

EMS-CL-PGC

Inhibited propylene glycol concentrate, dilute on site

Concentrate for on-site dilution to the required concentration, with a pH of 9.5–10.5 at 50 %

EMS-CL-PGC is the inhibited propylene glycol concentrate: diluted on site to the concentration the loop needs, with a published pH of 9.5–10.5 at 50 % and a reserve alkalinity published at ≥ 15.0 mL minimum on an inhibited concentrate. Dilution water carries its own limits, <25 ppm chloride and sulfate and <50 ppm hard-water ions, and a vacuum fill can partially separate glycol, so a sample is required to confirm the blend is uniform. The failure it exists to catch is a concentrate diluted with untreated site water, where the water introduces the chloride and hardness the fluid specification excludes.

ORDERING INFORMATION

Part number	EMS-CL-PGC
Form	Concentrate, diluted on site
pH at 50 %	9.5–10.5
Reserve alkalinity	≥ 15.0 mL minimum
Dilution water limits	<25 ppm chloride and sulfate; <50 ppm hard-water ions
Container sizes	1, 2.5, 5, 30, 55 and 265 US gallons; 5 000-gallon tankers
Dilution record	Sample after dilution to confirm the blend is uniform
Transport documentation	Container label and safety data sheet issued with the delivery

FLUID IDENTITY AND DILUTION

Parameter	Value	Notes
Form	Concentrate, diluted on site	Diluted to the concentration the loop requires; the freeze point then follows the published curve
Concentration of the delivered product	Concentrate	Not a premix; the delivered container carries no fixed loop concentration
Freeze point	Set by the dilution performed on site	The published curve gives the value at each concentration: 20 % $\rightarrow$ -7.2 °C · 25 % $\rightarrow$ -10.1 °C · 30 % $\rightarrow$ -13.3 °C · 40 % $\rightarrow$ -22.2 °C · 50 % $\rightarrow$ -35.0 °C · 55 % $\rightarrow$ -43.3 °C
Freeze-point curve corroboration at 25 %	25 % $\rightarrow$ -10.1 °C, corroborated by an independent 25 % fluid data sheet at -11 °C by ASTM D1177	One design point, two sources
Recommended minimum concentration	25 % water-glycol by volume on a secondary loop	Or particulate-free deionised fluid with inhibitors and biocides
Viscosity	Set by the dilution performed on site	The family runs 1.68 mPa·s at 15 %, 2.48 mPa·s at 25 % and 8.20 mPa·s at 55 %, all at 20 °C
Viscosity effect on flow instruments	Turndown and low-flow cut-off move with concentration	The diluted concentration must be fixed before the flow instrument is specified, because a meter specified at 15 % does not behave the same at 55 %
Dilution water limits	<25 ppm chloride and sulfate and <50 ppm hard-water ions	The dilution water is part of the fluid specification, not an accessory to it
Specific gravity	Not published in the retrieved material for this product	Quoted on request against the fluid data sheet

Parameter	Value	Notes
Loop operating envelope	6.9 bar (100 psig) nominal operating pressure and 60 °C (140 °F) fluid temperature	Technology cooling pipework envelope the fluid is specified against

WATER-QUALITY BANDS THE FLUID IS SPECIFIED AGAINST

Parameter	Value	Notes
Conductivity, facility water / glycol-premix loop	50–300 µS/cm	Wide band. Glycol is a weak electrolyte, so a diluted concentrate loop cannot sit at 5 µS/cm
Conductivity, de-ionised technology cooling loop	0.2–20 µS/cm	Narrow band, ASHRAE technology-cooling guidance; a de-ionised loop must hold it and a glycol loop cannot
Why the two conductivity bands differ	Glycol content	Applying the technology band to a facility loop, or the reverse, is the documented and costly misapplication
pH, facility water / glycol-premix loop	7.0–9.0	Wide band, published for the facility-water side
pH, de-ionised technology cooling loop	8.0–9.5	Narrow band, published for the technology cooling side
Chloride, facility water side	<50 ppm	Facility-water side limit; the dilution water limit for this product is tighter at <25 ppm
Chloride, technology cooling side	<5 ppm	Ten times tighter than the facility-water limit
Sulfate, facility water side	<100 ppm	Facility-water side limit; the dilution water limit for this product is tighter at <25 ppm
Sulfate, technology cooling side	<10 ppm	The same limit sulfur-cured EPDM can breach as the seal ages
Total hardness as CaCO ₃ , facility water side	<200 ppm	Facility-water side limit; the dilution water limit for this product is <50 ppm hard-water ions
Total hardness as CaCO ₃ , technology cooling side	<20 ppm	Technology cooling side limit
Bacteria, facility water side	<1 000 CFU/mL	Facility-water side limit
Bacteria, technology cooling side	<100 CFU/mL	Technology cooling side limit
Residue after evaporation, facility water side	<500 ppm	Facility-water side limit
Residue after evaporation, technology cooling side	<50 ppm	Technology cooling side limit
Biocide, facility water side	Not required	Published as not required on the facility-water side
Biocide, technology cooling side	Required	Published as required on the technology cooling side

INHIBITOR PACKAGE AND CORROSION PERFORMANCE

Parameter	Value	Notes
pH of the concentrate at 50 %	9.5–10.5	Published pH for the concentrate diluted to 50 %
Reserve alkalinity	≥15.0 mL minimum	Published minimum for an inhibited concentrate, measured per ASTM D1121; the family also publishes ≥5 mL on a direct-to-chip grade and 1.4 mL on a 25 % premix

