

Product Sheet

CLARIANT 

AIRCRAFT DE-ICER / ANTI-ICER

**SAFEWING®
MP IV LAUNCH**



Product Description

Safewing® MP IV LAUNCH is a propylene glycol based SAE type IV aircraft deicing / anti-icing fluid, which meets or exceeds the current revision of SAE specification AMS 1428.

Benefits

- Safewing® MP IV LAUNCH is approved according to the current version SAE AMS 1428.
- Shows excellent spraying and handling behavior, extremely low foaming tendency, outstanding wetting ability and heat stability up to +60 °C.
- Can be applied with all positive displacement pumps due to the excellent shear stability.
- Can be diluted to be used as deicing fluid in a two-step procedure.
- Can be stored under proper conditions for minimum 2 years and can be extended.
- Can be used at temperatures (LOUT) down to -28.5 °C
- Improved environmental behavior (contains no alkyl phenol ethoxylates and no triazoles, minimum amount of inhibitors, fully biodegradable).
- Excellent availability throughout the world.
- Outstanding brandspecific holdover time table.
- Extremely low formation of residues upon dry-out and rehydration and easy cleaning and removability of residues.

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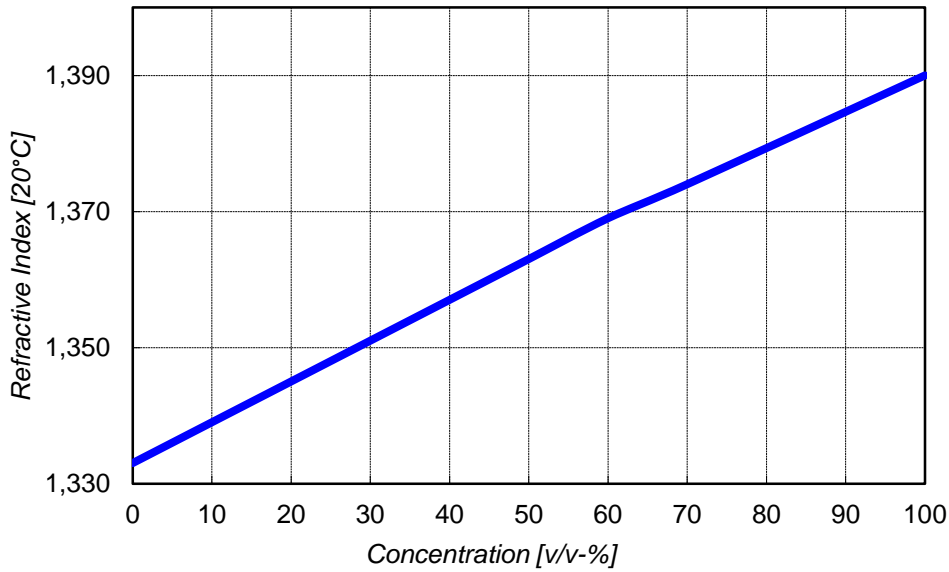


Technical Data - Product Properties

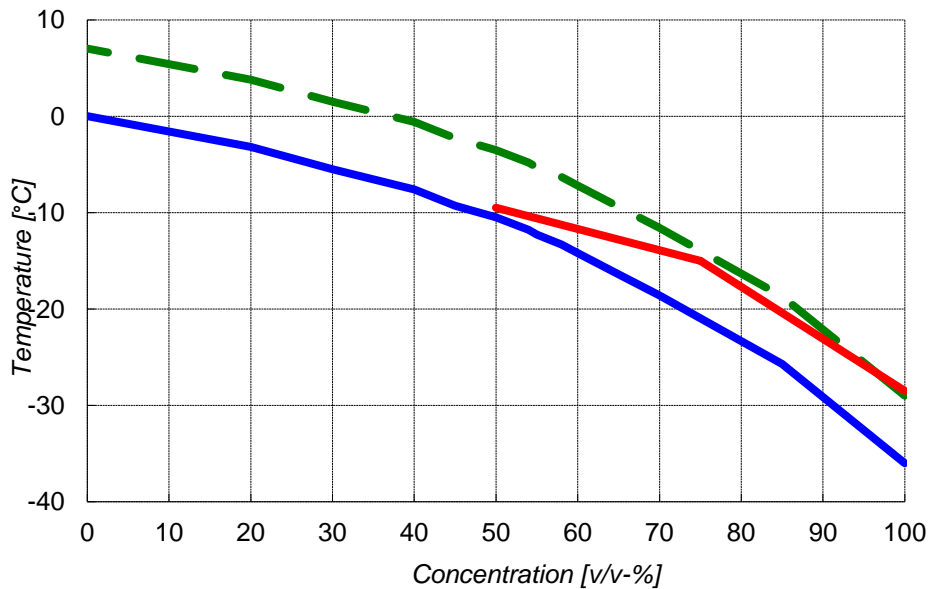
ITEMS	VALUE	REFERENCE METHOD
Appearance	green liquid	visual
Density (20 °C)	approx. 1.04 g/cm ³	DIN 51757
Refractive Index (20 °C)	1.390 - 1.393	ASTM D 1747
Content Water	47.0 – 49.8 %	ASTM E 203
Content Propylene Glycol	≥ 50 %	GC
pH Value (20 °C)	7.0 - 7.5	ASTM E 70
Freezing Point (neat)	-36 °C	ASTM D 1177
Dynamic Viscosity (neat, 20 °C)	10,000 – 20,000 mPas	ASTM D 2196
Ignition Temperature	> 400 °C	DIN 51794
Flash Point	> 100 °C	ASTM D 93
Boiling Point (1013 hPa)	103 °C	ASTM D 1120
Surface Tension	24 – 30 dynes/cm	ASTM D 1331
Water Spray Endurance Time	> 80 min	AMS 1428
High Humidity Endurance Time	> 8 h	AMS 1428
Chemical Oxygen Demand (COD)	0.85 kg O ₂ /kg	DIN ISO 15705-H45
Biological Oxygen Demand (BOD, 5 d, 20 °C)	0.34 kg O ₂ /kg	DIN EN 1899-1
Biodegradability (7 d, 20 °C)	98 %	OECD 301 E
Daphnia Acute Toxicity (EC ₅₀ , 48 h, Daphnia Magna)	976 mg/L	OECD 202
Fish Acute Toxicity (LC ₅₀ , 96 h, Fathead Minnow)	2,443 mg/L	EPA OPPTS 850.1075
Algae Acute Toxicity (EC ₅₀ , 72 h, Pseudokirchneriella subc.)	2,228 mg/L	EPA OPPTS 850.5400
Bacteria Acute Toxicity (EC ₅₀ , 30 min, Vibrio Fisheri)	5,200 mg/L	DIN EN ISO 11348-2
Trace Contaminants		
Sulfur	1 ppm	AMS 1428
Halogens	< 10 ppm	AMS 1428
Phosphate	< 1 ppm	AMS 1428
Nitrate	< 2 ppm	AMS 1428
Heavy Metals	< 1 ppm	AMS 1428
Low Embrittling Cd Corrosion	< 0.3 mg/cm ² /24 h	ASTM F 1111
Sandwich Corrosion	conforms	ASTM F 1110
Hydrogen Embrittlement	conforms	ASTM F 519
Effect on Transparent Plastics	conforms	ASTM F 484
Total Immersion Corrosion	conforms	ASTM F 483
Stress Corrosion	conforms	ASTM F 945
Effect on Painted Surfaces	conforms	ASTM F 502
Effect on Unpainted Surfaces	conforms	ASTM F 485
Runway Concrete Scaling Resistance	conforms	ASTM C 672

