

# Type I aircraft de-icing fluids **SAFEWING® MP I ECO PLUS (80)**



# SAFEWING® MP I ECO PLUS (80)

Clariant is the global leader in aircraft and runway de-icing products with over 40 years of experience. Our outstanding expertise in business relationships, product service, logistics and our world class research team make Clariant's Safewing®, Max Flight™, Octaflo™ and Safeway® products your preferred choice in the aviation business.

## BENEFITS AT A GLANCE

- Low foaming application ensures easy identification of remaining frozen deposits on the wing.
- Excellent wetting ability avoids re-icing of already treated surfaces.
- Improved inhibitor package allows the use of fluid dilutions with water of different quality.
- Fully biodegradable additive package, low surfactant content and triazole-free formulation gives superior environmental profile.
- Improved inhibitor package to meets strictest environmental restrictions.

## PRODUCT DESCRIPTION

- Safewing® MP I ECO PLUS (80) is a modern propylene glycol based type I de-icing fluid.
- Safewing® MP I ECO PLUS (80) meets and exceeds the requirements of the latest revision of AMS 1424.



## HANDLING

Safewing® MP I ECO PLUS (80) is not critical to heating and can be stored during the winter season at high temperatures (up to +90 °C).

Nevertheless, evaporation of water has to be avoided.

Safewing® MP I ECO PLUS (80) contains an especially developed inhibitor package which allows the use of almost any tap water even with high hardness while minimizing the formation of precipitates in the fluid.

## CERTIFICATION AND APPROVALS

Safewing® MP I ECO PLUS (80) is certified according to the latest revision of AMS 1424. Among this international standard, Safewing® MP I ECO PLUS (80) is certified and approved by many airlines around the world.

## PRODUCT PROPERTIES

Chemical Composition	80% aqueous propylene glycol solution with corrosion inhibitors
Appearance	orange liquid
Refractive Index (20 °C)	1.418 - 1.420
pH (as is)	8.0 - 9.5
Density (20 °C)	approx. 1.04 g/cm <sup>3</sup>
Freezing Point (diluted 1 : 1 with water)	< - 20 °C
Kinematic Viscosity	18 - 23 mm <sup>2</sup> /s
Surface Tension	37 - 45 dynes/cm
COD	1.3 kg O <sub>2</sub> /kg
BOD <sub>5</sub>	0.66 kg O <sub>2</sub> /kg

# SAFEWING® MP I ECO PLUS (80)



## PERFORMANCE

Safewing® MP I ECO PLUS (80) has an outstanding spraying behaviour with almost no foaming and excellent wetting ability. Therefore, the minimum requirement of the water spray endurance time test (3 minutes) is exceeded by far.

## ENVIRONMENT

Safewing® MP I ECO PLUS (80) contains a low amount of surfactant and a fully biodegradable, triazole-free corrosion inhibitor package leading to a superior environmental profile.

### Aquatic toxicity

<b>LC<sub>50</sub></b>	(Zebra fish, 96 h OECD 203)	7.071 mg/L
<b>EC<sub>50</sub></b>	(Daphnia magna, 48 h OECD 202)	>10 g/L
<b>EC<sub>0</sub></b>	(Bacteria, 3 h OECD 209)	>25 g/L

## IN SERVICE LIMITS

Dilution Safewing® MP I ECO PLUS (80) Concentrate: Water	Refractive Index (+20°C)	Freezing point	LOUT
100:00	1.418	does not freeze	do not use
71:29	1.397	-48 °C -54 °F	-33 °C -27 °F
70:30	1.396	-47 °C -53 °F	-33 °C -27 °F
65:35	1.392	-39 °C -38 °F	-29 °C -20 °F
60:40	1.388	-34 °C -29 °F	-24 °C -11 °F
55:45	1.384	-28 °C -18 °F	-18 °C 0 °F
50:50	1.379	-23 °C -9 °F	-13 °C +9 °F
45:55	1.375	-19 °C -2 °F	-9 °C +16 °F
40:60	1.371	-15 °C +5 °F	-5 °C +23 °F
35:65	1.366	-12 °C +10 °F	-2 °C +28 °F
30:70	1.361	-9 °C +16 °F	+1 °C +34 °F
25:75	1.356	-7 °C +19 °F	+3 °C +37 °F
20:80	1.351	-5 °C +23 °F	+5 °C +41 °F

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