Product Sheet

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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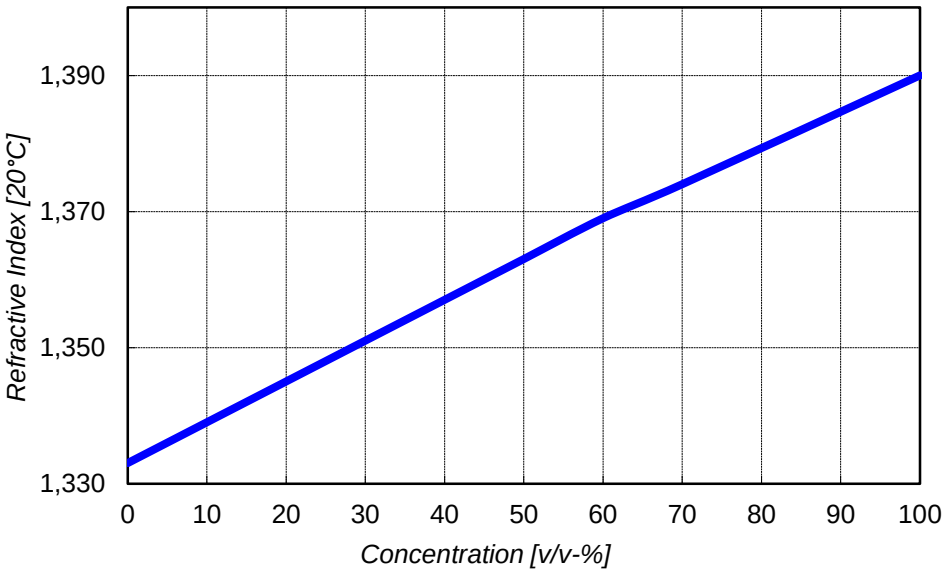
Technical Data - Product Properties

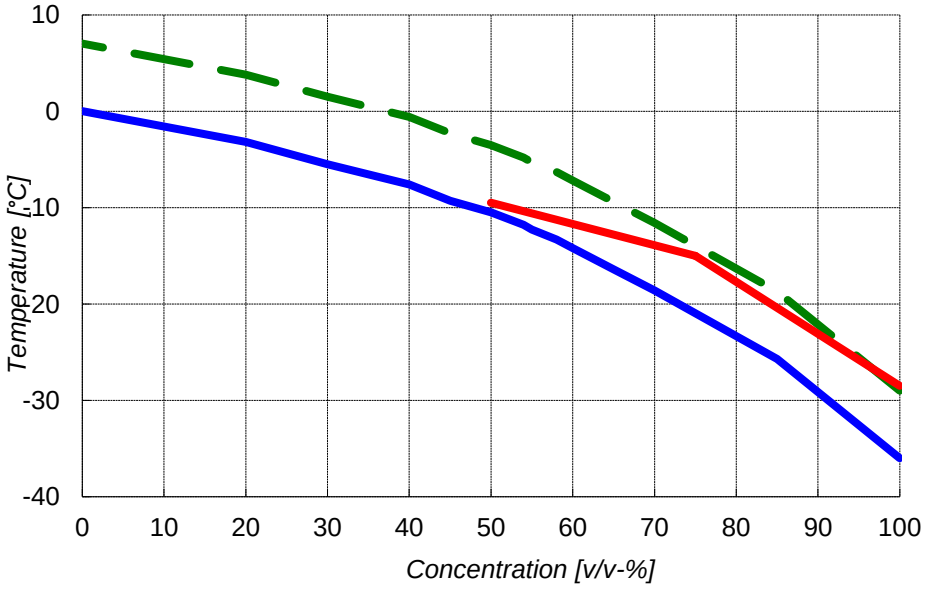
ITEMS	VALUE	REFERENCE METHOD
Appearance	green liquid	visual
Density (20 °C)	approx. 1.04 g/cm^3	DIN 51757
Refractive Index (20 °C)	1.390 - 1.393	ASTM D 1747
Content Water	47.0 – 49.8 %	ASTM E 203
Content Propylene Glycol	≥ 50 %	GC
pH Value (20 °C)	7.0 - 7.5	ASTM E 70
Freezing Point (neat)	-36 °C	ASTM 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 Safewing® MP IV LAUNCH	Maximum On-Wing Viscosity[2] for brandspecific HOT 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.

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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 a t 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.