



EC GROW

ICE MELT

Ice Melt Information And Training Manual



EC GROW
ICE MELT
PRODUCTS



Calcium Chloride	X	X	X	X		
Magnesium Chloride	X	X	X	X		X
Sodium Chloride	X	X	X	X	X	
Contains AMC	X	X	X	X	X	
Melts Down to	-20°F	-15°F	-10°F	-10°F	-5°F	-15°F
Melting Speed	FASTEST	FASTER	FAST	FAST	FAST	FASTER
Environmentally Friendly	BEST	BEST	GOOD	BETTER	GOOD	BEST
Dyed for Application Control	X(BLUE)	X(BLUE)	X(GREEN)	X(BLUE)	X(GREEN)	
Rust Inhibitor	X	X	X	X		X
Safe on Concrete	X	X	X	X	X	X
Safe on Treated Wood	X	X	X	X	X	X
No Tracking	BEST	BEST	BETTER	BETTER	BETTER	GOOD
Price	MEDIUM	MEDIUM	ECONOMY	ECONOMY	ECONOMY	PREMIUM

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What is Blended Ice Melt?

A blended ice melting product is a composition of numerous de-icing granules which work in conjunction with one another to provide optimum melting performance. Blended product typically contains two or more of the following chlorides or granular products:

Sodium Chloride (rock salt)
Calcium Chloride
Magnesium Chloride
Potassium Chloride
Urea (Nitrogen)
Limestone (for traction)
CMA (Calcium Magnesium Acetate)
Liquid enhancement products
Liquid dyes

The percentage of each ingredient utilized in any given blend will dictate the quality, consistency, and appearance of the de-icing product. Each ingredient listed

brings with it a set of positive and negative characteristics in regards to performance, price, and de-icing effects.

In formulating a blend, the ingredients most often utilized are the four chlorides: sodium, calcium, magnesium, and potassium. The basis for the majority of blends on the market is sodium chloride as it carries a low cost and is readily available. It also performs down to relatively cold temperatures and can be activated by friction from tires and even heavy foot traffic. Sodium and potassium chloride both work by absorbing heat, they do not generate heat by themselves. The low temperature melting and speedy activation of a blend is normally attributed to the calcium and magnesium chloride in the blend. Both chlorides react

faster and to lower temperatures than sodium or potassium as they benefit from hygroscopic characteristics (draw in moisture from the surrounding air to create heat). The higher the percentage of calcium and magnesium in a blend, the faster the product will work. It also means that the blend will work to lower temperatures. With the increased performance comes a higher price tag, calcium and magnesium chloride are expensive raw materials, so the higher the percentage of calcium and magnesium, the higher the cost of the product.



What's In Your Blend?

The concept of a blended ice melting product is pretty simple, unfortunately, knowing what you are buying is often times much more confusing. The ice melt industry is not regulated, therefore; you will not find a guaranteed analysis on the bag, on a SDS sheet, or on a product specification sheet. Additionally, any claim as to melt to temperature, melting speed, and product performance can be made even if the performance of the blend itself does not warrant it. This makes deciphering the differences between blends very difficult. It is important to ask your sales representative the right questions to gain the proper knowledge on your de-icing blend. If you don't, you may end up overpaying for a product or purchasing a product you did not intend to.

First and foremost, a buyer of de-icing blends needs to determine what characteristics are most important for their de-icing needs. In most instances, the objective is to identify a product that will create a clear, safe, and non-hazardous environment that is free of snow and ice. Product efficacy and melting speed are always at or near the top of the list. Beyond that, typical requests are for an environmentally friendly product, one that is safe to concrete and metal, and one that is safe to pets and humans. There is not a blend in existence that can satisfy all of these needs; in fact, all products have the potential to harm vegetation, concrete, pets, humans, and metals when they are not used properly. This is why we see such an array of differing blends, deceptive marketing, and unethical

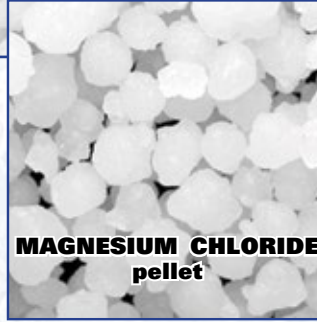
sales techniques in the blended ice melt business.

