propane, ethyls, propyls and inert gas mixtures with a wide range of compositions.			
Additional information	The BTS catalyst consists of around 30 % copper. It is provided in oxidized form and can be used without further preliminary treatment for the removal of reducing contaminants from inert gases. The oxidized form is black, the reduced form grey, although the change in color is relatively weak. Return to the oxide form occurs with the help of an oxygen-nitrogen mixture, ideally at a temperature between 120 and 200°C: $2 \text{Cu} + \text{O}_2 \rightarrow 2 \text{CuO}$			

Glass beads	CAS No.	Content	Packaging	Ord. No.
Glass beads 2 mm	–	500 g	Plastic bottle	1.04014.0500
Glass beads 3 mm	–	500 g	Plastic bottle	1.04015.0500
Glass beads 4 mm	–	500 g	Plastic bottle	1.04016.0500
Glass beads 5 mm	–	500 g	Plastic bottle	1.04017.0500
Glass beads 6 mm	–	500 g	Plastic bottle	1.04018.0500
Application advice	Glass beads of size 2 to 6 mm can be used in a wide range of ways in laboratories and technical facilities: For filling distillation columns (the size of the glass beads determines the distillation speed and separation); As agitator and mixing beads e.g. when mixing solutions which tend to settle or substances which are difficult to dissolve; For the prevention of superheating during distillation, especially in highly pure solvents or acids; In the concentration or vaporization of solutions (prevents change in weight, even in aggressive substances and at high temperatures. The vaporization or evaporation dish can be reweighed with glass beads.			
Additional information	Glass beads are made from colorless soda lime silica glass. It is the most widely used material for glass applications and is produced by melting quartz sand, natrite and lime at a temperature of over 1,200°C.			



Glass beads 6 mm

Graphite	CAS No.	Content	Packaging	Ord. No.
Graphite fine powder extra pure	7782-42-5	2.5 kg	Fibre carton	1.04206.2500
		25 kg	Fibre carton	1.04206.9025

Heating bath fluid [Auxiliary]	CAS No.	Content	Packaging	Ord. No.
Heating bath fluid for heating baths up to approx. 170°C	31694-55-0	2.5 l	Plastic bottle	1.15265.2500

Application advice	Heating bath fluid is used to allow chemical reactions at a higher temperature.
Additional information	Heating bath fluids can be used up to a temperature of around 170°C. The colorless heating bath fluid consists of a mixture of polyhydric aliphatic alcohols. It can be mixed with water without limitation, and is toxically harmless and biodegradable. In contrast to other mineral oil heating baths, reaction vessels can easily be washed out with water. Even if water gets into the hot heating bath unintentionally, there is usually no splashing.
Information on sustainable protection	Toxically harmless and biodegradable.



Iron (II) sulfide [Analysis]	CAS No.	Content	Packaging	Ord. No.
Iron(II) sulfide sticks Ø ~ 1 cm	1317-37-9	1 kg	Plastic bottle	1.03956.1000
		25 kg	Fibre carton	1.03956.9025

Application advice	Used in laboratories for the production of hydrogen sulfide.
Additional information	Iron (II) sulfide is dark gray or black, metal-like pieces, plates or sticks, which are usually contaminated with excess Fe-extra pure, crystalline FeS would be light tumbac brown. FeS is insoluble in water, but dissolves in acids, developing hydrogen sulfide. Since there is non-converted Fe in FeS, the nitrogen sulfide obtained in this way is contaminated with hydrogen.

Ordering information **Sample preparation and product purification**

Kaolin	CAS No.	Content	Packaging	Ord. No.
Kaolin powder	1332-58-7	2.5 kg	Plastic bottle	1.04440.2500

Application advice	Kaolin can be used e.g. as an adsorbent, filler, polisher or carrier. As an adsorbent, kaolin can bond cations among other things.
Additional information	Due to the structure of aluminium silicate, kaolin, also known as china clay, kaolinite, porcelain clay etc., swells significantly when taking up water, and can absorb up to 80 % water.
Information on sustainable protection	The kaolin offered here is a selected natural product which is tested for organic impurities and various anions and cations and provided in laboratory quality.



Magnesia rods [Reaction detection]	CAS No.	Content	Packaging	Ord. No.
Magnesia rods for the phosphorus salt pearls	-	100 units	Plastic bottle	1.05809.0100

Application advice	Magnesia rods are used e.g. for the detection of certain elements through characteristic flame color and for reactions with borax and phosphoric salt pearls. The magnesia rods are also used as a carrier or digestion agent for certain substances that can be fused when held into a flame.
Additional information	Magnesia rods are formed from ignited magnesium oxide which, due to its high melting point of over 2,600°C, does not melt even in the hottest flame and does not show its own flame color. The rods are around 14 cm long and have a diameter of around 2 mm.



