

Certificate of Analysis

Product: Isopropyl Alcohol, 99% Item Number: IPAU99 Grade: USP Lot Number: 292466 Manufacture Date: 08/24/2022 Expiration Date: 12/31/2024 Country of Origin: United States

Tested Property	Specification	Analysis
Purity, wt%	99.8 min	99.9%
Methanol, %	0.02 max.	Passes
Ethyl Ether, %	0.1 max.	Passes
Acetone, %	0.1 max.	Passes
Diisopropyl Ether, %	0.1 max.	Passes
1-propanol,%	0.1 max.	Passes
2-butanol,%	0.1 max.	Passes
Any Individual Impurity, %	0.1 max.	Passes
Total Impurities,%	1.0 max.	Passes
Water, wt%	0.10 max.	0.03%
APHA Color, Pt-Ca	5 max.	3
Acidity as Acetic Acid, wt%	0.001 max	0.001
Appearance	Clear & FFSM	Pass
Density @ 20Ã,°C, g/ml	0.785 - 0.786	0.785
Specific Gravity @ 20/20Ã,°C	0.785 - 0.787	0.787
Specific Gravity @ 25/25Ã,°C	0.783 - 0.787	0.783
Non Volatile Residue, g/100mL	0.0010 max.	0.0002
Refractive Index @ 20Ã,°C	1.376 - 1.378	1.377
Distillation IBP, Ã,°C	81.8 min.	82.1Ã,°C
Distillation DP, Ã,°C	82.8 max.	82.4Ã,°C

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Water Miscibility	Clear & Miscible	Passes
Identification by IR	To pass the test	Passes
Identification by GC Retention	To pass the test	Passes
Purity, wt%	99.8 min	99.9%
Methanol, %	0.02 max.	Passes
Ethyl Ether, %	0.1 max.	Passes
Acetone, %	0.1 max.	Passes
Diisopropyl Ether, %	0.1 max.	Passes
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Water, wt%	0.10 max.	0.03%
	_	-
APHA Color, Pt-Ca	5 max.	3
APHA Color, Pt-Ca Acidity as Acetic Acid, wt%	5 max. 0.001 max	3 0.001
		_
Acidity as Acetic Acid, wt%	0.001 max	0.001
Acidity as Acetic Acid, wt% Appearance	0.001 max Clear & FFSM	0.001 Pass
Acidity as Acetic Acid, wt% Appearance Density @ 20°C, g/ml	0.001 max Clear & FFSM 0.785 - 0.786	0.001 Pass 0.785
Acidity as Acetic Acid, wt% Appearance Density @ 20°C, g/ml Specific Gravity @ 20/20°C	0.001 max Clear & FFSM 0.785 - 0.786 0.785 - 0.787	0.001 Pass 0.785 0.787
Acidity as Acetic Acid, wt% Appearance Density @ 20°C, g/ml Specific Gravity @ 20/20°C Specific Gravity @ 25/25°C	0.001 max Clear & FFSM 0.785 - 0.786 0.785 - 0.787 0.783 - 0.787	0.001 Pass 0.785 0.787 0.783
Acidity as Acetic Acid, wt% Appearance Density @ 20°C, g/ml Specific Gravity @ 20/20°C Specific Gravity @ 25/25°C Non Volatile Residue, g/100mL	0.001 max Clear & FFSM 0.785 - 0.786 0.785 - 0.787 0.783 - 0.787 0.0010 max.	0.001 Pass 0.785 0.787 0.783 0.0002
Acidity as Acetic Acid, wt% Appearance Density @ 20°C, g/ml Specific Gravity @ 20/20°C Specific Gravity @ 25/25°C Non Volatile Residue, g/100mL Refractive Index @ 20°C	0.001 max Clear & FFSM 0.785 - 0.786 0.785 - 0.787 0.783 - 0.787 0.0010 max. 1.376 - 1.378	0.001 Pass 0.785 0.787 0.783 0.0002 1.377
Acidity as Acetic Acid, wt% Appearance Density @ 20°C, g/ml Specific Gravity @ 20/20°C Specific Gravity @ 25/25°C Non Volatile Residue, g/100mL Refractive Index @ 20°C Distillation IBP, °C	0.001 max Clear & FFSM 0.785 - 0.786 0.785 - 0.787 0.783 - 0.787 0.0010 max. 1.376 - 1.378 81.8 min.	0.001 Pass 0.785 0.787 0.783 0.0002 1.377 82.1°C
Acidity as Acetic Acid, wt% Appearance Density @ 20°C, g/ml Specific Gravity @ 20/20°C Specific Gravity @ 25/25°C Non Volatile Residue, g/100mL Refractive Index @ 20°C Distillation IBP, °C Distillation DP, °C	0.001 max Clear & FFSM 0.785 - 0.786 0.785 - 0.787 0.783 - 0.787 0.0010 max. 1.376 - 1.378 81.8 min. 82.8 max.	0.001 Pass 0.785 0.787 0.783 0.0002 1.377 82.1°C 82.4°C
Acidity as Acetic Acid, wt% Appearance Density @ 20°C, g/ml Specific Gravity @ 20/20°C Specific Gravity @ 25/25°C Non Volatile Residue, g/100mL Refractive Index @ 20°C Distillation IBP, °C Distillation DP, °C Water Miscibility	0.001 max Clear & FFSM 0.785 - 0.786 0.785 - 0.787 0.783 - 0.787 0.0010 max. 1.376 - 1.378 81.8 min. 82.8 max. Clear & Miscible	0.001 Pass 0.785 0.787 0.783 0.0002 1.377 82.1°C 82.4°C Passes

Isopropyl Alcohol, 99%

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