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Morton Salt, Michigan Technological University Study Uncovers Optimal Rates for Ice Melt Application

New Mobile Tool Leverages Findings to Provide Real-Time Application Recommendations

CHICAGO – To date, there has been no definitive direction of how best to manage commercial snow and ice removal with the use of ice melters, which has led to potential over-application and misuse of safety-enhancing features of ice melt. Morton Salt, Inc. has set out to change that by partnering with Michigan Technological University to study ice melter performance levels in real world conditions. Through this research, Morton Salt has found how the interaction of surface temperature, melter type and application rate can be maximized for efficacy, profitability and safety.

“There are so many differing views in the industry regarding the proper product solution and application rate that snow professionals unknowingly over-apply product, creating unnecessary environmental runoff and reducing their profitability,” said Niles Hysell, Morton Salt’s director of ice melt product management. “It was important for us to bring some objectivity to these recommendations and provide our customers with real data and real solutions.”

The study revealed:

- In “extreme low” temperatures (below 0°F), only anhydrous calcium chloride (CaCl_2) produces measurable melting. A deicer must also be accompanied by mechanical removal (i.e. plowing) to produce bare pavement.
- In “low” temperatures (between 0°F and 10°F), substantial application amounts of any deicer are needed to produce bare pavement. A salt/calcium chloride blend is the most cost-effective deicer at these application rates.
- In “moderately low” temperatures (above 11°F), the performance of salt/calcium blend becomes equivalent to that of calcium and magnesium chlorides. In “typical” temperatures above 20°F, salt is the most cost-effective deicer.
- A blend of rock salt and CaCl_2 was found to be the most cost-effective and productive deicer in above 5°F temperatures. At \$63 per application (based on a 1,000-square-foot lot at 18 – 20°F surface temperature), it’s less than half the cost of calcium chloride and magnesium chloride and nearly half the quantity of rock salt needed to produce the same results.
- Despite claims to the contrary, some deicers tested worse, or equivalent to rock salt. It’s recommended to check that suppliers’ claims are validated with accredited, unbiased third parties to ensure product integrity and customer satisfaction.

“The average temperature in even the most extreme U.S. climates doesn’t often fall below 10 degrees Fahrenheit,” Hysell said. “So the research showed us that a blend of rock salt and calcium chloride will address standard melting needs during the season and keep snow removal a profitable business. We found that using only extreme temperature deicers can result in undue damage and unnecessary costs.”

Consumers and snow professionals can also explore using “safer blends” that may not melt as well in sub-zero temperatures, but provide environmental, pet and people safety in normal winter conditions while clearing snow.

The study was conducted in Houghton, Mich., providing researchers an ideal testing environment. Key testing variables identified were: surface temperature, melter type and application rate. To address each variable, the team selected surface temperature ranges to measure melting performance in extreme and average winter temperatures using sodium chloride (rock salt), calcium chloride, calcium chloride/rock salt blend and magnesium chloride. Initial high, medium and low application rates were selected and adjustments were made during the course of the study in the case of over or under-melting.

A controlled laboratory test was performed on each material at each temperature range as a control and comparison point. The study also consisted of field testing, which validated melting performance in real-world settings.

“This research proved to be incredibly valuable in combating some common ice melt application myths,” said Russell Alger, director, Institute of Snow Research at the Keweenaw Research Center at Michigan Technological University. “What we’ve shown is that there are optimal deicing products to use in different climates that provide the best results for the greatest return. We look forward to conducting more research and testing to bring additional intelligence to the industry.”

The results of the research were announced at the Snow and Ice Management Association’s 14th annual Snow & Ice Symposium. At the show, Morton Salt also unveiled a smartphone application that leverages the research findings to identify, in real time, the best snow removal tools and application to maximize efficiency and profits. It is available for iPhone and Droid platforms.

For more information about Morton Salt, Inc., Morton ice melter products and the new smartphone application, visit www.mortonmelters.com or call 877-912-6358.

About Morton Salt, Inc., a K+S Group Company

Morton Salt, Inc., a Chicago-based company continuing a Morton Salt business dating back to 1848, is North America’s authority on salt and a leading producer of salt for grocery, water softening, ice control, agricultural, and industrial uses. Morton introduced the nation to the Morton Umbrella Girl and the now-famous slogan, “When It Rains It Pours” in 1914. Since that time, Morton Salt products have graced the shelves of more homes throughout the country than any other brand of salt.

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