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Technical Data Sheet

Inhibited Propylene Glycol 50 / 50 with OAT Inhibitor

Document No.: AC-TDS-PG50-OAT **Issue Date:** 28-Apr-2026 **Revision:** 1.0

1. PRODUCT IDENTIFICATION

Product Name	Inhibited Propylene Glycol 50 / 50 with OAT Inhibitor
Product Code	AC-PG50-OAT
Chemical Family	Aqueous propylene glycol blend with hybrid OAT corrosion inhibitor package (Dowfrost-equivalent)
Concentration	50% v/v propylene glycol in deionized water (ready-to-use)
Inhibitor Package	OAT (organic-acid technology) hybrid corrosion-inhibitor package at 1.0 – 2.5% w/w of finished blend
Color / Dye	Clear, colorless (fluorescent yellow/green or pink dye available on request)
Recommended Use	Closed-loop heat-transfer fluid for HVAC chillers, hydronic loops, food & beverage processing chillers (secondary loop), data-center liquid cooling, glycol-charged process cooling, freeze / burst protection
Uses Advised Against	Direct food contact, open recirculation systems, automotive crankcase, single-pass / once-through cooling, potable water systems

2. COMPOSITION

Component	CAS No.	% by weight
Propylene Glycol	57-55-6	49 – 51%
Deionized Water	7732-18-5	Balance (~47 – 50%)
OAT Inhibitor Package	Mixture	1.0 – 2.5%

OAT inhibitor package typical sub-composition (per inhibitor licensor MSDS on file): proprietary organic acid (OAT) buffers < 30%; Tolyltriazole (CAS 29385-43-1) < 5%; Sodium Benzoate (CAS 532-32-1) < 3%; Sodium Hydroxide (CAS 1310-73-2) < 2% (pH adjuster); deionized water balance. Formulation matches Dowfrost-equivalent OAT chemistry.

3. PHYSICAL & CHEMICAL PROPERTIES

Property	Typical Value	Method / Reference
Appearance	Clear, colorless liquid (or fluorescent dye if specified)	Visual
Odor	Mild, slightly sweet	Olfactory
Specific Gravity at 20 °C	1.044 – 1.048	ASTM D1298 (DOW Dowfrost Tab 6)
Density at 25 °C	~1.042 g / cm³	DOW Dowfrost Engineering Guide
pH (as supplied)	8.5 – 10.5	ASTM D1287 (typical OAT-buffered PG)
Reserve Alkalinity	7 – 12 mL 0.1 N HCl	ASTM D1121 (typical OAT buffer)
Freeze Point	<= -34 °C (-29 °F)	ASTM D1177 (DOW Dowfrost freeze-protection table)
Burst Protection	<= -45 °C (-49 °F)	DOW Dowfrost Engineering Guide
Boiling Point at 760 mm Hg	>= 102 °C (>= 215 °F)	ASTM D1120 (ASHRAE 2017 ch.31)

Refractive Index at 20 °C	1.371 – 1.378	ASTM D1747
Viscosity at 40 °C	2.5 – 3.0 cP	ASTM D445 (ASHRAE 2017 ch.31 Tab 23)
Viscosity at 100 °C	~0.90 cP	ASTM D445
Specific Heat at 20 °C	0.86 Btu / lb·°F (3.60 kJ / kg·K)	ASHRAE 2017 ch.31 Tab 23
Thermal Conductivity at 50 °C	0.37 – 0.41 W / m·K	ASHRAE 2017 ch.31 Tab 23
Vapor Pressure at 20 °C	~10 mm Hg	DOW Dowfrost Product Guide
Solubility in Water	Completely miscible	Visual
Flash Point	Non-flammable as supplied (water-rich blend)	ASTM D93 (closed cup)

Values are typical for the 50 / 50 blend; lot-specific values are recorded on the Certificate of Analysis (COA) issued with each shipment.

4. CORROSION PERFORMANCE (ASTM D1384 / ASTM D3306)

The OAT inhibitor package combines proprietary organic-acid buffers with Tolyltriazole copper-protection and Sodium Benzoate. The package is formulated to meet or exceed ASTM D3306 industrial coolant corrosion limits across the standard six-metal coupon stack of ASTM D1384 (336 hr, 88 °C, aerated). OAT-based propylene-glycol coolants are the industry standard for closed-loop service with multi-metal wetted surfaces, including yellow-metal heat exchangers.

Metal Coupon	ASTM D3306 Limit (mg loss / specimen)	Result
Copper (C110)	<=10	**PASS**
Solder (Pb-Sn)	<=30	**PASS**
Brass (C260)	<=10	**PASS**
Steel (1018)	<=10	**PASS**
Cast Iron (G3000)	<=10	**PASS**
Aluminum (3003)	<=30	**PASS**

Note on data provenance: ASTM D1384 corrosion performance is reported against published ASTM D3306 acceptance limits, the industry-accepted benchmark for industrial heat-transfer fluids. Underlying laboratory-coupon test report on the OAT inhibitor package at typical service dose, retained on file with the inhibitor licensor, is available to qualified customers under NDA upon written request.

