

TECHNICAL DATA SHEET

Propylene Glycol 50% – USP Grade (C3H8O2)

USP Grade · 50%

CAS NUMBER	ALLIANCE CODE	GENERATED
57-55-6	50-propylene-glycol-usp-grade	2026-09-12
REVISION	REVIEWED	
1.3	2026-07-06 · Andre Taki	

IDENTITY & COMPOSITION

PRODUCT NAME	ALLIANCE CODE
Propylene Glycol 50% – USP Grade (C3H8O2)	50-propylene-glycol-usp-grade
GRADE	CONCENTRATION
USP Grade	50%
CAS NUMBER	FORMULA
57-55-6 PubChem	— PubChem
MOLECULAR WEIGHT	PRODUCT TYPE
76.09 PubChem	mixture

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay	49.0 – 51.0 %, by volume	50.0 %	—	Interpreted
Propylene glycol concentration	49.0 – 51.0 % v/v	50.0 %	—	Interpreted

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Dilution water	Purified Water USP; conductivity ≤ 1.3 $\mu\text{S}/\text{cm}$ @ 25 °C	Passes test	USP <1231> / conductivity USP <645>	Interpreted
Acidity	not more than 0.10 mL of 0.10 N sodium hydroxide	0.02	USP monograph titration, 0.10 N NaOH	Interpreted
Microbial enumeration	TAMC ≤ 100 CFU/mL; TYMC ≤ 10 CFU/mL	Passes test	USP <61>	Interpreted
Chloride	0.0035% max	0.000015 %	USP <221>	Interpreted
Heavy metals	2.5 ppm max	0.25 ppm	USP <231>	Interpreted
Iron	0.26 ppm max	0.025 ppm	HOC 0290	Interpreted
Limit of Diethylene Glycol	0.05% max	0.0015 %	GC, flame ionization detector, 0.53-mm x 30-m fused-silica G43 column, 2,2,2-trichloroethanol internal standard	Interpreted
Limit of Ethylene Glycol	0.05% max	0.001 %	GC, flame ionization detector, 0.53-mm x 30-m fused-silica G43 column, 2,2,2-trichloroethanol internal standard	Interpreted
Residue on ignition	0.0036 wt% max	0.00025 wt%	Ignition of 50 g, residue moistened with 0.5 mL sulfuric acid and ignited to constant weight	Interpreted
Sulfate	0.0031% max	0.00025 %	USP <221>	Interpreted

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
arsenic	0.5 ppm max	0.01 ppm	—	Interpreted
dpg	0.05 % max	0.015 %	—	Interpreted
pb	0.51 mg/kg max	0.005 mg/kg	—	Interpreted
meg	0.0005 % max	0.00025 %	—	Interpreted
po	0.0005 % max	0.0001 %	—	Interpreted
tpg	0.015 % max	0.003 %	—	Interpreted
residue	0.0025 % max	0.0005 %	—	Interpreted
Identification A (Infrared Absorption)	Infrared Absorption [197F] on undried specimen	Passes test	USP <197F>	Interpreted
Residual solvents	Pass	Passes test	USP <467>	Interpreted
Suspended matter	Pass	Passes test	HOC 0171	Interpreted
Composition	50 % propylene glycol / 50 % deionized water, by volume	Conforms	By formulation; confirmed by specific gravity	Interpreted
Freeze point	−28.6 °F (−33.7 °C) max	−28.6 °F (−33.7 °C)	ASTM D1177	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 Grade	50%	—	current
—	60%	—	propylene-glycol-60-inhibited
Technical	60%	—	propylene-glycol-60-technical-grade
USP	60%	—	propylene-glycol-60-usp-grade
Technical Grade	40%	—	40-propylene-glycol-technical-grade
USP Grade	40%	—	40-propylene-glycol-usp-grade
—	20%	—	propylene-glycol-20-inhibited
Technical	20%	—	propylene-glycol-20-technical-grade
USP	20%	—	propylene-glycol-20-usp-grade
Technical Grade	—	—	propylene-glycol-technical-grade
USP Grade	—	—	propylene-glycol-usp-grade

Typical assay shown is the rolling-window mean from the sibling product's most recent lots. Grade selection drives downstream end-use — verify the sibling grade matches your specification before substitution.

