

Fact Sheet

LIQUID DE-ICER

General Description

Liquid anti-icers and de-icers are salt compounds extracted from the Great Salt Lake or Salt Flats with added corrosion inhibitors used to prevent or remove the build up of ice and snow on roads.

How it Works

The products are called freezing point depressants, and work to lower the freezing point of moisture. What's more, they can help prevent the build-up of ice and snow and melt existing ice and snow.

Environmental Impacts

Liquid anti-icers and de-icers are better for the environment than other alternatives including sand and salt. While some sand and salt use is still necessary for CDOT's overall winter maintenance program, increased use of liquids has drastically reduced air pollution associated with sand use. The amount of sand run-off that endangers roadside plant life as well as the amount of silt that goes into streams causing damage to aquatic life, especially at higher elevations, has been greatly reduced.

Safety

In a comparison of the two major interstates through the Denver metro area, CDOT found that increasing the use of liquid de-icers over a 12-year period, reduced snow and ice-related traffic crashes by an average of 14% while traffic volumes increased over 23%.

Impact to Vehicles

Salt products naturally lower the freezing temperature of water, but do have some corrosive properties. Motorists should always wash their vehicles after any snowstorm to remove liquid de-icer residue that may come into contact with your vehicle, just as you always should with salt and sand/salt mixtures. Unlike sand and sand/salt mixtures, however, liquid de-icers will not damage your car's paint job or windshield and are less corrosive than sodium chloride which has traditionally been used for snow removal.

Economics

At approximately 30¢ a gallon, CDOT's most widely used liquid anti-icers and de-icers are the least expensive alternatives to sand and salt on the market. In addition to reducing the need for the less environmentally friendly sand/salt mixture, the application of liquids helps to reduce maintenance costs by lessening the need for plowing and after-storm sweeping.

What products does CDOT use during winter storms?

- Sand or sand salt mixture
- Ice Slicer
 - Solid de-icer made of granular salt and other materials
- Liquid de-icers (27-29% de-icer)
 - Magnesium chloride (used above 16 degrees pavement temperature)
 - Cold temperature magnesium chloride (used below 16 degrees pavement temperature)
 - Includes a corn bi-product to lower the freezing point
 - Used for anti-icing and de-icing on roadways during winter weather conditions

Environment impact studies

CDOT has invested in numerous environmental impact studies which have shown that the use of de-icers like magnesium chloride have little or no environmental impact. Some studies have led to changes in specifications, making the de-icers more environmentally friendly and less corrosive.

- Effect of Magnesium Chloride on Asphalt pavements
(Werner Hutter, CDOT) February 1999
- Studies of Environmental Effects of Magnesium Chloride De-icer in Colorado
(Professor William M. Lewis) November 1999
- Preliminary Environmental Evaluation of Caliber M1000 De-icer for Use in Colorado
(Professor William M. Lewis) December 2000
- Evaluation and Comparison of Three Chemical De-icers for Use in Colorado
(Professor William M. Lewis) August 2001
- Evaluation of Selected De-icers Based on a Review of the Literature
(The SeaCrest Group) October 2001
- Corrosion Effects of Magnesium Chloride and Sodium Chloride on Automobile Components
(Professors Yunping Xi and Zhaihui Xie) May 2002
- Cost of Sanding
(Professor Nien-Yin Chang) June 2002
- Roadside Vegetation Health
(University of Northern Colorado) starts fall 2003

Each year, CDOT spends more than \$200,000 on quality assurance testing of its de-icer products. CDOT's de-icer specifications are set by Dr. William Lewis, University of Colorado professor and water quality expert.

For more information on CDOT's winter driving measures:

Visit www.dot.state.co.us

Call 800-999-4997

Send feedback or questions to info@dot.state.co.us

