

Product Sheet

AIRCRAFT DEICING FLUID

CLARIANT 

**SAFEWING®
MP I LFD 88**



Product Description

Safewing® MP I LFD 88 is a propylene glycol based SAE Type I aircraft deicing fluid, designed to meet all individual environmental demands. Safewing® MP I LFD 88 is an AMS 1424/1 fluid.

Benefits

- Approved according to the latest revision of SAE AMS 1424/1.
- Safewing® MP I LFD 88 is a low foaming fluid with excellent wetting properties that entirely covers aircraft surfaces to avoid premature re-icing of already treated surfaces.
- Fully biodegradable additive package, low surfactant content and triazole-free formulation gives superior environmental profile.
- Can be stored up to 2 years under proper conditions.
- Suitable for use at temperatures down to -33 °C (-27 °F) (LOUT).
- GHS Label-free and globally registered.

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Technical Data - Product Properties

ITEMS	VALUE	REFERENCE METHOD
Appearance	orange liquid	visual
Density (20 °C)	approx. 1.04 g/cm ³	DIN 51757
Refractive Index (20 °C)	1.4230 – 1.4260	ASTM D 1747
Content Water	10 – 11.8 %	ASTM E 203
Content Propylene Glycol	≥ 88 %	GC
pH Value (20 °C)	7.1 – 8.1	ASTM E 70
Freezing Point (diluted 50/50 with water)	< - 25 °C	ASTM D 1177
Kinematic Viscosity (20 °C)	25 - 36 mm ² /s	ASTM D 445
Ignition Temperature	> 400 °C	DIN 51794
Flash Point	> 100 °C	ASTM D 92
Boiling Point (1013 hPa)	129 °C	ASTM D 1120
Surface Tension	35 – 44 dynes/cm	ASTM D 1331
Water Spray Endurance Time	> 4 min	AMS 1424
High Humidity Endurance Time	> 26 min	AMS 1424
Chemical Oxygen Demand (COD)	1.44 kg O ₂ /kg	DIN 38409-41
Biological Oxygen Demand (BOD, 5 d, 20 °C)	0.49 kg O ₂ /kg	DIN 38409-51
Biodegradability (10 d, 20 °C)	98 %	OECD 301 E
Daphnia Acute Toxicity Test (LC₅₀, 48 h, Daphnia magna)	16,225 mg/L	EPA 40 CFR 797.1300
Fish Acute Toxicity Test (LC₅₀, 96 h, pimephales promelas, static system)	8,150 mg/L	EPA 40 CFR 797.1400
Water Hazard Classification (WGK)	1	
Trace Contaminants		
Sulfur	10 ppm	AMS 1424
Halogens	26 ppm	AMS 1424
Phosphorus	< 1 ppm	AMS 1424
Nitrate	< 1 ppm	AMS 1424
Heavy Metals	< 1 ppm	AMS 1424
Low Embrittling Cd Corrosion	conforms	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

Acceptance Criteria

	Safewing® MP I LFD 88	Safewing® MP I LFD Ready to Use 55/45	Safewing® MP I LFD Ready to Use 60/40
Appearance	Clear liquid, Orange	Clear liquid, Orange	Clear liquid, Orange
pH (as is) ^[1]	7.1 – 8.1	6.1 – 7.1	6.3 – 7.3
RI ^[1]	1.4230 – 1.4260	1.3870 – 1.3900	1.3920 – 1.3950

[1] Measurement taken at 20°C.