A breakdown of the common ingredients in an ice melt blend can be found on the next page. Reference the information to educate yourself on the raw materials and get to know which products offer benefits to your ice melting goals. It will help you to determine if the specific blend you are buying is exactly what you are looking for. It is important to know what is in the bag, if the formulation is "proprietary," it may be best to work with a supplier that is willing to share some information in regards to what you are buying.

The Four Main Melting Granules

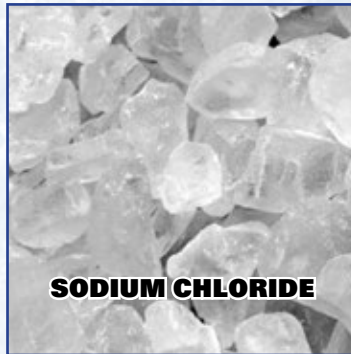
SODIUM CHLORIDE (NaCl)

- Melts to 12° F
- Comes in a variety of shapes, but for the purpose of de-icing, a medium crystal shape is ideal
- The most commonly used de-icing granule both in blended products and as a straight product
- Commonly referred to as "rock salt"
- The base product for the majority of blended products on the market



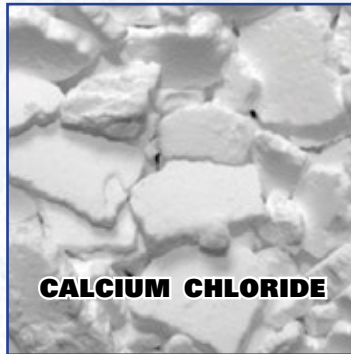
MAGNESIUM CHLORIDE (MgCl)

- Melts to -15° F
- High cost raw material, similar to calcium chloride
- Comes in a thick flake shape or a round pellet
- A secondary plant nutrient and is used as a fertilizer. Is considered an environmentally friendly option*
- The least corrosive of all the chlorides, product is typically 50% magnesium, 50% water



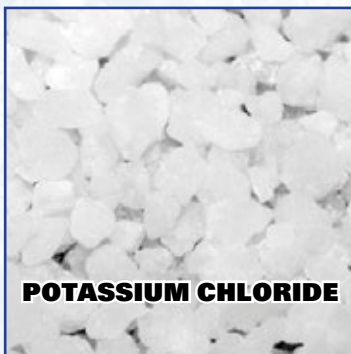
CALCIUM CHLORIDE (CaCl)

- Melts to -25° F
- The fastest acting ice melt available
- High cost raw material, similar to magnesium chloride
- Comes in a white flake shape or a round pellet
- In regards to performance, calcium chloride adds the most benefit to the speed and melt to capabilities of a blend



POTASSIUM CHLORIDE (KCl or potash)

- Melts to 20° F
- Premium cost raw material
- Comes in a variety of shapes, but for the purpose of de-icing, a medium crystal shape is ideal
- A secondary plant nutrient and is used as a fertilizer. Is considered an environmentally friendly option*
**when product is applied correctly*



Other Commonly Blended Raw Materials:

CMA

- Melts to 25° F
- Premium cost raw material
- Comes in a white pellet form
- Best used as an anti-icer, applied pre-storm to inhibit bond between snow/ice and surface
- Very slow in regards to activation and very limited melting capabilities
- A blended product should contain a minimum of 40% CMA to be effective in reducing corrosion

UREA

- Melts to 25° F
- Premium cost raw material
- A non-corrosive raw material, does not contain chloride
- Best used as an anti-icer, applied pre-storm to inhibit bond between snow/ice and surface
- Very slow in regards to activation and very limited melting capabilities

