

EMS-CL-DIW

De-ionised water for technology cooling loops, 0 % propylene glycol

Particulate-free de-ionised water for flush duty and low-conductivity loops, with inhibitors and biocides added

EMS-CL-DIW carries no propylene glycol and no freeze protection: it is de-ionised water for flush duty and for low-conductivity technology cooling loops, held in the 0.2–20 $\mu\text{S}/\text{cm}$ band and the 8.0–9.5 pH band with biocide required. That band sits below the 5 $\mu\text{S}/\text{cm}$ floor an electromagnetic flow meter needs, so a DI loop takes the ultrasonic instrument EMS-TL-SFU rather than EMS-TL-SF. The failure it exists to catch is a de-ionised loop run on a flow principle that cannot measure it, reporting near zero without raising a fault.

ORDERING INFORMATION

Part number	EMS-CL-DIW
Propylene glycol concentration	0 % v/v
Freeze protection	None: flush duty and DI loop duty
Conductivity band, technology cooling side	0.2–20 $\mu\text{S}/\text{cm}$
pH band, technology cooling side	8.0–9.5
Biocide	Required
Flow instrument implication	Below the 5 $\mu\text{S}/\text{cm}$ electromagnetic floor; use EMS-TL-SFU
Container sizes	1, 2.5, 5, 30, 55 and 265 US gallons; 5 000-gallon tankers

FLUID IDENTITY AND DUTY

Parameter	Value	Notes
Propylene glycol concentration	0 % v/v	No glycol content
Freeze protection	None	Flush duty and de-ionised loop duty only; the published freeze-point curve for the glycol grades does not apply to this fluid
Duty	Flush duty and low-conductivity technology cooling loops	A secondary loop on de-ionised fluid requires inhibitors and biocides to be added
Conductivity band, de-ionised technology cooling loop	0.2–20 $\mu\text{S}/\text{cm}$	Narrow ASHRAE technology-cooling band; this is the loop type the fluid is specified for
pH band, de-ionised technology cooling loop	8.0–9.5	Technology cooling side pH band
Biocide	Required	Published as required on the technology cooling side, against not required on the facility-water side
Flow instrument implication	Sits below the 5 $\mu\text{S}/\text{cm}$ floor of the electromagnetic flow meter	A de-ionised loop can sit under the meter's floor and the meter reads near zero without raising a fault; the ultrasonic instrument EMS-TL-SFU has no minimum conductivity requirement
Viscosity	Water-like, not the glycol family's viscosity	The 1.68 to 8.20 mPa·s band at 20 °C describes the propylene glycol grades at 15 % to 55 %; a de-ionised loop does not carry that swing
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, de-ionised technology cooling loop	0.2–20 µS/cm	Narrow band, ASHRAE technology-cooling guidance. This is the band a de-ionised loop must hold
Conductivity, facility water / glycol-premix loop	50–300 µS/cm	Wide band, published for the facility-water side and for glycol premix loops; glycol is a weak electrolyte, so a premix loop cannot sit at 5 µS/cm
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, de-ionised technology cooling loop	8.0–9.5	Narrow band, published for the technology cooling side
pH, facility water / glycol-premix loop	7.0–9.0	Wide band, published for the facility-water side
Chloride, technology cooling side	<5 ppm	Ten times tighter than the facility-water limit of <50 ppm
Sulfate, technology cooling side	<10 ppm	The same limit sulfur-cured EPDM can breach as the seal ages, against <100 ppm on the facility-water side
Total hardness as CaCO ₃ , technology cooling side	<20 ppm	Against <200 ppm on the facility-water side
Bacteria, technology cooling side	<100 CFU/mL	Against <1 000 CFU/mL on the facility-water side
Residue after evaporation, technology cooling side	<50 ppm	Against <500 ppm on the facility-water side
Biocide, technology cooling side	Required	Against not required on the facility-water side
Inhibitor requirement	Inhibitors and biocides required on a secondary loop	A secondary loop should be a minimum 25 % water-glycol mix or particulate-free deionised fluid with inhibitors and biocides
Dilution water limits where water is added on site	<25 ppm chloride and sulfate and <50 ppm hard-water ions	Applies to any water used to make up the loop

CORROSION AND CONTAMINATION CONTROL

Parameter	Value	Notes
Corrosion performance basis of the inhibited grades	ASTM D1384, with a target of less than 0.5 mils penetration per year	Target applies to all system metals; this fluid requires the inhibitor package to be added
Inhibited against raw glycol	Carbon steel at 0.01 mpy inhibited, against 23.65 mpy for raw uninhibited propylene glycol at 40 %	Context for why an uninhibited fluid is unacceptable in any fluid system
Automotive antifreeze	Unacceptable and must not be used in any fluid system	Stated as a prohibition, not a preference
Residual flush water	Residual flush water must be removed before the final fill	Remaining fluid reduces system performance
Fluid left idle	Do not leave the fluid circuit in a no-flow condition	Idle fluid collects sediment and prevents the protective oxide layer forming
Suspended solids target	<5 µm at the cold plate and <10 µm at a rear-door heat exchanger	The filtration duty that keeps a DI loop inside its specification A suspended-solids target, not a filter rating; the element is selected on a protection rating.

DELIVERY, SAMPLING AND HANDLING

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.
Sampling cadence	Every 50–100 days, or quarterly	Annual analysis is standard practice for systems containing more than 250 gallons
Sampling points	Hot closed-loop samples	Analyse before start-up and after any significant make-up addition
Laboratory panel	Glycol concentration, freeze point, pH, reserve alkalinity, organic-acid inhibitor level, conductivity, ICP metals and anions	On a DI loop the panel confirms conductivity, inhibitor and biocide state
Automatic water make-up	Discouraged	Undetected dilution or contamination of the loop fluid is the reason

APPLICATIONS

- Flush duty and final rinse before a glycol fill
- De-ionised technology cooling loops held in the 0.2–20 µS/cm band
- Loops where an ultrasonic flow instrument is the flow principle
- Systems sampled on a quarterly laboratory panel for conductivity and inhibitor state

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-TL-SFU ultrasonic flow meter, which has no minimum conductivity requirement
- EMS-TL-SK leak channel input module, whose detection needs a conductive liquid to reach the sensor

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 ≤100 µm 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

Parameter	Value	Notes
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: this fluid belongs to the narrow, low-conductivity band and a glycol premix cannot sit in it.
- This fluid has no freeze protection and the published freeze-point curve for the glycol grades does not apply to it.
- A de-ionised loop sits below the 5 µS/cm conductivity floor of the electromagnetic flow meter, so the flow principle is the ultrasonic EMS-TL-SFU.
- One freeze-point curve is published across the coolant ladder, from 20 % to 55 %; the 25 % point is corroborated by an independent 25 % fluid data sheet at –11 °C by ASTM D1177.
- 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.

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