

# 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.

CLARIANT CORPORATION  
BU INDUSTRIAL AND CONSUMER  
SPECIALTIES

625 East Catawba Avenue  
Mount Holly, NC 28120  
US

**CONTACTS** FYVE STAR, Inc.®

Tel: +1 801-552-9100

Tel: +1 801-599-5559

E-Mail:

Sales:

[info@fyvestar.com](mailto:info@fyvestar.com)

Customer Service:

[Deicers.US@Clariant.com](mailto:Deicers.US@Clariant.com)

COPYRIGHT ©  
CLARIANT INTERNATIONAL LTD 2019

**ISSUE**

March 2019, Version 6.0

## Technical Data - Product Properties

ITEMS	VALUE	REFERENCE METHOD
<b>Appearance</b>	orange liquid	visual
<b>Density (20 °C)</b>	approx. 1.04 g/cm <sup>3</sup>	DIN 51757
<b>Refractive Index (20 °C)</b>	1.4230 – 1.4260	ASTM D 1747
<b>Content Water</b>	10 – 11.8 %	ASTM E 203
<b>Content Propylene Glycol</b>	≥ 88 %	GC
<b>pH Value (20 °C)</b>	7.1 – 8.1	ASTM E 70
<b>Freezing Point (diluted 50/50 with water)</b>	< - 25 °C	ASTM D 1177
<b>Kinematic Viscosity (20 °C)</b>	25 - 36 mm <sup>2</sup> /s	ASTM D 445
<b>Ignition Temperature</b>	> 400 °C	DIN 51794
<b>Flash Point</b>	> 100 °C	ASTM D 92
<b>Boiling Point (1013 hPa)</b>	129 °C	ASTM D 1120
<b>Surface Tension</b>	35 – 44 dynes/cm	ASTM D 1331
<b>Water Spray Endurance Time</b>	> 4 min	AMS 1424
<b>High Humidity Endurance Time</b>	> 26 min	AMS 1424
<b>Chemical Oxygen Demand (COD)</b>	1.44 kg O <sub>2</sub> /kg	DIN 38409-41
<b>Biological Oxygen Demand (BOD, 5 d, 20 °C)</b>	0.49 kg O <sub>2</sub> /kg	DIN 38409-51
<b>Biodegradability (10 d, 20 °C)</b>	98 %	OECD 301 E
<b>Daphnia Acute Toxicity Test (LC<sub>50</sub>, 48 h, Daphnia magna)</b>	16,225 mg/L	EPA 40 CFR 797.1300
<b>Fish Acute Toxicity Test (LC<sub>50</sub>, 96 h, pimephales promelas, static system)</b>	8,150 mg/L	EPA 40 CFR 797.1400
<b>Water Hazard Classification (WGK)</b>	1	
<b>Trace Contaminants</b>		
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
<b>Low Embrittling Cd Corrosion</b>	conforms	ASTM F 1111
<b>Sandwich Corrosion</b>	conforms	ASTM F 1110
<b>Hydrogen Embrittlement</b>	conforms	ASTM F 519
<b>Effect on Transparent Plastics</b>	conforms	ASTM F 484
<b>Total Immersion Corrosion</b>	conforms	ASTM F 483
<b>Stress Corrosion</b>	conforms	ASTM F 945
<b>Effect on Painted Surfaces</b>	conforms	ASTM F 502
<b>Effect on Unpainted Surfaces</b>	conforms	ASTM F 485
<b>Runway Concrete Scaling Resistance</b>	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 – 7.6	6.3 – 7.8
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 [1]	REFRACTIVE		FREEZING POINT [°C] [3]	LOUT [°C] [4]	DILUTION [1]	REFRACTIVE		FREEZING POINT [°C] [3]	LOUT [°C] [4]
	INDEX [2]	BRIX +/- 0.5				INDEX [2]	BRIX +/- 0.5		
100/0	1.4245	52.1	Must not be used!		37/63	1.3705	23.9	-16	-6
65/35	1.3975	38.8	-48	-33	36/64	1.3695	23.3	-15	-5
64/36	1.3966	38.3	-46	-33	35/65	1.3684	22.7	-15	-5
63/37	1.3957	37.9	-45	-33	34/66	1.3674	22.1	-14	-4
62/38	1.3947	37.4	-43	-33	33/67	1.3664	21.4	-13	-3
61/39	1.3938	37.0	-42	-32	32/68	1.3653	20.8	-13	-3
60/40	1.3929	36.5	-40	-30	31/69	1.3643	20.2	-12	-2
59/41	1.3920	36.0	-39	-29	30/70	1.3633	19.6	-12	-2
58/42	1.3911	35.5	-37	-27	29/71	1.3622	18.9	-11	-1
57/43	1.3901	35.0	-36	-26	28/72	1.3612	18.3	-10	0
56/44	1.3892	34.5	-35	-25	27/73	1.3601	17.7	-10	0
55/45	1.3883	34.0	-33	-23	26/74	1.3591	17.1	-9	+1
54/46	1.3874	33.5	-31	-21	25/75	1.3581	16.4	-9	+1
53/47	1.3864	33.0	-30	-20	24/76	1.3570	15.8	-8	+2
52/48	1.3855	32.4	-28	-18	23/77	1.3560	15.2	-7	+3
51/49	1.3845	31.9	-28	-18	22/78	1.3550	14.6	-7	+3
50/50	1.3835	31.4	-27	-17	21/79	1.3539	13.9	-6	+4
49/51	1.3825	30.8	-26	-16	20/80	1.3529	13.3	-6	+4
48/52	1.3815	30.3	-25	-15	19/81	1.3519	12.6	-5	+5
47/53	1.3805	29.7	-23	-13	18/82	1.3508	12.0	-5	+5
46/54	1.3795	29.2	-23	-13	17/83	1.3498	11.3	-5	+5
45/55	1.3786	28.6	-22	-12	16/84	1.3488	10.6	-4	+6
44/56	1.3776	28.0	-21	-11	15/85	1.3478	10.0	-4	+6
43/57	1.3766	27.5	-20	-10	14/86	1.3467	9.3	-4	+6
42/58	1.3756	26.9	-19	-9	13/87	1.3457	8.6	-3	+7
41/59	1.3746	26.4	-18	-8	12/88	1.3446	8.0	-3	+7
40/60	1.3736	25.8	-18	-8	11/89	1.3436	7.3	-3	+7
39/61	1.3726	25.2	-17	-7	10/90	1.3426	6.7	-3	+7
38/62	1.3715	24.6	-16	-6	9/91	1.3415	6.0	-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 LOUT 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.

This information corresponds to the present state of our knowledge and is intended as a general description of our products and their possible applications. Clariant makes no warranties, express or implied, as to the information's accuracy, adequacy, sufficiency or freedom from defect and assumes no liability in connection with any use of this information. Any user of this product is responsible for determining the suitability of Clariant's products for its particular application. \* Nothing included in this information waives any of Clariant's General Terms and Conditions of Sale, which control unless it agrees otherwise in writing. Any existing intellectual/industrial property rights must be observed. Due to possible changes in our products and applicable national and international regulations and laws, the status of our products could change. Material Safety Data Sheets providing safety precautions, that should be observed when handling or storing Clariant products, are available upon request and are provided in compliance with applicable law. You should obtain and review the applicable Material Safety Data Sheet information before handling any of these products. For additional information, please contact Clariant.

\* For sales to customers located within the United States and Canada the following applies in addition: NO EXPRESS OR IMPLIED WARRANTY IS MADE OF THE MERCHANTABILITY, SUITABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE OF ANY PRODUCT OR SERVICE.

