

# Heat transfer fluid for the pharma and food industry **ANTIFROGEN<sup>®</sup> L**



what is precious to you?

# ANTIFROGEN® L

## HEAT TRANSFER FLUID FOR THE PHARMA AND FOOD INDUSTRY

Antifrogen L is a monopropylene glycol based heat transfer fluid for applications in the pharma or food industry, like heat & cooling systems in breweries, dairies, ice-cream factories, cold stores and fish processing plants. Antifrogen L has been certified by VdS as the first glycol based antifreeze for the use as a fire extinguishing agent.

Antifrogen L contains a highly efficient combination of inhibitors which provides excellent corrosion prevention and long term stability in your installations. The frost resistance is defined by the mixing ratio with water (chloride content < 100 ppm, water hardness 0° - 25° GH) and shall be at least 25% v/v of Antifrogen L (corresponds to frost protection down to -10 °C).

Antifrogen L is inhibited without the use of nitrite, amine, borate, phosphate and silicate, does neither contain CMR substances (Carcinogenic Mutagenic Reprotoxic) nor any other restricted substances as described in the EG-guideline 2011/65/EG, article 4 §1 (i.e. lead, mercury, cadmium, chromate VI, polybrominated biphenyl or diphenyl ether).

Antifrogen L is classified to be toxicologically harmless, readily biodegradable and non-toxic to aquatic organisms and meets the requirements of the German water hazardous class WGK 1. It complies with our standards for sustainable acting and responsible care.

Antifrogen L keeps its operational efficiency over many years. Clariant advises to verify the performance during regular maintenance by the Antifrogen Service every 2 years, which is free of charge.

### Product characteristics

Basis \_\_\_\_\_ monopropylene glycol  
 Appearance (20 °C) \_\_\_\_\_ clear blue liquid  
 Density (20 °C, DIN 51757) \_\_\_\_\_ 1.043 g/cm<sup>3</sup>  
 Refractive index (20 °C, DIN 51423 part 2) \_\_\_\_\_ 1.432  
 Minimum usage concentration \_\_\_\_\_ 25 % v/v in water  
 Permanent usage temperature \_\_\_\_\_ -25 to +150 °C

## FROST AND CORROSION PROTECTION

ASTM D 1384 has been established as standardized test method to determine the protection of various metals/alloys against corrosion in water and glycol based heat exchange fluids.

Antifrogen L possesses an excellent protection performance even after prolonged test durations of 3000 h. The very minor weight losses of tested metals/alloys show its long term reliability and suitability for permanent usage.

Metal	MEG <sup>a</sup>	Antifrogen L <sup>b</sup> 336 hours	Antifrogen L <sup>b</sup> 3000 hours	Limits <sup>c</sup>
copper	-1.2	-0.7	-2.8	3.6
soft solder (WL 30)	-136	-3.3	-2.4	11.2
brass (MS 63)	-2.5	-0.8	-1.8	3.6
steel (C 15)	-225	+0.2	+0.5	3.6
gray iron (GG 22)	-92	+0.7	+0.9	3.5
cast aluminium (AlSi6Cu3)	-68	-2.3	-1.3	10.4

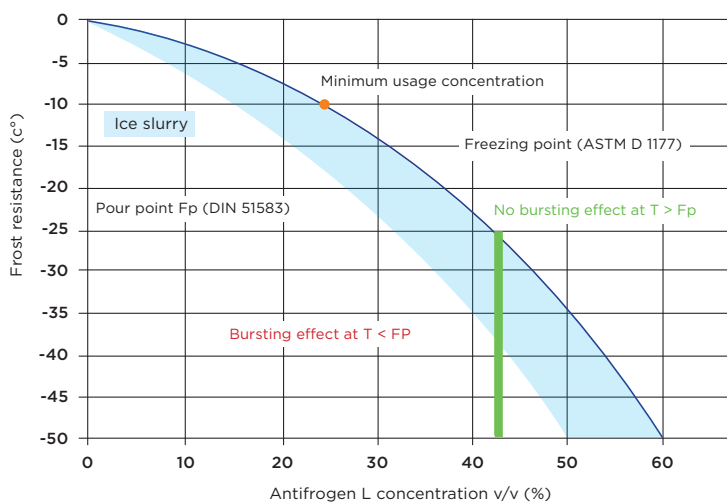
Given values show the weight losses/increases of the metals in g/m<sup>2</sup> (acc. ASTM D 1384, at 88 °C, 6 l/h of air)

a monopropylene glycol (MPG) without inhibitors / demineralized water (1:2 v/v)

b Antifrogen L / demineralized Water (1:2 v/v)

c limits of ASTM D 1384 in accordance to ASTM D 3306-05 (Glycol Base Engine Coolant for Automobile)

The frost resistance of Antifrogen L is defined by its mixing ratio with water and does not change when used in closed systems over a long period of time. Antifrogen L/ water mixtures with concentration of 43% v/v (frost resistance -23 °C) and more do not exhibit a bursting effect at any temperature.



Special Antifrogen L antifreeze testers and refractometers are available for determining the frost resistance.

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