



Data Sheet

Issued:

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Product Name

Isopropyl Alcohol

Product Code
S1111
Product Category
Alcohols
CAS Registry Number

67-63-0

EINECS Number

200-661-7

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.

Sales Specification

Property	Unit	Min	Max	Method
Purity	% m/m	99.8		DIN 55685
Water	% m/m		0.1	ASTM D1364
Appearance		Cl & FFSM		ASTM D4176
Color	Pt-Co		5	ASTM D1209 (4)
Density @20°C	g/mL	0.785	0.786	ASTM D4052 (4)
Refractive Index @20°C		1.376	1.378	ASTM D1218 (4)
Acidity as Acetic acid	% m/m		0.001	ASTM D1613
Non Volatile Matter	g/100mL		0.001	ASTM D1353
Distillation, IBP	°C	81.8		ASTM D1078 (4)
Distillation, DP	°C		82.8	ASTM D1078 (4)
Water Miscibility		Miscible		ASTM D1722

(1) Guaranteed, (2) Typical, (3) Report Only, (4) Guaranteed spec with typical result

Product as produced complies with ASTM D770, DIN 53245 and ACS 8th edition. Product meets guaranteed limits, but are not routinely tested.

Typical Properties

Property	Unit	Method	Value
Density @20°C	kg/L	ASTM D4052	0.785
Cubic Expansion Coefficient @20°C	(10 ⁻⁴)/°C	-	11
Refractive Index @20°C	-	ASTM D1218	1.378
Distillation, IBP	°C	ASTM D1078	81.8
Distillation, DP	°C	ASTM D1078	82.8
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
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	101
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
Hildebrand Solubility Parameter	(cal/cm ³) ^{1/2}	-	11.5
Hydrogen Bonding Index	-	-	-16.7
Fractional Polarity	-	-	0.178
Freezing Point	°C	-	-88
Surface Tension @20°C	mN/m	ASTM D971	22.8
Viscosity @20°C	mPa.s	ASTM D445	2.43
Dielectric Constant @20°C	-	-	18.6
Electrical Conductivity @20°C	pS/m	ASTM D4308	6*10 ⁶
Heat of Combustion (Net) @25°C	kJ/kg	-	31000
Heat of Vaporization @Tboil	kJ/kg	-	664
Specific Heat @20°C	kJ/kg/°C	-	2.56
Thermal Conductivity @20°C	W/m/°C	-	0.14
Azeotrope with Water: Boiling Point	°C	-	80.3
Azeotrope with Water: Solvent Content	% m/m	-	87.4
Miscibility @20°C: Solvent in Water	% m/m	-	Complete
Miscibility @20°C: Water in Solvent	% m/m	-	Complete
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	<p>Copies of copyrighted test methods can be obtained from the issuing organisations:</p> <p>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</p> <p>Shell Method Series (SMS) methods are issued by Shell International Chemicals B.V., Shell Research and Technology Centre, Amsterdam, The Netherlands. Copies of SMS can be obtained through your local Shell Chemicals company.</p> <p>For routine quality control analyses, local test methods may be applied that are different from those mentioned in this datasheet. Such methods have been validated and can be obtained through your local Shell Chemicals company.</p>
Quality	<p>Isopropyl Alcohol can be supplied to meet the requirements ASTM D770, DIN 53245 and BS 1595. Isopropyl Alcohol does not contain detectable quantities of polycyclic aromatics, heavy metals or chlorinated compounds.</p>
Storage and Handling	<p>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.</p>
Hazard Information	<p>For detailed Hazard Information please refer to the Material Safety Data Sheet on www.shell.com/chemicals.</p>
Warranty	<p>All products purchased or supplied by Shell are subject to terms and conditions set out in the contract, order acknowledgment and/or bill of lading. Shell warrants that its product will meet those specifications designated as such herein or in other publications. All other information including that herein, supplied by Shell is considered accurate but is furnished upon the express condition that the customer shall make its own assessment to determine the products suitability for a particular purpose. Shell makes no other warranty either expressed or implied, regarding such other information, the data upon which the same is based, or the results to be obtained from use thereof; that any products shall be merchantable or fit for any purpose; or that the use of such other information or product will not infringe any patent.</p> <p>The expression 'Shell Chemicals' refers to the companies of the Royal Dutch/Shell Group which are engaged in chemical businesses. Each of the companies which make up the Royal Dutch/Shell Group of companies is an independent entity and has its own separate identity.</p>