“In Service” Properties

Refractive Index (20 °C):



LOUT (Lowest Operational Use Temperature):



Freezing Point Curve



+7 °C Buffer Line



Aerodynamic
Acceptance Line



“In Service” (on-wing) Chart:

DILUTION ¹	REFRACTIVE INDEX ²	pH ³	FREEZING POINT ⁴	LOUT ⁵
100/0	1.3890 – 1.3924	7.0 – 7.5	- 36	- 28.5
75/25	1.3765 – 1.3814	6.5 – 7.5	- 21	- 14
50/50	1.3625 – 1.3674	6.5 – 7.5	- 10	- 3

¹ Dilution Safewing® MP IV LAUNCH with water (v/v-%).

² According to ASTM D 1747 at 20 °C. Limits according AMS 1428, paragraph 3.2.1.4

³ According to ASTM E 70 at 20 °C

⁴ According to ASTM D 1177 (in °C).

⁵ According to AMS 1428, paragraph 1.3.1 (in °C) (LOUT's listed are for large transport type jet aircrafts).

„In Service“ (on-wing) Dynamic Viscosities:

DIL. ¹	Minimum On-Wing Viscosity ² for brandspecific HOT	Maximum On-Wing Viscosity ² for brandspecific HOT
	Safewing® MP IV LAUNCH	Safewing® MP IV LAUNCH
100/0	7.550 (a)	20.500 (b)
75/25	18.000 (a)	47.800 (b)
50/50	17.800 (a)	63.000 (b)

¹ Dilution Safewing® MP IV LAUNCH with water (v/v-%).

² Dynamic viscosity in mPa·s using Brookfield LV viscometer. Manufacturer method according to ASTM D2196, that is:

- (a) LV 1, big sample adapter (BSA), 55 mL, 20 °C, 0.3 rpm, 10 minutes
- (b) LV 2, big sample adapter (BSA), 60 mL, 20 °C, 0.3 rpm, 10 minutes

Remark: For dynamic viscosity data according to **SAE AS9968** please refer to the current Holdover Time Guidelines published by FAA or Transport Canada.

Additional Information:

Where diluted fluids are stored (Safewing® MP IV LAUNCH / water) in heated bulk storage tanks ensure regular quality control checks are carried out to ensure fluids is within “In Service” limits.

Storage and Handling

- Safewing® MP IV LAUNCH should be stored in stainless steel or plastic (high-density and UV-protected) containers. When stainless steel or plastic are not available, aluminum, and epoxy coated carbon steel containers may be used.
- It is recommended to examine storage and vehicle tanks annually to check if corrosion or contamination has occurred. If contamination with other materials has occurred, don't use the fluid any longer and contact us.
- Safewing® MP IV LAUNCH is sensitive to over-heat. Do not store Safewing® MP IV LAUNCH at temperatures higher than 60 °C for a long time to prevent decomposition of glycol. It can be stored at low temperatures. In general, the lowest recommended storage temperature is – 25 °C.
- Safewing® MP IV LAUNCH shows Non-Newtonian behavior and can be destroyed upon too high shear stress. Compressed air or gravity should be used to transfer Safewing® MP IV LAUNCH. If neither is available, a positive displacement pump must be used. Avoid pipes and lines with 90° angles in the system and also avoid narrow pipes and lines or decrease the pump pressure. Take always care that valves are 100 % open when pumping the fluid.
- Please take care to use only homogenous Safewing® MP IV LAUNCH material for application.

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