

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 solvent for epoxy and acrylic resins, ethyl cellulose, polyvinyl butyral, alkaloids, gums, shellac, natural resins, and many essential oils. It functions as a latent solvent in solvent systems for nitrocellulose. It is a medium evaporating solvent and is completely miscible with most solvents.

Typical Properties

Property	Unit	Method	Value
Purity, min.	%m/m	GC	99.8
Water	%m/m	ASTM D1364	0.03
Acidity (as Acetic Acid)	%m/m	ASTM D1613	0.001
Density at 20°C	kg/l	ASTM D4052	0.785
Specific Gravity at 20°C/20°C	-	ASTM D4052	0.786
Specific Gravity at 25°C/25°C	-	ASTM D4052	0.783
Coefficient of Cubic Expansion at 20°C	10 ⁻⁴ /°C	Calculated	11
Refractive Index at 20°C	-	ASTM D1218	1.377
Color	Pt-Co	ASTM D1209	< 5
Boiling Point	°C	-	82
Relative Evaporation Rate (nBuAc=1)	-	ASTM D3539	1.5
Relative Evaporation Rate (Ether=1)	-	DIN 53170	11
Antoine Constant A #	kPa. °C	-	6.86618
Antoine Constant B #	kPa. °C	-	1360.13
Antoine Constant C #	kPa. °C	-	197.592
Temperature Limits for Antoine Equation #	°C	-	-10 to +90

Vapor Pressure at 20°C	kPa	Calculated	4.1
Vapor Pressure at 50°C	kPa	Calculated	24
Saturated Vapor Concentration at 20°C	g/m ³	Calculated	102
Volatile Organic Compound (VOC)	g/l	EU / EPA	785
Flash Point (Abel)	°C	IP 170	12
Auto Ignition Temperature	°C	ASTM E659	425
Lower Explosion Limit	%v/v	-	2.0
Upper Explosion Limit	%v/v	-	12
Electrical Conductivity at 20°C	pS/m	ASTM D4308	6*10 ⁶
Dielectric Constant at 20°C	-	-	18.6
Freezing Point	°C	-	-88
Surface Tension at 20°C	mN/m	-	23
Viscosity at 20°C	mPa.s	-	2.4
Hildebrand Solubility Parameter	(cal/cm ³) ^{1/2}	-	11.5
Hydrogen Bonding Index	-	-	-16.7
Fractional Polarity	-	-	0.178
Heat of Vaporization at T _{boil}	kJ/kg	-	664
Heat of Combustion (Net) at 25°C	kJ/kg	-	31000
Specific Heat at 20°C	kJ/kg/°C	-	2.56
Thermal Conductivity at 20°C	W/m/°C	-	0.14
Miscibility at 20°C: Solvent in water	%m/m	-	complete
Miscibility at 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 as produced and delivered complies with ACS 10th Edition Reagent Grade (General Use), ASTM D770, DIN 53245 and FED MIL Spec TT-I-735A.

Isopropyl Alcohol does not contain detectable quantities of polycyclic aromatics, heavy metals or chlorinated compounds.

Hazard Information

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

Storage 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 Safety Data Sheet on www.shell.com/chemicals.

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