Parameter	Value	Notes
Inhibitor chemistry class	Inhibited propylene glycol concentrate	Automotive antifreeze is unacceptable and must not be used in any fluid system
Corrosion performance basis	ASTM D1384, with a target of less than 0.5 mils penetration per year	Target applies to all system metals
Inhibited against raw glycol	Carbon steel at 0.01 mpy inhibited, against 23.65 mpy for raw uninhibited propylene glycol at 40 %	A 2 365× difference on the same test
Dye for leak detection	Fluid is dyed for leak detection	One inhibited concentrate in the family is bright yellow

DELIVERY, DILUTION AND SAMPLING

Parameter	Value	Notes
Container sizes	1, 2.5, 5, 30, 55 and 265 US gallons, plus 5 000-gallon tankers	Container sizes as the fluid data sheets carry them; no litre equivalent of the package ladder is published
Container labelling check	Validate that containers are properly labelled and match design intent	Product or batch mismatch against the delivery note is a listed failure mode
Transport documentation	Container label and safety data sheet issued with the delivery	The safety data sheet is supplied with the delivery documentation; no transport classification is published.
Vacuum fill caveat	Sample after a vacuum fill to confirm the blend is uniform	A vacuum fill can partially separate glycol, so the diluted blend is verified by sample
Start-up analysis	Analyse before start-up and after any significant make-up addition	The analysis establishes the baseline for the inhibitor-depletion pattern
Sampling cadence	Every 50–100 days, or quarterly	Annual analysis is standard practice for systems containing more than 250 gallons
Laboratory panel	Glycol concentration, freeze point, pH, reserve alkalinity, organic-acid inhibitor level, conductivity, ICP metals and anions	The panel confirms both the dilution and the inhibitor state
Automatic water make-up	Discouraged	Make-up dilutes the propylene glycol without an operator noticing
Cross-brand top-up	Sample and obtain laboratory approval before mixing	Cross-brand top-up can cause phase separation

APPLICATIONS

- Sites that dilute to a concentration of their own choosing rather than buying a fixed premix
- Loops where dilution water quality can be controlled and documented
- Commissioning rounds filling more than one loop at different concentrations
- Systems that need the concentrate's published reserve alkalinity as the starting point

COMPATIBLE WITH

- EMS-FF-C120, EMS-FF-C200 and EMS-FF-C500 fill carts
- EMS-FF-FL75, EMS-FF-FL340 and EMS-FF-FL1300 flush skids
- EMS-FF-FS20, EMS-FF-FS60 and EMS-FF-FS150 filtration skids
- EMS-CL-DIW de-ionised water where a de-ionised loop is being charged
- EMS-TL-SF electromagnetic flow meter, once the diluted blend is fixed

LOOP MATERIALS THIS FLUID IS SPECIFIED AGAINST

- 316L stainless steel, peroxide-cured EPDM, Viton, FEP, PTFE, HDPE, PEEK and PP-R
- Free iron and plain carbon steel are excluded
- Brass above 15 % zinc only where dezincification resistance is verified to ISO 6509 at $\leq 100 \mu\text{m}$ depth
- Sulfur-cured EPDM is discouraged against peroxide-cured EPDM

SCOPE

- Loop fluid only: coolant distribution units and cold plates are outside this scope

COOLANT LADDER BY PROPYLENE GLYCOL CONCENTRATION

Parameter	Value	Notes
EMS-CL-PG15	15 % v/v · freeze point -5°C	Viscosity 1.68 mPa·s at 20°C ; pH 8.0–10.5
EMS-CL-PG20	20 % v/v · freeze point -7.2°C	Viscosity quoted on request; pH 8.0–8.7
EMS-CL-PG25	25 % v/v · freeze point -10.1°C	The common design point; viscosity 2.48 mPa·s at 20°C
EMS-CL-PG30	30 % v/v · freeze point -13.3°C	Viscosity quoted on request; pH 8.0–10.5
EMS-CL-PG40	40 % v/v · freeze point -22.2°C	Viscosity quoted on request; pH 8.0–10.5
EMS-CL-PG50	50 % v/v · freeze point -35.0°C	Viscosity quoted on request; pH 7.0–8.5
EMS-CL-PG55	55 % v/v · freeze point -43.3°C	Viscosity 8.20 mPa·s at 20°C ; pH 8.0–10.5
EMS-CL-PGC	Concentrate, dilute on site	pH 9.5–10.5 at 50 %
EMS-CL-DIW	0 % propylene glycol	De-ionised water, flush duty only; pH 8.0–9.5

NOTES

- Two water-quality bands are published above, each labelled with the loop type it belongs to. Publishing either band alone is misleading.
- One freeze-point curve is published, from 20 % to 55 %. The 25 % point is corroborated by an independent 25 % fluid data sheet at -11°C by ASTM D1177.
- Freeze point and viscosity of this product are set by the dilution performed on site; they are not fixed values of the delivered concentrate.
- Dilution water is part of the specification: <25 ppm chloride and sulfate and <50 ppm hard-water ions.
- No transport classification of any kind is published for this coolant. The container label and the safety data sheet issued with the delivery are the transport documentation.
- Container sizes are published in US gallons as the fluid data sheets carry them; no litre conversion of the package ladder is published.
- Certification names are published on the badge cards; approval documents are shown on request.
- Scope: no coolant distribution units and no cold plates.

Full specification sheet and current pricing
 EMS-Trade Cooling · ems-cool.com
 Typical lead time confirmed on order acknowledgement.

EMS-CL-PGC
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