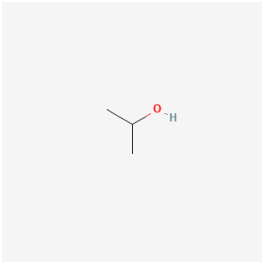
Technical Data Sheet

Isopropyl Alcohol 50% USP Grade

USP · 50%

Alliance Code	Revised	Revision
isopropyl-alcohol-50-usp-grade	2026-10-20	1.10

CAS number 67-63-0	UN number UN1219	Hazard class · packing group 3 · PG II
 Structure · PubChem	Grade USP · 50%	Signal word **Danger**
Hazards Flammable · Irritant / harmful · H225 H319 H336		
Proper shipping name Isopropanol or isopropyl alcohol		

IDENTITY & COMPOSITION

PRODUCT NAME
Isopropyl Alcohol 50% USP Grade

ALLIANCE CODE
isopropyl-alcohol-50-usp-grade

GRADE
USP

CONCENTRATION
50% v/v

CAS NUMBER
67-63-0 PubChem

FORMULA
C3H8O PubChem

MOLECULAR WEIGHT
60.10 PubChem

PRODUCT TYPE
Solution

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay (isopropyl alcohol)	48-52 % v/v	—	Specific gravity	Interpreted
1-Propanol	≤ 0.0505 %	—	—	Interpreted
2-Butanol	≤ 0.0505 %	—	—	Interpreted
Acidity	NMT 0.35 mL of 0.020 N sodium hydroxide	—	Titration with 0.020 N sodium hydroxide, 50 mL sample	Interpreted
Benzene	≤ 1.01 ppm	—	—	Interpreted
Diisopropyl ether	≤ 0.0505 %	—	—	Interpreted
Ethyl ether	≤ 0.0505 %	—	—	Interpreted
Total volatile impurities	≤ 0.505 %	—	—	Interpreted
Each other individual known impurity (ethyl ether, acetone, diisopropyl ether, 1-propanol, 2-butanol)	0.048 % max	—	Gas chromatography	Interpreted
Methanol	0.0097 % max	—	Gas chromatography	Interpreted
Total organic impurities	0.48 % max	—	Gas chromatography	Interpreted
Titrable Base	0.000043 meq/g max	—	—	Interpreted

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Carbonyl compounds (as acetone)	0.00087 % max	—	—	Interpreted
Limit of nonvolatile residue	does not exceed 2.5 mg (0.005%)	—	Evaporate 50 mL on a steam bath to dryness, heat at 105° for 1 hour	Interpreted
Composition	50 % isopropyl alcohol by volume of finished solution, in deionized water	—	By formulation; batch weights (scale ticket)	Interpreted

Values are reproduced from the current product reference. Source labels do not by themselves establish a supplier guarantee or a test result for your lot. Confirm applicable acceptance limits and request lot-specific documentation.

AVAILABLE GRADES SAME CAS, ALTERNATE GRADES AND CONCENTRATIONS

GRADE	CONCENTRATION	TYPICAL ASSAY	SKU
THIS GRADE USP	50%	—	current
ACS Reagent	99.9%	—	isopropyl-alcohol-99-9-acs-reagent-grade
Technical	99%	—	isopropyl-alcohol-99
USP Grade	91%	—	isopropyl-alcohol-91
USP Grade	70%	—	isopropyl-alcohol-70-usp-grade
Technical	60%	—	isopropyl-alcohol-60-technical-grade
USP	60%	—	isopropyl-alcohol-60-usp-grade
Technical	50%	—	isopropyl-alcohol-50-technical-grade

Typical assay for each grade is the average of its recent lots. Confirm a grade meets your specification before substituting it.

PHYSICAL & CHEMICAL PROPERTIES

PROPERTY	VALUE	SOURCE
Appearance	Clear, colorless liquid with mild alcohol odor	Adjudicated
Color	NMT 5	Interpreted
Odor	Alcohol-like odor	Adjudicated
Specific Gravity	0.923 at 20/20 °C (water = 1)	Adjudicated
Density	0.9214 g/cm^3 at 20 °C	Adjudicated
Boiling Point	About 82 °C (180 °F)	Adjudicated
Melting Point	-21 to -23 °C (-6 to -9 °F), freezing point of a 50% v/v isopropyl alcohol–water solution (published tables)	Adjudicated
Flash Point	12–22 °C (54–72 °F), closed cup	Adjudicated
Vapor Density	2.1 (air = 1)	Adjudicated
Solubility (water)	Completely miscible with water	Adjudicated

Polar solvent — purity vs. intended end-use (electronics, pharma, general industrial) is the dominant grade consideration. See application guidance for grade selection.