Magnesia rods

Marble granular [Analysis]	CAS No.	Content	Packaging	Ord. No.
Marble granular for producing CO ₂	471-34-1	1 kg	Plastic bottle	1.05986.1000
Marble granular for producing CO ₂	471-34-1	5 kg	Plastic bottle	1.05986.5000
Application advice	Marble granular is used for the determination of carbon dioxide in water, which attacks lime. CO ₂ can be produced from the effect of hydrochloric acid on marble.			
Additional information	Marble granular is formed from calcium carbonate.			

Oil bath filling [Additive]	CAS No.	Content	Packaging	Ord. No.
Oil bath filling for oil baths up to about 250°C	8002-74-2	1 l	Alu bottle	1.06900.1000
		5 l	Alu bottle	1.06900.5000
		25 l	Steel barrel	1.06900.9026
Application advice	Oil bath fillings are used up to a temperature of around 250°C.			
Additional information	Oil bath filling consists of mineral oils which boil at high temperatures and are free from resin and acid. When used for the first time, the oil bath filling should be heated to the operating temperature for a while in a fume hood, in order to remove low-molecular components. If high temperatures are maintained for a long time, there is a risk of thermal decomposition. Due to unpleasant odors, the oil bath filling should generally only be used in a fume hood.			

Paraffin	CAS No.	Content	Packaging	Ord. No.
Paraffin 42-44, in block form	8002-74-2	1 kg	Plastic bottle	1.07150.1000
		2.5 kg	Plastic bottle	1.07150.2500
		25 kg	Fibre carton	1.07150.9025
Paraffin 46-48, in block form	8002-74-2	1 kg	Plastic bottle	1.07151.1000
		25 kg	Fibre carton	1.07151.9025
Paraffin 51-53, in pastille form Ph Eur, BP, NF	8002-74-2	1 kg	Plastic bottle	1.07157.1000
		2.5 kg	Plastic bottle	1.07157.2500
		25 kg	Fibre carton	1.07157.9025
Paraffin 52-54, in pastille form Ph Eur, BP, NF	8002-74-2	1 kg	Plastic bottle	1.07300.1000
		20 kg	Fibre carton	1.07300.9020
Paraffin 56-58, in pastille form Ph Eur, BP, NF	8002-74-2	1 kg	Plastic bottle	1.07337.1000
		2.5 kg	Plastic bottle	1.07337.2500
		20 kg	Fibre carton	1.07337.9020
Paraffin 57-60, in pastille form Ph Eur, BP, NF	8002-74-2	1 kg	Plastic bottle	1.07158.1000
		25 kg	Fibre carton	1.07158.9025
Paraffin liquid Reag. Ph Eur	8012-95-1	1 l	Plastic bottle	1.07162.1000
		2.5 l	Plastic bottle	1.07162.2500
		25 l	Plastic container	1.07162.9025
Paraffin viscous Ph Eur, BP, USP	8012-95-1	1 l	Plastic bottle	1.07160.1000
		2.5 l	Plastic bottle	1.07160.2500
		25 l	Plastic container	1.07160.9026
Application advice	Paraffins have a wide range of uses and applications, e.g. as a heating bath medium, as a waxing agent and lubricant or as an additive. Due to their high flashpoint and ignition temperature, paraffins can be used up to a temperature of around 200°C.			
Additional information	Paraffins (alkanes) consist of saturated aliphatic hydrocarbon and may be in liquid or solid form, depending on the chain length. Paraffin is not a single organic bond, but rather a mixture of hydrocarbons of varying chain lengths. This also defines the condition of aggregation and the defined melting range.			

Polyvidone	CAS No.	Content	Packaging	Ord. No.
Polyvidone 25 Ph Eur, BP	9003-39-8	100 g	Plastic bottle	1.07443.0100
		1 kg	Plastic bottle	1.07443.1000
Application advice	Polyvidone, also known as polyvinylpyrrolidone (PVP), is used as a protective colloid, stabilizer and binding agent.			
Additional information	Polyvidone is a hygroscopic, amorphous, white-yellow powder, a polymer of 1-vinylpyrrolidone-(2), and forms a viscous colloidal solution with water. Its amorphous structure means that PVP has no melting point, but rather a glass transition temperature depending on the level of polymerization between around 110 and 180°C. PVP dissolves in water and in a wide range of other organic solvents.			

Ordering information **Sample preparation and product purification**

Polyvinyl alcohol [Auxiliary]	CAS No.	Content	Packaging	Ord. No.
Polyvinyl alcohol protective colloid for argentometric titration	9002-89-5	100 g	Plastic bottle	1.14266.0100
Application advice	Polyvinyl alcohol or PVA or PVOH is a man-made thermoplastic plastic which is used, for example, as an adhesive and thickening agent.			