PHYSICAL & CHEMICAL PROPERTIES

PROPERTY	VALUE	SOURCE
Appearance	Clear, colorless to pale liquid	Published reference
Color	10 APHA (maximum)	Interpreted
Odor	Pass	Interpreted
pH	Essentially neutral (unbuffered blend)	Published reference
Specific Gravity (20 °C)	1.046 (20 °C)	Published reference
Density	1.046 g/mL at 20 °C	Published reference
Boiling Point	~106 °C	Published reference
Melting Point	-34 °C (freeze / crystallization onset)	Published reference
Flash Point	Not flammable (aqueous solution)	Published reference
Solubility (water)	Miscible with water	Published reference

REGULATORY & TRANSPORT

DOT / 49 CFR

UN NUMBER

Not regulated **Adjudicated**

PACKING GROUP

Not regulated **Adjudicated**

HAZARD CLASS

Not regulated **Adjudicated**

PROPER SHIPPING NAME

Not regulated **Adjudicated**

GHS / OSHA HAZCOM 2012

SIGNAL WORD

Not regulated **Adjudicated**

H-CODES (HAZARD STATEMENTS)

Not applicable **ECHA CLP Annex VI**

P-CODES (PRECAUTIONARY STATEMENTS)

Not applicable **ECHA CLP Annex VI**

OCCUPATIONAL EXPOSURE LIMITS

OSHA PEL (29 CFR 1910.1000)

— **no canonical**

ACGIH TLV

— **no canonical**

NIOSH REL

— **no canonical**

NIOSH IDLH

— **no canonical**

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

APPLICATION GUIDANCE

Propylene Glycol 50% – USP Grade (C₃H₈O₂) (USP Grade) is a glycol-based heat-transfer and freeze-protection fluid. Concentration sets the freeze and burst protection; the inhibitor package sets how long the system stays protected from corrosion.

- Closed-loop heat transfer and process cooling
- Data-centre and chilled-water freeze protection
- HVAC hydronic loops and glycol makeup
- Freeze and burst protection for idle or seasonal systems
- Humectant and carrier applications (USP/food-grade propylene glycol only)

Verify concentration against the required freeze and burst protection, and confirm elastomer and metallurgy compatibility for the service temperature. Ethylene glycol is toxic by ingestion and must not be used where incidental food or potable contact is possible — specify a propylene glycol grade for those services.

STORAGE & HANDLING

RECOMMENDED STORAGE

Cool, dry, well-ventilated area in tightly sealed original containers. Neat glycols are combustible liquids with high flash points (roughly 99–111 °C) and do not require a solvent store; aqueous blends will not sustain combustion. Protect inhibited coolants from contamination and from freezing below their stated protection point.

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

INCOMPATIBILITIES

Strong oxidizers, strong acids and strong bases. Galvanized (zinc) surfaces are attacked by many inhibited coolant packages. Verify elastomer and gasket compatibility for the service temperature; EPDM is standard for glycol/water service.

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

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.

HANDLING PRECAUTIONS

Chemical-resistant gloves and splash goggles. Ethylene glycol grades are toxic by ingestion and must be kept away from food, drink and animals; propylene glycol grades are not. Avoid contact with hot surfaces and hot process equipment. Inhibitor packages deplete in service — monitor rather than top up blindly.

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

SHELF LIFE

Consult Technical Services for product-specific shelf life

PACKAGING & LOGISTICS

SHIPPING DESCRIPTION (US DOT)

Not regulated for transport.

Confirm against shipping documents and carrier requirements before tender.

NMFC CLASS
55

REVISION HISTORY

Last reviewed 2026-07-06 by Andre Taki, DOT Hazmat Specialist.

VERSION	DATE	CHANGE	TRIGGER
1.3	2026-09-09	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. physicalProperties · canonical change (coa.data_provenance / adjudication)	canonical_change
1.2	2026-07-24	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. physicalProperties · canonical change (coa.data_provenance / adjudication)	canonical_change
1.1	2026-07-06	Canonical data re-verified: 4 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) - dotSubsidiaryHazardClass · canonical adjudication / reground (coa.data_provenance) - hsCode · canonical adjudication / reground (coa.data_provenance) - physicalProperties · 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.