Technical Information

Solvenon® PM

Description

Colorless, medium-volatility, water-miscible neutral liquid with a mild, alcoholic odour. Its favourable physiological properties make it preferable to methoxyethanol and ethoxyethanol as a solvent for coatings and printing inks.

Chemical nature

Methoxy-1,2-propanol, Propylene glycol-1-methyl ether,
Methoxy-1,2-hydroxpropane, Methylpropylene glycol

Molecular formula	$C_4H_{10}O_2$
Molar mass	90.12 g/mol
CAS number	107-98-2
EC number	203-539-1

Delivery specification

Property	Value	Unit	Test method
Methoxypropanols*	99.5 min.	%	GC-Method BASF
Water	0.1 max.	%	DIN 51777, Part1
Pt/Co color value (Hazen)	10 max.	-	DIN EN ISO 6271

** Solvenon® PM contains less than 0.3% of the methoxy-2,1-propanol-isomer*
For general instructions on gas chromatography, see e. g. [1].

Properties

Solvenon® PM is a clear, hygroscopic, medium-volatility liquid with a mild, alcoholic odor. It is miscible with water and many common organic solvents. By virtue of its ether and alcohol groups, Solvenon® PM has very good solvent power for many of the raw materials used in coatings, e. g. resins, binders, etc. It possesses the typical properties of the ether and alcohol groups. For instance, it may react with acids (or form esters), oxidizing agents (to form the corresponding ketones or carboxylic acids), alkali metals (to form alcoholates) or aldehydes (to form acetals). Solvenon® PM may form peroxides with atmospheric oxygen.

Physical data

The following physical data were measured in the BASF SE laboratories. They do not represent any legally-binding guarantee of properties for our sales product.

Property	Condition	Value	Test method
Boiling range	at 1013 hPa; 95 Vol.-%; 2 – 97 ml	119 – 122 °C	DIN 51751
Density	at 20 °C	0.920 – 0.923 g/cm^3	DIN 51757
Refractive index n_D^{20}		1.402 – 1.404	DIN 51423
Solidification point		- 95 °C (glass transition)	-
Evaporation rate	ether = 1	22	DIN 53170
Enthalpy combustion (ΔH_C)	at 20 °C	26393 kJ/kg	-
Enthalpy of vaporization (ΔH_V)	at 1013 hPa	452 kJ/kg	calculated
Enthalpy of formation (ΔH_f)	at 25 °C	-4 962 kJ/kg	calculated
Surface tension σ	at 25 °C	27.7 mN/m	
Dipole moment (μ)		1.67 D	
Dielectric constant (ε)		12.0	
Solubility in water	at room temperature	Freely miscible	
Hansen solubility parameters		$\delta d = 15.60\ (MPa)^{1/2}$ $\delta p = 6.30\ (MPa)^{1/2}$ $\delta h = 11.60\ (MPa)^{1/2}$ $\delta t = 22.44\ (MPa)^{1/2}$	

T [°C]	Vapor pressure P [hPa]	Density ρ [g/cm³]	Viscosity η [mPa·s]	Specific heat Cp [kJ/(kg·k)]
- 60		0.9926	122.8	
- 40		0.9758	22.5	
- 20		0.9583	7.47	
- 10		0.9493	4.91	
0	3.4	0.9401	3.43	2.31
10	6.9	0.9308	2.52	2.35
20	13.3	0.9214	1.91	2.39
40	42.2	0.9120	1.20	2.46
60	112	0.8820	0.82	2.51
80	261	0.8613	0.59	2.56
100	543	0.8400	0.44	2.61
110	757	0.8292	0.39	
120.1	1013			

Applications

Solvenon® PM possesses properties similar to those of methoxyethanol and ethoxyethanol and used in the same applications, particularly in coatings and printing inks.

Selected applications are given below.

- Printing inks

Solvenon® PM is eminently suitable for use in printing inks, e.g. for cellulose nitrate flexographic inks. It can also be used in gravure inks.

Solvenon® PM regulates, i. e. retards, the drying of printing inks, but two facts should be noted in this respect.

Solvenon® PM (evaporation rate= 22; ether = 1) dries more rapidly than ethoxyethanol (evaporation rate = 43). In other words, somewhat greater amounts are required to retard drying.

A general rule is that drying regulators incur the risk of solvent retention and blocking if their proportion is too high or if inadequate time is allowed for drying. This also applies to Solvenon® PM. Solvenon® PM can also be used for cleaning printing plates and for thinning printing inks.

- Coatings Industry

The main application for Solvenon® PM in the coatings industry is the production of cellulose nitrate lacquers. The initial solutions can be thinned with many cheap diluents, yet still dry to give clear, transparent coatings of good strength. Solvenon® PM improves the brushability, levelling and gloss of air-drying paints and prevents blushing.

It is included in formulations for paints applied by a spray-gun for the purpose of improving gloss and adhesion.

Other applications for Solvenon® PM are as follows:

- Component in copying fluids (particularly together with alcohols, inks, and felt-tip pen inks)
- Component in the solvent phase for road marking paints
- Solvent or leather finishes and stamp pad inks
- Additive in cleaners, e. g. for metals, windows and floors
- Component in the solvent phase for wood stains and polishes
- Starting material in the production of Methoxypropyl Acetate, which is also an excellent solvent
- Component in liquids for the evaporative cooling of engines, particularly large diesel engines.
- Starting material in the production of esters that may be used as plasticizers.

Storage & Handling

Solvenon® PM should be stored under nitrogen. The storage temperature must not exceed 40 °C and moisture are excluded. Under these conditions, a storage stability of 12 months can be expected.

Safety

When using this product, the information and advice given in our Safety Data Sheet should be observed. Due attention should also be given to the precautions necessary for handling chemicals.

Note

The data contained in this Technical Information is based on our current knowledge and experience as well as our investigations according to the today's state-of-the-art. In view of the many factors that may affect processing and application of the Product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the Product for specific purpose. No liability of BASF can be derived therefrom. It is the responsibility of the recipient of the Product to ensure that any proprietary rights and existing laws and legislation are observed.

August 2020

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