Technical Information

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n-Propanol

Description

Mild-smelling, semi-volatile, polar, clear, low-viscosity, water-miscible solvent of high purity. Starting material for syntheses.

Chemical nature

n-Propanol, 1-propanol, propan-1-ol, n-propyl alcohol

Molecular formula	C_3H_8O
Molar mass	60.10 g/mol
CAS number	71-23-8
EC number	200-746-9

Delivery specification

Property	Value	Unit	Test method
n-Propanol	99.5 min.	%	GC-Method BASF
Water	0.1 max.	%	DIN 51777, Part1
Pt/Co color value (Hazen)	10 max.	-	DIN EN ISO 6271
Acid value	0.1 max	mg KOH/g	DIN EN ISO 2114

Properties

n-Propanol is a clear, low-viscosity, neutral liquid with a characteristic alcohol odor. The product is miscible with all common solvents, such as alcohols, ketones, aldehydes, ethers, glycols and aromatic and aliphatic hydrocarbons. n-Propanol is also miscible in all proportions with water.

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	96.5 – 98 °C	DIN 51751
Density	at 20 °C	0.803 – 0.805 g/cm^3	DIN 51757
Refractive index n_D^{20}		1.385 – 1.386	DIN 51423
Solidification point	at 1013 hPa	- 127 °C	
Evaporation rate	ether = 1	16	
Enthalpy of combustion (ΔH_C)	at 25 °C	33 580 kJ/kg	
Dipole moment (μ)		1.55 D	
Conversion factor		1 (cal/cm^3)$^{1/2}$ = 2,0455 (MPa)$^{1/2}$	
Hansen solubility parameters		δd = 16.0 (MPa)$^{1/2}$ δp = 6.8 (MPa)$^{1/2}$ δh = 17.4 (MPa)$^{1/2}$ δt = 24.5 (MPa)$^{1/2}$	

T [°C]	Vapor pressure P [hPa]	Specific heat Cp [kj/(kg·K)]	Density r [g/cm^3]	Viscosity η [mPa·s]
- 50	0.03	1.920	0.8543**	20.2
- 30		1.998		
- 20	0.84	2.051	0.8339	6.9
- 10		2.113		
0	4.59	2.183	0.8193	3.9
10	9.7	2.262	0.8117	2.9
20	19.4	2.348	0.8038	2.3
30	36.8	2.443	0.7957	1.8
40	66.8	2.544	0.7874	1.4
50	116.3	2.653	0.7789	1.1
60	195	2.769	0.7702	0.9
70	316	2.892	0.7613	0.7
80	498	3.021	0.7521	0.6
90	763	3.156	0.7428	0.5
97.02	1013			

T [°C]	Thermal Conductivity λ [mW/(m·K)]	Surface tension ο [mN/m]	Refractive indexn_D	Dielectric constant ε
0	157.6		1.3920**	24.0
10	154.8	24.6	1.3889	22.3
20	152.3	23.7	1.3855	20.7
30	150.0	22.9	1.3818	19.3
40	147.7		1.3778	18.0
50	145.5		1.3735**	16.7
60	143.1		1.3689**	15.4
70	140.6*			
80	137.7*			

** calculated* **extrapolated

Applications

n-Propanol is used as a solvent and an intermediate product. It tends to absorb less water than lower alcohols and has a much milder, more pleasant smell than higher alcohols.

As a solvent, n-Propanol is employed mainly in printing inks, especially flexographic inks. The use for printing inks in food contact is not supported by BASF for n-Propanol; please use Protectol NP S instead as it is manufactured with appropriate controls, or as an alternative the suitability for food contact may be established by the customer's own testing. In the coatings industry, n-Propanol is used as a semi-volatile alcohol for improving the drying properties, for example in the manufacture of alkyd resin paints, baking finishes and electrodeposition paints.

In the cleaning agent sector, it is added to floor polishes and metal degreasing agents. In adhesive manufacture, n-Propanol serves as an additional solvent.

n-Propanol is also used in deicing fluids, as an extracting agent and as an entrainer in azeotropic distillations.

n-Propanol serves as a starting material for the manufacture of insecticides, herbicides and medicines. It is reacted with acetic acid to produce propyl

acetate, with ammonia to form propylamine and with halogens to yield the corresponding propyl halogenides.

Storage & Handling

n-Propanol 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.

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