MATERIALS OF CONSTRUCTION SERVICE ENVELOPE ≈ 50%

MATERIAL	RATING	MAX T (°C)	NOTES	SOURCE
Buna-N (NBR) Elastomer	Fair	60	Acceptable for alcohols; poor for ketones.	Parker O-ring Chemical Compatibility

MATERIAL	RATING	MAX T (°C)	NOTES	SOURCE
EPDM Elastomer	Fair	—	Good for alcohols, poor for esters	Cole-Parmer Chemical Compatibility
Viton (FKM) Elastomer	Fair	80	Swells in acetone and esters; avoid for those.	Parker O-ring Chemical Compatibility
FFKM (Kalrez) Fluoropolymer	Excellent	200	Premium ester / ketone sealing	Cole-Parmer Chemical Compatibility
PTFE Fluoropolymer	Excellent	200	Universal solvent compatibility.	Cole-Parmer Chemical Compatibility
Borosilicate Glass Glass Ceramic	Excellent	100	Universally inert.	Cole-Parmer Chemical Compatibility
316L Stainless Steel Metal	Excellent	80	Inert; preferred for high-purity solvent service.	Cole-Parmer Chemical Compatibility
Aluminium Metal	Good	40	Acceptable; avoid prolonged wet contact	Cole-Parmer Chemical Compatibility
Carbon Steel Metal	Fair	50	Trace moisture causes rust; flash-rust prevention required.	Cole-Parmer Chemical Compatibility
HDPE Thermoplastic	Fair	40	Swells with many polar solvents; verify per solvent.	Cole-Parmer Chemical Compatibility
PP Thermoplastic	Good	50	Acceptable but watch swelling with esters	Cole-Parmer Chemical Compatibility
PVC Thermoplastic	Fair	25	Esters soften PVC; avoid for esters	Cole-Parmer Chemical Compatibility

Ratings reflect the service envelope (concentration × temperature) shown. Always confirm against your specific duty cycle and contact-time before equipment selection. The most cautious rating across overlapping references is shown.

REGULATORY & TRANSPORT

DOT / 49 CFR

UN NUMBER

UN1219 Adjudicated

HAZARD CLASS

3 Adjudicated

PACKING GROUP

II Adjudicated

PROPER SHIPPING NAME

Isopropanol or isopropyl alcohol Adjudicated

GHS / OSHA HCS 2024

SIGNAL WORD

Danger Adjudicated

H-CODES (HAZARD STATEMENTS)

H225, H319, H336 ECHA C&L Inventory

P-CODES (PRECAUTIONARY STATEMENTS)

P210, P233, P240, P241, P242, P243, P261, P264, P271, P280, P303+P361+P353, P304+P340, P305+P351+P338, P312, P337+P313, P370+P378, P403+P233, P403+P235, P405, P501

ECHA C&L Inventory

OCCUPATIONAL EXPOSURE LIMITS

OSHA PEL (29 CFR 1910.1000)

400 ppm TWA OSHA 29 CFR 1910.1000

ACGIH TLV

200 ppm TWA / 400 ppm STEL Adjudicated

NIOSH REL

400 ppm TWA / 500 ppm STEL NIOSH Pocket Guide

NIOSH IDLH

2000 ppm NIOSH Pocket Guide

Transport descriptions reflect 49 CFR 172.101 lookup at time of publication. Sourced data: NIOSH Pocket Guide for REL/IDLH, OSHA Z-Tables for PEL. Always verify against the latest regulatory text before shipment-critical decisions.

HEALTH & FIRE HAZARD

ACUTE TOXICOLOGY

LD_{50} ORAL (RAT)

4,700–5,840 mg/kg (isopropyl alcohol)

Adjudicated

LD_{50} DERMAL (RABBIT)

12,800–16,400 mg/kg (isopropyl alcohol)

Adjudicated

LC_{50} INHALATION (RAT, 4 H)

72.6 mg/L (isopropyl alcohol vapor)

Adjudicated

Acute toxicology values from SDS Section 11 or NIOSH RTECS.

APPLICATIONS

Cleaning and degreasing solution; surface and equipment wipe-down; general solvent blend. Adjudicated

Restrictions on Use: For external and surface use only. Do not drink. Highly flammable: keep away from heat and open flame.

STORAGE & HANDLING

RECOMMENDED STORAGE

Keep tightly closed in a cool, well-ventilated flammables area away from ignition sources and oxidizers. Ground and bond containers.

Adjudicated

HANDLING PRECAUTIONS

Use chemical-resistant gloves and splash goggles. Bond and ground during transfer to prevent static accumulation. Eliminate ignition sources within vapor envelope.

Class-level guidance — not product-specific; the SDS controls.

INCOMPATIBILITIES

Strong oxidizing agents (peroxides, nitric acid, perchlorates, hypochlorites), strong acids, acid anhydrides, halogens, and alkali metals (release hydrogen).