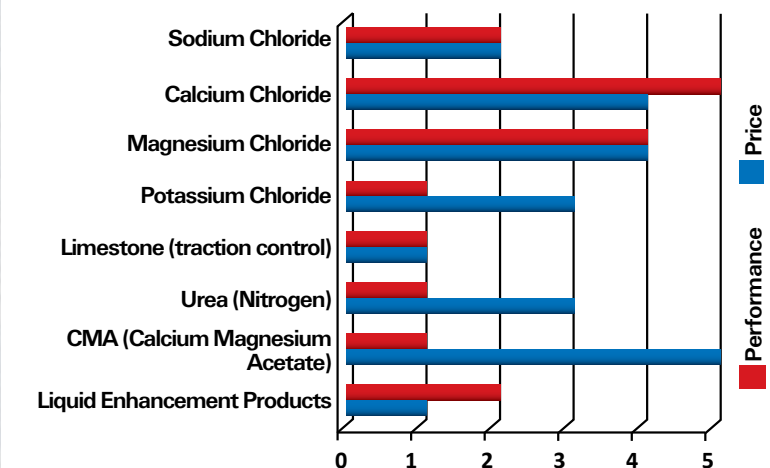
LIMESTONE

- Does not melt ice and snow, is used for traction control
- Low cost raw material
- Does not contain chloride
- Will eventually break down over time, but can take months and numerous snow and ice events

LIQUID ENHANCEMENT PRODUCTS

- Only utilized in low doses to assure a dry, spreadable ice melting product
- Low cost raw material
- Typically sprayed on during the blending process with a colored dye
- Will enhance the speed of the product, but normally does not significantly affect the melt to temperature

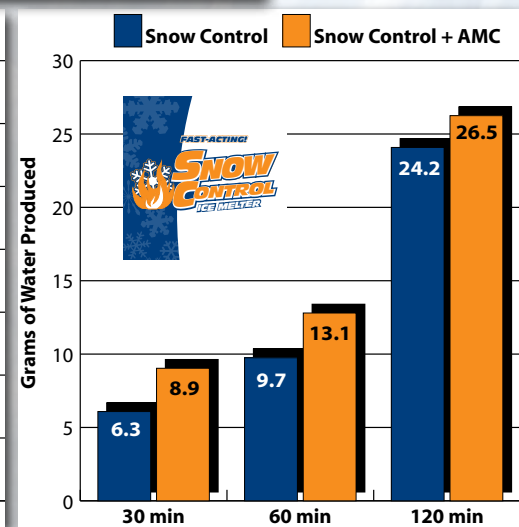
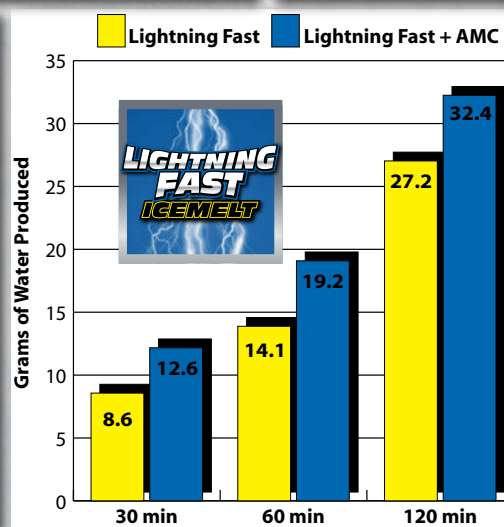
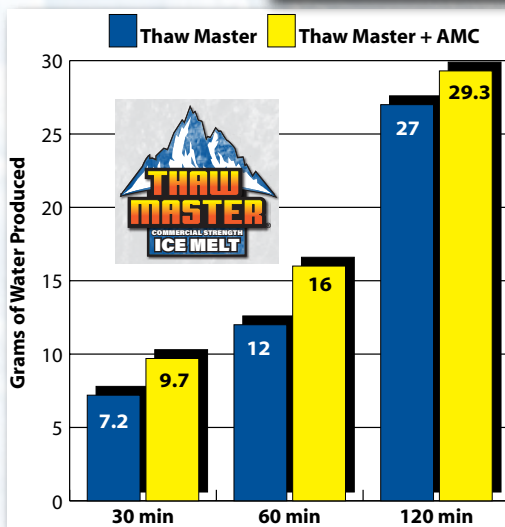
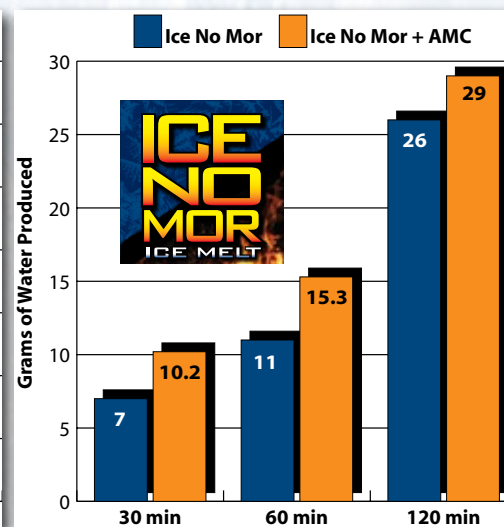
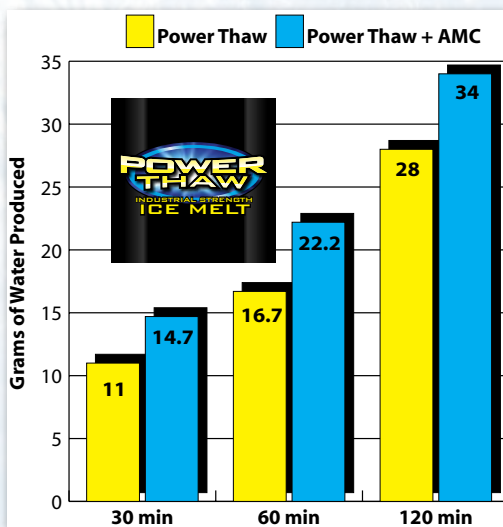
PRICE TO PERFORMANCE COMPARISON





