



Winter Ice Melters

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One of the best and easiest ways to improve removal of ice and snow is to learn how to properly use deicing chemicals. Everyone knows that slippery sidewalks and roads are hazardous. Removing compacted snow and ice with shovels or snow blowers can be very difficult. Deicers can help by undercutting or loosening the snow and ice because they lower the freezing point of water.

Deicers aren't supposed to be used to completely melt snow or ice, but to make their removal easier. Deicers melt down through the ice or snow to the hard surface, then spread out underneath. This undercuts and loosens the snow so shoveling and plowing can be done.

Research shows that the shape of deicing particles affects the speed of their penetration through the ice. Uniformly shaped spherical pellets of 1/16" to 3/16" penetrate ice faster and more efficiently than other shapes. Irregularly shaped particles tend to melt randomly in all directions. Flakes melt as much horizontally as they do vertically.

There are four chemicals commonly used as deicers. While they can be used alone, they often are blended together or combined with other materials to enhance their performance.

Salt, chemically sodium chloride, is sold as table salt, rock salt, or ice cream salt. It is the most used and least expensive deicer. It is the second most efficient in melting ice and is often mixed with calcium chloride. Above 10 degrees Fahrenheit salt melts ice and snow effectively and rapidly. Use it at a rate of about half a pound per square yard, or about 5 pounds per 100 square feet. Salt brine dries to a white powder which may be objectionable when tracked into a building.

Available in flakes, pellets, or liquid, calcium chloride produces an exothermic reaction, giving off heat. Because of this it begins to melt ice and snow more rapidly than salt and remains effective down to -25 degrees Fahrenheit. It is the most efficient of the deicers and also the most expensive. Use it on small areas at a rate of one-half cup per square yard or 1.5 to 3 pounds per 100 square feet. Tracking and residue are not visible on walks, carpets, and other surfaces. Calcium chloride does the least damage to concrete of all the deicers.

Potassium chloride is the third most effective deicer if it is mixed 50/50 with rock salt. It is rarely used by itself. A naturally-occurring material, potassium chloride is also used as a fertilizer (muriate of potash). Its high salt index does mean that it has the potential to burn plant foliage and inhibit rooting.

Synthesized from ammonia and carbon dioxide, urea is used primarily as a fertilizer. It has a lower burn potential than potassium chloride, and is a source of nitrogen fertilizer. It is effective above 10 degrees Fahrenheit and is very effective at temperatures of 25 to 30 degrees. It is used at a rate of 1 pound per 100 square feet.

Abrasives (sand, sawdust, and other similar materials) are not melters but are used as anti-skid materials. In addition to being inexpensive, most abrasives are harmless to grasses and shrubs. They do track into buildings and require cleaning up. The anti-skid effect can be lost when additional precipitation covers them or melting and refreezing occurs. Abrasives are sometimes mixed with deicers like calcium chloride for a long lasting effect. Mix at a rate of one part deicer to three parts abrasive. If you have brick walkways, you may want to primarily use abrasives like sawdust or sand which won't harm your brick.

Relatively recent is the development of deicers containing alcohol that are designed for use around pets. They will not harm the pads on a pet's paws.

If you have a large area to keep clear you may want to buy a cheap broadcast fertilizer spreader to make application of deicers more efficient. It will corrode over time, but certainly simplifies the spreading process.

If you spread a lot of deicers near plants you may want to leach the soil in spring after the ground thaws. A heavy application of water may move any lingering salts through the soil profile before they have a chance to damage your landscape plants.

Salt damage affects different plants in different ways. Its weed killing effects have long been known and at one time, salt was recommended as a weed killer for asparagus beds. Apparently, asparagus can withstand high salt but most plants can't. So when salt is splashed or plowed up with snow or around plants it accumulates there where it kills the grass and weakens or kills the plants. As you might expect, plants closer to the road suffer more damage than those set farther back. Damage to pine is often not noticeable to mid summer. Symptoms of salt injury include desiccation, stunting, and dieback. Leaf tips and margins appear burned. Roots may be injured. Especially sensitive are crab-apple, American beech, oaks, and white pine.

Since World War II we've been using chemical deicers to help control ice and snow. The goal is to do this economically without harming grass and plants or contaminating water supplies. Wait to use a deicer until you know its chemical composition and have examined the characteristics, melting actions, advantages, and disadvantages of the material.

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