Safewing® MP I LFD 88 – Dilution Table

DILUTION	REFRACTIVE INDEX	FREEZING POINT [°C]	LOUT [°C]	DILUTION	REFRACTIVE INDEX	FREEZING POINT [°C]	LOUT [°C]
[1]	[2]	[3]	[4]	[1]	[2]	[3]	[4]
100/0	1.4245	Must not be used!		37/63	1.3705	-16	-6
65/35	1.3985	n/a	-33	36/64	1.3695	-15	-5
64/36	1.3975	n/a	-33	35/65	1.3685	-15	-5
63/37	1.3965	n/a	-33	34/66	1.3675	-14	-4
62/38	1.3955	n/a	-33	33/67	1.3665	-13	-3
61/39	1.3945	n/a	-33	32/68	1.3655	-13	-3
60/40	1.3935	-48	-30	31/69	1.3645	-12	-2
59/41	1.3925	-45	-25	30/70	1.3635	-12	-2
58/42	1.3915	-42	-22	29/71	1.3625	-11	-1
57/43	1.3905	-39	-19	28/72	1.3615	-10	0
56/44	1.3895	-36	-16	27/73	1.3605	-10	0
55/45	1.3885	-33	-23	26/74	1.3595	-9	+1
54/46	1.3875	-31	-21	25/75	1.3585	-9	+1
53/47	1.3865	-30	-20	24/76	1.3575	-8	+2
52/48	1.3855	-28	-18	23/77	1.3565	-7	+3
51/49	1.3845	-28	-18	22/78	1.3555	-7	+3
50/50	1.3835	-27	-17	21/79	1.3545	-6	+4
49/51	1.3825	-26	-16	20/80	1.3535	-6	+4
48/52	1.3815	-25	-15	19/81	1.3525	-5	+5
47/53	1.3805	-23	-13	18/82	1.3515	-5	+5
46/54	1.3795	-23	-13	17/83	1.3505	-5	+5
45/55	1.3785	-22	-12	16/84	1.3495	-4	+6
44/56	1.3775	-21	-11	15/85	1.3485	-4	+6
43/57	1.3765	-20	-10	14/86	1.3475	-4	+6
42/58	1.3755	-19	-9	13/87	1.3465	-3	+7
41/59	1.3745	-18	-8	12/88	1.3455	-3	+7
40/60	1.3735	-18	-8	11/89	1.3445	-3	+7
39/61	1.3725	-17	-7	10/90	1.3435	-3	+7
38/62	1.3715	-16	-6	9/91	1.3425	-3	+7

[1] Dilution Safewing® MP I LFD 88 with water (v/v-%).

[2] According to ASTM D 1747 at 20 °C.

[3] According to ASTM D 1177 (in °C).

[4] Ambient temperature limit or LOU according to AMS 1424, Paragraph 1.2.2.1 (in °C) (LOU's listed are for large transport type jet aircrafts).

Important Note:

Minimum allowed RI for corresponding dilution to meet LOU^T requirements.
Any dilution higher can be used up to the highest allowed dilution (65/35).
Any mixture above 65/35 must not be used.

Water Quality:

Tap water may or may not be applicable for diluting Safewing[®] MP I LFD 88.
This decision belongs to the end-user. Water can be checked by Clariant at any time to assist you in this process.

Storage Requirements:

- Safewing[®] MP I LFD 88 can be stored in a variety of containers, ranging from mild steel tanks to plastic totes (high-density). Please keep the fluid tightly closed and store it under proper conditions. For further storage information please refer to the Material Safety Data Sheet of Safewing[®] MP I LFD 88 and to our bulletin “*Storage and Handling of Clariant Aircraft Deicing/Anti-Icing Fluids*” (available via your local Sales Representative or our R&D team). It is recommended to examine storage and vehicle tanks annually to check if corrosion or contamination has occurred.
- Safewing[®] MP I LFD 88 consists mainly of glycol and therefore is sensitive to over-heating. Do not store the fluid at temperatures higher than 90 °C for a long time to prevent decomposition of glycol. Safewing[®] MP I LFD 88 can be stored at low temperatures. The lowest recommended storage temperature is – 40 °C.
- Safewing[®] MP I LFD 88 shows Newtonian behavior and can be transferred and pumped with any common commercially available pumps.
- Please take care to use only homogenous Safewing[®] MP I LFD 88 material for application.

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