

## TECHNICAL DATA SHEET

# Propylene Glycol 50% – USP Grade (C<sub>3</sub>H<sub>8</sub>O<sub>2</sub>)

USP Grade · 50%

### CAS NUMBER

57-55-6

### ALLIANCE CODE

50-propylene-glycol-usp-grade

### GENERATED

2026-09-11

### REVISION

1.3

### REVIEWED

2026-07-06 · Andre Taki

## IDENTITY & COMPOSITION

### PRODUCT NAME

Propylene Glycol 50% – USP Grade (C<sub>3</sub>H<sub>8</sub>O<sub>2</sub>)

### ALLIANCE CODE

50-propylene-glycol-usp-grade

### GRADE

USP Grade

### CONCENTRATION

50%

### CAS NUMBER

57-55-6 [PubChem](#)

### FORMULA

— [PubChem](#)

### MOLECULAR WEIGHT

76.09 [PubChem](#)

### PRODUCT TYPE

mixture

## SPECIFICATIONS

| TEST                           | SPECIFICATION            | TYPICAL | METHOD | SOURCE                      |
|--------------------------------|--------------------------|---------|--------|-----------------------------|
| Assay                          | 49.0 – 51.0 %, by volume | 50.0 %  | —      | <a href="#">Interpreted</a> |
| Propylene glycol concentration | 49.0 – 51.0 % v/v        | 50.0 %  | —      | <a href="#">Interpreted</a> |

| TEST                       | SPECIFICATION                                                               | TYPICAL     | METHOD                                                                                                          | SOURCE      |
|----------------------------|-----------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------|-------------|
| Dilution water             | Purified Water USP; conductivity $\leq 1.3$ $\mu\text{S}/\text{cm}$ @ 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 $\leq 100$ CFU/mL; TYMC $\leq 10$ 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 |

Specification values are guaranteed limits. Typical values are representative of production lots and are not guaranteed. Lot-specific certificates of analysis ship with every order.

## AVAILABLE GRADES SAME CAS, ALTERNATE GRADES AND CONCENTRATIONS

| GRADE                       | CONCENTRATION | TYPICAL ASSAY | SKU                                 |
|-----------------------------|---------------|---------------|-------------------------------------|
| <b>THIS GRADE</b> 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         | <a href="#">Published reference</a> |
| Color                    | 10 APHA (maximum)                       | <a href="#">Interpreted</a>         |
| Odor                     | Pass                                    | <a href="#">Interpreted</a>         |
| pH                       | Essentially neutral (unbuffered blend)  | <a href="#">Published reference</a> |
| Specific Gravity (20 °C) | 1.046 (20 °C)                           | <a href="#">Published reference</a> |
| Density                  | 1.046 g/mL at 20 °C                     | <a href="#">Published reference</a> |
| Boiling Point            | ~106 °C                                 | <a href="#">Published reference</a> |
| Melting Point            | -34 °C (freeze / crystallization onset) | <a href="#">Published reference</a> |
| Flash Point              | Not flammable (aqueous solution)        | <a href="#">Published reference</a> |
| Solubility (water)       | Miscible with water                     | <a href="#">Published reference</a> |

## REGULATORY & TRANSPORT

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### 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

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Propylene Glycol 50% – USP Grade (C<sub>3</sub>H<sub>8</sub>O<sub>2</sub>) (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

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### 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

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### SHIPPING DESCRIPTION (US DOT)

Not regulated for transport.

Confirm against shipping documents and carrier requirements before tender.

NMFC CLASS  
55

## REVISION HISTORY

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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. <ul style="list-style-type: none"> <li>physicalProperties · canonical change (coa.data_provenance / adjudication)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                     | canonical_change |
| 1.2     | 2026-07-24 | Canonical data updated: 1 field changed via the provenance/adjudication pipeline. <ul style="list-style-type: none"> <li>physicalProperties · canonical change (coa.data_provenance / adjudication)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                     | 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). <ul style="list-style-type: none"> <li>countryOfOrigin · canonical adjudication / reground (coa.data_provenance)</li> <li>dotSubsidiaryHazardClass · canonical adjudication / reground (coa.data_provenance)</li> <li>hsCode · canonical adjudication / reground (coa.data_provenance)</li> <li>physicalProperties · canonical adjudication / reground (coa.data_provenance)</li> </ul> | 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.