



The Frigid Facts about Icy Abrasives

Is it safe to use deicing salts on concrete, asphalt and wood surfaces? Can Deicing salts cause severe damage to concrete? Are there safer salts that work differently than others? What about using fertilizer as a deicer and traction aid? Read on and find out the real story and what your snow contractor should be using to protect your roads and walks.

Damage to Concrete

Deicing salts can cause severe damage to concrete that has not been formulated, mixed, installed and finished properly. That is a fact. The good news is that it is easy to install concrete so that deicing salts can be used with confidence knowing that little or no damage will occur over the years.

The damage to concrete is actually caused by the freezing and thawing of water that soaks into the upper surface of the concrete. The use of deicing salts increases the amount of freeze-thaw cycles that a concrete sidewalk or driveway experiences. The volume of water increases by 9 percent when it freezes. This expansion creates internal pressures that can break apart weak concrete.

What You Can Do: Proper Concrete Installation

Make sure your properties have proper concrete installed on walk ways and roads. Concrete that contains small air bubbles (air entrained), a minimum of 564 pounds of cement (6 bag mix) per cubic yard and a minimum amount of water when mixed (4 inch slump) can resist repeated episodes of ice expansion within the concrete.

In addition, the concrete must be moist cured at or above 50 F for a minimum of seven days, produce a 28 day strength of 4,000 pounds per square inch and have a minimum drying time of 30 days before it is subjected to the first freeze-thaw cycle. These practices are commonly followed by experienced, professional concrete masons.

How About Wood?

Deicing salts rarely cause problems on wood surfaces and asphalt besides some discoloring. What little damage may be caused is far outweighed by the benefits of preventing personal injury as a result of a fall on ice.

Preferred Products to Use on Walkways

Not all salts are equal. Your contractor should be using Magnesium Chloride on your walks. This product continues to melt the ice to -13 degrees. This reduces the number of thawing and re-freezing cycles – reducing damage to your walks. Be sure your contractor uses 100% magnesium and not some combination with other salt products.

Preferred Products to Use on Roadways

In this area we generally use a combination of sand and a salt product. Sand provides a good deal of traction and no damage to the roads. In colder markets in the North some contractors use salt exclusively. At this time Blade Runners recommends 60/40 sand to calcium chloride mix.

See below a comparison of different products:

Item	Low Melt Temp	Cost per 50lb bag	Pros	Cons
Rock Salt (Sodium Chloride)		16-20 Deg	*Inexpensive *Effective *Good traction	*Harsh on concrete *Can damage landscape plants *High amount of thaw cycles *Release maximum amount of chloride ions (high environmental impact)
Potassium Chloride (White Potash)	20 Deg	8.50	*Safe on plants *Little Residue *Inexpensive	*Very high thaw cycles
Magnesium Chloride	-15 Deg	15.00	*Fast acting *Very low thaw cycles *Safest for concrete *Low environmental impact *Less toxic to plants than all others	*Can corrode aluminum/steel over time *Blade Runners recommends this product.
Urea	20-25 deg	7.00	*Does not contain plant harming chlorides *Inexpensive	*Very High thaw cycles *Can cause fertilizer burn to plants *Ammonium nitrate and sulfate provide highest threat to concrete.
Calcium Chloride	-15 deg	11.00	*Low thaw cycles *Attracts moisture from atmosphere	*Can leave oily residue *Expensive *Need 2x the product as compared to magnesium
Potassium Acetate	-15 deg	??	*Pre-treatment application *Reduce need for shoveling labor	*New product potential unknown issues Expensive

New Products on the Horizon

There is a line of pre-treatment deicing products that Blade Runners is going to test this coming winter. This would involve a liquid application on roadways in advance of a storm to reduce accumulation of ice. The manufacturers claim zero potential damage. Blade Runners will keep you posted on the results and further research.

Blade Runners Snow Plowing Information Letter

Follow the attached link to see about our plowing technique and most common concerns of residents.