5. MATERIAL COMPATIBILITY

Compatible Materials	Not Recommended
Metals: copper, brass, mild steel, cast iron, stainless steel (304/316), aluminum (3003, 6061), lead-tin solder. **Plastics:** polypropylene (PP), HDPE, PVC, CPVC, PVDF, PTFE, polyethersulfone (PES). **Elastomers:** NBR (Buna-N), EPDM, FKM (Viton), HNBR, VMQ silicone, neoprene (CR), CSM (Hypalon).	**Elastomers:** natural rubber (NR). **Metals:** zinc-galvanized surfaces for prolonged immersion; magnesium alloys; soft (low-tin) solder in continuous high-temperature service. **Plastics:** some grades of polyurethane (verify with manufacturer); ABS at elevated temperature.

6. DILUTION & MAKE-UP

Supplied as a 50 / 50 v/v ready-to-use blend. A glycol concentrate plus inhibitor pre-charge (96 / 4 v/v PG / OAT) is also available; field-blend 1 part concentrate with 0.92 parts deionized or distilled water by volume to achieve 50 vol% propylene glycol. Use only deionized or distilled water (< 50 µS / cm conductivity, < 25 ppm chloride, < 25 ppm sulfate) for top-up and make-up. Tap or hard water introduces calcium / magnesium scale and chloride that will accelerate pitting and shorten inhibitor life. Do not mix with ethylene-glycol coolants or inhibited-glycol products of unknown chemistry — inhibitor cross-reactions can drop reserve alkalinity and trigger premature replacement.

7. SERVICE LIFE & MAINTENANCE

Closed-loop service life of **5+ years** is typical for OAT-buffered propylene glycol coolants under design operating conditions. Service life is dependent on system cleanliness, oxygen ingress, make-up water quality, peak operating temperature, and avoidance of cross-contamination with incompatible inhibitor chemistries. Annual fluid analysis is recommended:

Test	Method	Typical Replace / Treat Trigger
Reserve Alkalinity	ASTM D1121	Replace or sweeten when < 4.0 mL
pH	ASTM D1287	Replace when < 7.5 or > 11.0
Refractive index / SG	ASTM D1747 / D1298	Adjust dilution when freeze-point margin lost
Reserve inhibitor (HPLC / ICP)	Lab	Replace or sweeten if azole / OAT < 30% of fresh value
Visual / particulate	Visual + filter	Investigate if discolored, oily layer, or > 100 mg/L solids

8. PACKAGING

Container	Net Volume	Net Weight (approx.)
HDPE bottle	1 quart (0.95 L)	~2.2 lb (1.0 kg)
HDPE jug	1 US gallon (3.79 L)	~8.8 lb (4.0 kg)
HDPE pail	5 US gallons (18.9 L)	~46 lb (21 kg)
Steel drum, lined	55 US gallons (208 L)	~470 lb (213 kg)
IBC tote (preferred bulk)	275 US gallons (1041 L)	~2,400 lb (1,089 kg)
IBC tote, large	330 US gallons (1249 L)	~2,870 lb (1,302 kg)
Bulk tanker	4,000 – 6,500 US gallons	Quoted on request

9. STORAGE & HANDLING

Store sealed indoors at 5 – 40 °C (40 – 104 °F). Avoid prolonged storage at temperatures below the blend freeze point; ice formation can cause inhibitor stratification and out-of-spec on thaw. Shelf life is **two (2) years** in a sealed, original container; once a tote or drum is opened, use the contents within 12 months. Standard chemical PPE applies: chemical-resistant gloves, splash-rated safety glasses or full face shield, and impervious apron. Refer to the corresponding Safety Data Sheet (SDS AC-PG50-OAT-001) for full hazard identification, first-aid measures, accidental-release procedures, transport classification, and disposal guidance.

10. QUALITY ASSURANCE

Inhibited Propylene Glycol 50 / 50 with OAT inhibitor is blended at Alliance Chemical's Taylor, Texas USA facility under documented batch-control procedures. Each batch is assigned a lot number and receives in-house QC testing for pH, specific gravity, refractive index, and inhibitor reserve; a lot-specific Certificate of Analysis (COA) accompanies every shipment on request. The finished blend conforms to ASTM D3306 industrial corrosion-coolant performance limits.

11. ORDERING & TECHNICAL SUPPORT

Sales: sales@alliancechemical.com | +1 512-365-6838
Technical contact: Andre Taki, Technical Specialist | andre@alliancechemical.com | ext. 515
24-hour transportation emergency: CHEMTREC 1-800-424-9300
Web: alliancechemical.com

References: OAT inhibitor licensor MSDS data on file (matches Alliance SDS AC-PG50-OAT-001); DOW Dowfrost / Dowfrost HD Engineering & Operating Guide; ASHRAE Handbook 2017, Chapter 31; ASTM D1384, D1287, D1121, D1177, D1120, D1298, D1747, D445, D3306. Underlying ASTM D1384 laboratory-coupon test data on the OAT inhibitor package is retained on file with the inhibitor licensor and is available to qualified customers under NDA upon written request.