Quartz fine granular

Quartz [Filler and additive]	CAS No.	Content	Packaging	Ord. No.
Quartz fine granular, washed and calcined for analysis	14808-60-7	250 g	Plastic bottle	1.07536.0250
		1 kg	Plastic bottle	1.07536.1000
		5 kg	Plastic bottle	1.07536.5000
Application advice	As a result of its chemical indifference, quartz sand is used as a filler, filtration aid and as a catalyst carrier or pulverization agent in laboratory analysis.			
Additional information	The grain size of quartz is 0.2 to 0.8 mm.			
Information on sustainable protection	Quartz sand is a selected natural product which is treated in a similar way to sea sand.			



Silicic acid [Filler and additive]	CAS No.	Content	Packaging	Ord. No.
Silicic acid precipitated extra pure heavy	10279-57-9	1 kg	Plastic bottle	1.00656.1000
		20 kg	Fibre carton	1.00656.9020
Silicic acid precipitated extra pure light DAB	10279-57-9	1 kg	Fibre carton	1.00657.1000
		10 kg	Fibre carton	1.00657.9010
Application advice	Synthetic, highly chemically pure silicic acid may be used in laboratories as a filler, additive, flow aid and adsorbent.			

Silicone anti-foaming agents [Anti-foaming agent]	CAS No.	Content	Packaging	Ord. No.
Silicon anti-foaming agent	-	100 g	Plastic bottle	1.07743.0100
		500 ml	Plastic bottle	1.07743.0500
Application advice	Silicone anti-foaming agents prevent the unwanted formation of foam through substances which are active on the surface of watery solutions, such as e.g. emulsifiers. In defoaming processes in laboratories and technical facilities, the quantity used depends on the composition of the substance to be defoamed and the foaming agent itself. Very low dosages are usually necessary – in normal cases around 2 to 10 ppm and in water solutions containing wetting agents, 200 to 1,000 ppm. The best amount to use in individual cases can only be found by trial.			
Additional information	Silicone anti-foaming agents consist of a watery emulsion of substituted polysiloxanes with differing chain lengths which are extremely effective as a »foam suppressor«: their limited ability to mix with water (hydrophobia) means that they accumulate at the phase interface, thus reducing the surface activity of the foam-forming emulsifiers.			

Silicone grease [Sealing]	CAS No.	Content	Packaging	Ord. No.
Silicone grease	-	100 g	Fibre case	1.07746.0100
Silicone high vacuum grease heavy	-	100 g	Fibre case	1.07921.0100
Application advice	Silicone grease is used in a similar way to desiccator or stopcock grease for the lubrication of moving parts and for sealing a vacuum in jointed apparatus.			
Additional information	Silicone greases are highly viscous polysiloxanes characterized by great chemical resistance. The difference between the various grease types is their viscosity, as can be derived from the additional designation. The higher the viscosity, the more reliable the seal in a vacuum, even at temperatures over 200°C.			

Silicone oil [Auxiliary]		CAS No.	Content	Packaging	Ord. No.
Silicone oil for oil baths up to 250°C		68083-14-7	100 ml	Plastic bottle	1.07742.0100
			1 l	Plastic bottle	1.07742.1000
Application advice	Silicone oil is used as a heat transfer medium. As a result of the wide operating temperature range of -45 to +230°C, it is also used as thermostat liquid.				
Additional information	Silicone oil is a methylphenylpolysiloxane and an almost colorless liquid, and cannot be mixed with water.				

Stopcock grease [Sealing]		CAS No.	Content	Packaging	Ord. No.
Stopcock grease melting point 45-53°C		-	250 g	Plastic can	1.04318.0250
Application advice	Desiccator grease is used for standard applications in the laboratory, e.g. for sealing joints in laboratory equipment made of glass.				
Additional information	It consists of beeswax and vaseline.				

Triton®		CAS No.	Content	Packaging	Ord. No.
Triton® X-100 for analysis		9036-19-5	1 l	Glass bottle	1.08603.1000
			2.5 l	Glass bottle	1.08603.2500

Water detection paste		CAS No.	Content	Packaging	Ord. No.
Water detection paste N		-	150 g	Alu tube	1.08641.0001
Application advice	This paste can be used to detect water in containers that are filled with fuel, heating oil or other water-immiscible fluids. The level water will be reflect by a color change. A well-defined color change does not only enable to show the presence of water, but also allows to measure the level of the water.				
Additional information	If stored in a cool and dry place with the tube firmly closed, the water detection paste can be kept indefinitely. When using in cool weather, the paste's spreading ability can be improved by warming the tube slightly.				

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

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Merck KGaA
Frankfurter Straße 250
64293 Darmstadt, Germany