AMC is an innovative liquid product added to POWER THAW, LIGHTNING FAST, THAW MASTER, ICE NO MOR, and SNOW CONTROL. Speed is key in ice melting and that is exactly what AMC supplies. By encapsulating each granule, AMC accelerates the speed of each individual particle in the blend and therefore enhances the performance of the blend as a whole.

AMC is a specially formulated liquid product that is unique to the ice melting industry. It works to form an ice melting brine quickly, which is necessary for any granular de-icing material to be effective. Shortly after the liquid AMC is applied to the granular blend, the ice melt granules dry and remain free flowing and easy to spread. The only difference is that the efficacy of each granule is noticeably enhanced. AMC will not cause harm to humans, animals, or the environment. It also acts as an anti-dust agent making each product cleaner and easier to use than other blended de-icers on the market.





POWER THAW *Melts to -20°F*

If you can't settle for anything but the best, look no further than POWER THAW with AMC. POWER THAW is a powerful ice melter specifically formulated for high performance melting in the industrial and commercial markets.

- *The most powerful blended ice melt in the industrial market*
- *Works when temperatures drop to extreme lows, melts to -20°F*
- *Dyed blue for easy application, high visibility, and proper placement*

ITEM NUMBER	PACKAGE SIZE	PALLET WEIGHT	UNITS PER PALLET	UPC CODE
955-0050	50# Bag	2500 Lbs.	49 Bags	24378 70050



LIGHTNING FAST *Melts to -15°F*

When priority #1 is quickly ridding high foot traffic areas of hazardous snow and ice, turn to LIGHTNING FAST Ice Melt with AMC. LIGHTNING FAST Ice Melt delivers de-icing Speed, Performance, Safety, and Reliability, all at an affordable cost.

- *A 4-ingredient blend that delivers safety with fast melting action and long lasting effects. Get great results and apply less product*
- *Dyed blue for ease in application*
- *Your All-In-One ice melt product!*

ITEM NUMBER	PACKAGE SIZE	PALLET WEIGHT	UNITS PER PALLET	UPC CODE
940-0050	50# Bag	2500 Lbs.	49 Bags	24378 60010



THAW MASTER *Melts to -10°F*

Need an exceptional ice melter without the high price tag? THAW MASTER offers a fast, sustaining melting action without the premium price. THAW MASTER utilizes calcium chloride, magnesium chloride and AMC to quickly form an ice melting brine.

