

Technical Data Sheet - Clearway[®] F1 Runway Deicer

Product description

Clearway[®] F1 is an environmentally friendly runway deicer, based on a unique formulation of Potassium Formate and environmentally friendly inhibitors to ensure that the product meets not only all known environmental and ecological requirements but the AMS1435A specification as well.

When applied with the mechanical facilities of airport maintenance departments, Clearway[®] F1 allows snow and ice to be removed quickly and economically

Clearway[®] F1 melts the ice by depressing the freezing point of water. Due to its low freezing point, the resultant solution will have a much lower freezing point.

Appearance	Clear liquid
Assay	50 % min. active material
Density at 20° C (68° F)	1.33 – 1.35 g/cm ³
Viscosity at 20° C (68° F)	3 mPa.s max
at 0° C (32° F)	5 mPa.s max
Flash point (abel closed up)	Non flammable
Freezing point	Less than – 50°C
Freezing point (fluid diluted 1:1)	- 17 °C
Miscibility with water	Complete

Environmental and toxicology information

Tests have been performed according to OECD guidelines by the Hygiene Institute des Ruhrgebiets in Germany and according to the AMS 1435A standard by Scientific Material International (SMI) in USA. Clearway F1 is assigned as Class 1 (WGK), which means it is in general not water endangering.

BOD₅		90 mg O ₂ /g
COD		110 mg O ₂ /g
Acute toxicity to Daphnia Magna	LC ₅₀ (48 h)	>2.000 mg/l
Acute toxicity to Fish	LC ₅₀ (48 h)	2.750 mg/l
Acute toxicity to Bacteria	EC ₅₀ (16 h)	>50.000 mg/l
Acute toxicity to Algae	EC ₅₀ (72 h)	>15.000 mg/l
Acute oral toxicity	LD ₅₀ (rat)	> 2.000 mg/kg

Storage and handling

Clearway[®] F1 is delivered ready to use. It should not be diluted nor should it be concentrated further. Clearway[®] F1 is available in bulk tankers, 1000 l IBC or 200 l drums. Clearway[®] F1 meets the requirements of AMS 1435 for storage stability and shows no sign of deterioration when stored for a longer period of time.

Clearway[®] F1 is compatible with most known materials used at airports, both related to equipment for storage and equipment for applying the product.

The table below list materials that have been shown to be compatible with Clearway[®] F1

METALS	POLYMERS
Stainless Steel	Polyethylene Plastics
Carbon Steel	Glass fibre reinforced polyester (high pH resistant resin)
Aluminium alloys (bare & anodized)	Polymethacrylate
Magnesium alloys (wrought, dichromate)	Acrylic plastic
Treated and epoxy coated	Polychloroprene
Titanium	Silicone
Cadmium plated steel	Vulcanized butadiene-acrylonitrile
Copper (acid pickled)	Vulcanized butadiene-propylene
Bronze (copper/tin)	Painted surfaces
	Bitumen

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Material non-compatibility

Clearway[®] F1 shows moderate corrosive effect on zinc, galvanized material, solder and silver. We recommend to paint or protect these items or replace them with items of compatible materials.

Application

Clearway[®] F1 is used as both anti-icing and de-icing chemical. Suggested application rates can be found in the table below. It is however important to take into consideration factors like surface material, surface structure, application-method and current weather situation when using the product. The below figures is therefore only a guide for application and must not be regarded as recommended dosage. Kemira will upon request give advise on application for the respective airport.

In case of thick ice-layers (> 3 mm) it is recommended to use Clearway[®] F1 in combination with the solid product Clearway[®] SF3.

In the case of de-icing, the surface should be treated mechanically before applying Clearway[®] F1. This will reduce the amount of liquid used, resulting in minimal environmental impact and lower cost of the de-icing operation.

In the event of freezing rain, a preventive treatment of runways, ramps and taxiways is highly recommended. Applying Clearway[®] F1 before the start of a light snow or ice event prevents frozen precipitation from accumulating. Since Clearway[®] F1 is both an anti-icing agent as well as a deicer, timely application of Clearway[®] F1 is essential to the continued use of operative surfaces.

Careful monitoring of meteorological conditions will keep you ahead of storm events, and guide you in preventive application of the product.

Clearway[®] F1 can be used with all known existing spraying equipment.

Suggested application rates

Temperature (°C)	Dry Conditions		Wet conditions		Wet conditions		Wet conditions	
	Ice thickness <1mm Light frost		Ice thickness <1mm Heavy frost		- Snow - Packed snow		- Freezing rain - Ice Thickness 1-3 mm	
	Anti-icing	De-icing	Anti-icing	De-icing	Anti-icing	De-icing	Anti-icing	De-icing
0 to - 5	20 g/m ²	20 g/m ²	20 g/m ²	30 g/m ²	30 g/m ²	40 g/m ²	40 g/m ²	50 g/m ²
-5 to - 10	25 g/m ²	30 g/m ²	30 g/m ²	40 g/m ²	40 g/m ²	50 g/m ²	50 g/m ²	60 g/m ²
-10 to - 15	30 g/m ²	40 g/m ²	40 g/m ²	50 g/m ²	50 g/m ²	60 g/m ²	60 g/m ²	60 g/m ²

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