Adjudicated

SHELF LIFE

Consult Technical Services for product-specific shelf life

For full hazard, PPE, and emergency response guidance, refer to the Safety Data Sheet (SDS) for this product. The SDS controls in all cases where guidance differs.

PACKAGING & LOGISTICS

SHIPPING DESCRIPTION (US DOT)

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UN1219, Isopropanol or isopropyl alcohol, 3, PG II
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Sourced from 49 CFR 172.101. Confirm against shipping documents and carrier requirements before tender.

NMFC CLASS	PLACARD	PACKING GROUP
70	Flammable Liquid	PG II

REVISION HISTORY

Last reviewed 2026-10-20 by Andre Taki, Chief Commercial Officer, DOT Hazmat–certified (49 CFR 172.704).

VERSION	DATE	CHANGE	TRIGGER
1.10	2026-10-20	Canonical data updated: 2 fields changed via the provenance/adjudication pipeline. • density · canonical change (coa.data_provenance / adjudication) • specificGravity · canonical change (coa.data_provenance / adjudication)	canonical_change
1.9	2026-10-14	Canonical data updated: 2 fields changed via the provenance/adjudication pipeline. • recommended_use · canonical change (coa.data_provenance / adjudication) • meltingPoint · canonical change (coa.data_provenance / adjudication)	canonical_change

VERSION	DATE	CHANGE	TRIGGER
1.8	2026-10-08	Canonical data updated: 19 fields changed via the provenance/adjudication pipeline. • odor · canonical change (coa.data_provenance / adjudication) • solubility · canonical change (coa.data_provenance / adjudication) • vaporDensity · canonical change (coa.data_provenance / adjudication) • explosiveLimits · canonical change (coa.data_provenance / adjudication) • autoIgnitionTemperature · canonical change (coa.data_provenance / adjudication) • oel_acgih_tlv · canonical change (coa.data_provenance / adjudication) • incompatible_materials · canonical change (coa.data_provenance / adjudication) • conditions_to_avoid · canonical change (coa.data_provenance / adjudication) • hazardous_decomposition_products · canonical change (coa.data_provenance / adjudication) • storage_precautions · canonical change (coa.data_provenance / adjudication) • rcra_waste_codes · canonical change (coa.data_provenance / adjudication) • cercla_rq · canonical change (coa.data_provenance / adjudication) • dot_transport_note · canonical change (coa.data_provenance / adjudication) • synonyms · canonical change (coa.data_provenance / adjudication) • flashPoint · canonical change (coa.data_provenance / adjudication) • boilingPoint · canonical change (coa.data_provenance / adjudication) • specificGravity · canonical change (coa.data_provenance / adjudication) • recommended_use · canonical change (coa.data_provenance / adjudication) • restrictions_on_use · canonical change (coa.data_provenance / adjudication)	canonical_change
1.7	2026-10-05	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • oel_niosh_rel · canonical change (coa.data_provenance / adjudication) • oel_idlh · canonical change (coa.data_provenance / adjudication) • oel_osha_pel · canonical change (coa.data_provenance / adjudication)	canonical_change
1.6	2026-10-03	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. • flashPoint · canonical change (coa.data_provenance / adjudication)	canonical_change
1.5	2026-09-30	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • boilingPoint · canonical change (coa.data_provenance / adjudication) • meltingPoint · canonical change (coa.data_provenance / adjudication) • appearance · canonical change (coa.data_provenance / adjudication)	canonical_change

VERSION	DATE	CHANGE	TRIGGER
1.4	2026-09-10	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. • flashPoint · canonical change (coa.data_provenance / adjudication)	canonical_change
1.3	2026-08-05	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • hazardClass · canonical change (coa.data_provenance / adjudication) • packingGroup · canonical change (coa.data_provenance / adjudication) • unNumber · canonical change (coa.data_provenance / adjudication)	canonical_change
1.2	2026-07-22	Canonical data updated: 2 fields changed via the provenance/adjudication pipeline. • dotSubsidiaryHazardClass · canonical change (coa.data_provenance / adjudication) • dotProperShippingName · canonical change (coa.data_provenance / adjudication)	canonical_change
1.1	2026-06-18	Canonical data re-verified: 3 fields updated against independent vendor SDSs, CLP Annex VI, 49 CFR, and OSHA HazCom 2024 (GHS classification, hazard/precautionary codes, signal word, physical properties as applicable). • countryOfOrigin · canonical adjudication / reground (coa.data_provenance) • ghsClassification · canonical adjudication / reground (coa.data_provenance) • hsCode · canonical adjudication / reground (coa.data_provenance)	canonical_change
1.0	2026-05-20	Initial URL-first TDS published from canonical chemistry registry.	initial

This Technical Data Sheet is provided for technical reference. The Safety Data Sheet (SDS) controls in all cases where guidance differs. Values reflect Alliance Chemical canonical data at time of generation; subsequent revisions are recorded in the Revision History above.