Shell Chemicals

Technical Datasheet

Isopropyl alcohol

Product Code	S1111
Region	North America
Product Category	Alcohols
CAS Registry Number	67-63-0
Synonym(s)	2-propanol, IPA
Description	Isopropyl Alcohol (IPA) is a water-white mobile liquid with a mild (alcohol) odor. It is miscible in all proportions with water and many organic liquids and has good solvent power for many organic substances (gums shellac, alkaloids, and essential oils). IPA forms azeotropic mixtures with water and many organic liquids. Although IPA itself is not a solvent for nitrocellulose, in combination with a true solvent, it increases that solvent's dissolving power for nitrocellulose.

Typical Properties

Property	Unit	Method	Value
Purity	% m/m	DIN 55685	min 99.8
Water	% m/m	ASTM D1364	0.05
Density @20°C	kg/l	ASTM D4052	0.785
Cubic Expansion Coefficient @20°C	(10^{-4})/°C	Calculated	11
Refractive Index @20°C	-	ASTM D1218	1.378
Boiling Point	°C	-	82
Relative Evaporation Rate (nBuAc=1)	-	ASTM D3539	1.5
Antoine Constant A #	kPa, °C	-	6.86618
Antoine Constant B #	kPa, °C	-	1360.13
Antoine Constant C #	kPa, °C	-	197.592
Antoine Constants: Temperature range	°C	-	-10 to +90
Vapor Pressure @20°C	kPa	Calculated	4.1
Vapor Pressure @50°C	kPa	Calculated	24
Saturated Vapor Concentration @20°C	g/m^3	Calculated	102
Flash Point	°C	IP 170	12
Auto Ignition Temperature	°C	ASTM E659	425
Explosion Limit: Lower	%v/v	-	2
Explosion Limit: Upper	%v/v	-	12

Electrical Conductivity @20°C	µS/m	ASTM D4308	6
Dielectric Constant @20°C	-	-	18.6
VOC Content	g/l	Calculated	785
Freezing Point	°C	-	-88
Surface Tension @20°C	mN/m	Du Nouy ring	23
Viscosity @20°C	mPa.s	ASTM D445	2.4
Hildebrand Solubility Parameter	$(cal/cm^3)^{1/2}$	-	11.5
Hydrogen Bonding Index	-	-	-16.7
Fractional Polarity	-	-	0.178
Heat of Vaporization @Tboil	kJ/kg	-	664
Heat of Combustion (Net) @25°C	kJ/kg	-	31000
Specific Heat @20°C	kJ/kg/°C	-	2.6
Thermal Conductivity @20°C	W/m/°C	-	0.14
Miscibility @20°C: Solvent in Water	% m/m	-	Complete
Miscibility @20°C: Water in Solvent	% m/m	-	Complete
Azeotrope with Water: Boiling Point	°C	-	80.3
Azeotrope with Water: Solvent Content	% m/m	-	87.4
Molecular Weight	g/mol	-	60

(#) In the Antoine temperature range, the vapor pressure P (kPa) at temperature T (°C) can be calculated by means of the Antoine equation: log P = A - B/(T+C)

Test Methods

Copies of copyrighted test methods can be obtained from the issuing organisations:

American Society for Testing and Materials (ASTM) : www.astm.org
Energy Institute (IP) : www.energyinst.org.uk
Deutsches Institut für Normung (DIN) : www.din.de

N.B: For routine quality control local test methods may be applied. Such methods have been validated against those mentioned in this datasheet.

Quality

Isopropyl alcohol does not contain detectable quantities of heavy metals, chlorinated compounds or polycyclic aromatic hydrocarbons.

Hazard Information

For detailed Hazard Information please refer to the Material Safety Data Sheet on www.shell.com/chemicals.

Storage and Handling

Provided proper storage and handling precautions are taken we would expect Isopropyl Alcohol to be technically stable for at least 12 months. For detailed advice on Storage and Handling please refer to the Material Safety Data Sheet on www.shell.com/chemicals.

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