EASTMAN

Technical Data Sheet
CLEARWAY® SF3

Applications

- Runway de-icing

Product Description

Eastman's de-icers are marketed under the brand name Clearway®. Clearway is acknowledged as one of the leaders in airport runway de-icing and the product range has been developed and expanded to include both liquid and solid formate-based and acetate-based products.

Based on sodium formate, Clearway SF3 is an effective solid runway de-icer with low environmental impact. Clearway SF3 melts ice by depressing the freezing point of water and is active at temperatures to -15°C. The irregular-shaped granules will remain where spread. We advise to use the product pre-wetted in combination with corresponding liquid Clearway de-icers to obtain a rapid initial de-icing effect; it can also be applied alone to give a long residual anti-icing effect under extreme weather conditions.

The product meets not only all relevant environmental and ecological requirements but also the AMS 1431 standard. Clearway SF3 is classified WGK1*, both for its excellent biodegradability and because of its low aquatic toxicity. Thanks to these properties, this solid de-icing solution carries the Blaue Engel ('Blue Angel') ecolabel.

When applied with the mechanical facilities of airport maintenance departments, Clearway SF3 allows snow and ice to be removed quickly and economically.

**WGK is a German method of classifying chemicals into three (1-3) Water Hazard Classes. Following several tests the Clearway products have been classified as Class 1: low hazard to waters.*

Typical Properties

Property	Typical Value, Units
General	
Appearance	White, irregular granule
Bulk Density	800-900 kg/m^3
Particle Size	<0.5 mm (max 3%) <5 mm (min 90%) >2 mm (min 90%)
pH	8.0-11.0

Handling Precautions

Clearway SF3 shows moderate corrosive effect on zinc, galvanized material, solder and silver, and these materials should therefore be avoided.

Clearway SF3 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 SF3..

METALS
Stainless Steel
Carbon Steel

Aluminium alloys (bare & anodized)
Magnesium alloys (wrought, dichromate
Treated and epoxy coated
Titanium
Cadmium plated steel
Copper (acid pickled)
Bronze (copper/tin)

POLYMERS
Polyethylene Plastics
Glass fiber reinforced polyester (high pH resistant resin)
Polymethacrylate
Acrylic plastic
Polychloroprene
Silicone
Vulcanized butadiene-acrylonitrite
Vulcanized butadiene-propylene
Painted surfaces
Bitumen

Environmental and toxicology information
All tests are conducted according to international guidelines and specifications, and are performed by test institutes recognized by the industry as one of the leaders in their field of expertize. Clearway SF3 is assigned as Class 1 (WGK), which means it is in general not water endangering.

BOD_5		100 mg O_2/g
COD		210 mg O_2/g
Acute toxicity to Daphnia Magna	EC_{50} (48 h)	> 2.000 mg/l
Acute toxicity to Fish	LC_{50} (48 h)	> 2.000 mg/l
Acute oral toxicity	LD_{50} (mouse)	> 2.000 mg/kg

Application
Clearway SF3 is delivered ready to use. Under dry conditions Clearway SF3 can be used pre-wetted with one of the liquid Clearway products.

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 figure below is therefore only a guide for application and must not be regarded as recommended dosage. We will give advice upon request on application for the respective airport.

In the event of freezing rain, a preventive treatment of runways, ramps and taxiways is highly recommended.

Applying Clearway SF3 before the start of a light snow or ice event prevents frozen precipitation from accumulating. Since Clearway SF3 is both an anti-icing agent
as well as a deicer, timely application of Clearway SF3 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 SF3 can be used with all known existing spreading equipment for solid deicers.
To achieve maximum performance, Clearway SF3 can be pre-wetted with 25-50% w/w liquid Clearway deicer.

Mechanical removal of ice and snow in front of the de-icing operation will reduce the amount of Clearway SF3 needed for an efficient operation.

SUGGESTED APPLICATION RATES:

	No mechanical snow clearing			**After / During mechanical snow clearing**	
	Frost or Freezing rain	**Frost / Thin Ice**	**Frost / Snow**	**Wet conditions**	**Heavy wet conditions**
Temperature (^oC)	Anti-Icing	De-Icing	De-Icing	De-Icing	De-Icing
0 to - 15^oC	30 gr/m^2	30 gr/m^2	60 gr/m^2	45 gr/m^2	60 gr/m^2

Packaging

Clearway SF3 is available in 1000 kg big-bags, 500 kg big-bags and 25 kg bags.

Storage

Clearway SF3 has been specially formulated to prevent caking in the bags. We advise to store Clearway SF3 in its original closed bags in a dry and cool environment.

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