- *The toughest industrial ice melter in its class!*
- *A highly effective blend that delivers performance and affordability*
- *Dyed green for easy application*

ITEM NUMBER	PACKAGE SIZE	PALLET WEIGHT	UNITS PER PALLET	UPC CODE
980-0050	50# Bag	2500 Lbs.	49 Bags	24378 80050



SNOW CONTROL *Melts to -5°F*

Looking for an affordable alternative to rock salt? SNOW CONTROL maximizes your budget by offering an extended residual melting effect, which coupled with an economical price, equals incredible value.

- *Provides safe, fast, effective, and economical melting*
- *Effective to -5°F while maintaining swift melting action*
- *Dyed green for precise placement and to avoid over-application*

ITEM NUMBER	PACKAGE SIZE	PALLET WEIGHT	UNITS PER PALLET	UPC CODE
880-0050	50# Bag	2500 Lbs.	49 Bags	24378 40070



ICE NO MOR *Retail Appeal*

There is always a need for an all in one ice melter and ICE NO MOR is just that blend. ICE NO MOR is tough on ice, but gentle to your surroundings. It will eliminate the worst ice and snow quickly and to temperatures as low as -10° F.

- *Packaging specifically developed for appeal in the retail market*
- *Unique and recognizable while remaining extremely cost-effective*
- *Dyed blue for easy application, high visibility, and proper placement*

ITEM NUMBER	PACKAGE SIZE	PALLET WEIGHT	QUANTITY PER PALLET	UPC CODE
800-0012	12# Jug (4/case)	1500 Lbs.	120 Jugs (30 cases)	24378 50030
800-0020	20# Bag	2450 Lbs.	120 Bags	24378 50050
800-0040	40# Pail	2450 Lbs.	60 Pails	24378 50150
800-0050	50# bag	2500 Lbs.	49 Bags	24378 50070



WINTER PAW *Safer for Little Paws*

Your Pet-Friendly Ice Melting Solution. Safer for people, pets and vegetation. A safer ice melting alternative when concerned with the welfare of your furry friends!

- *Melts to -15° F*
- *Safe to pet's paws*
- *Environmentally friendly*
- *Convenient shaker jug*

ITEM NUMBER	PACKAGE SIZE	PALLET WEIGHT	UNITS PER PALLET	UPC CODE
830-0008	8# Jug	1020 Lbs.	120 Jugs	24378 40030



PELADOW™ *The Best on Ice*

PELADOW calcium chloride outperforms other ice formulations in all winter conditions. With its fast melting action and cold-temperature performance, PELADOW calcium chloride is easily distinguished from other ice melters because it:

- *Contains more than 90 percent calcium chloride, the most effective material for melting ice and snow*
- *Melts ice 2 to 5 times faster than other ice-melt materials*
- *Absorbs moisture and generates heat to speed melting*
- *Performs in a wider range of winter temperatures, even extreme cold*

ITEM NUMBER	PACKAGE SIZE	PALLET WEIGHT	UNITS PER PALLET	UPC CODE
DOW50	50# Bag	2800 Lbs.	55 Bags	8 52651 00234 2



MAG *High Performance*

MAG® out-performs other ice melters. It melts ice effectively at temperatures as low as -13°F (-25°C) - considerably below most other products. And it works fast. In tests at 21°F, within 15 minutes of application, MAG melted twice as fast as rock salt (halite).

- *Safer for people, pets and concrete*
- *Less corrosive than other chloride-based de-icers*
- *Environmentally friendlier*

ITEM NUMBER	PACKAGE SIZE	PALLET WEIGHT	UNITS PER PALLET	UPC CODE
MAG50	50# Bag	2450 Lbs.	48 Bags	7 88479 36004 6

Pet Friendly Ice Melters

The best way to avoid any potential danger to your pet's health is to use an ice melting product responsibly. Whether a product has been deemed "Pet Friendly" or not, it is important to use as little product as possible, to monitor your pets' activity around the product, and to minimize their exposure to the chemicals.

De-icing products are widely considered a potential nuisance to your pet's health. Although exposure or consumption of any chemical in large amounts can be very hazardous, typically, de-icing products are not considered deadly. Ingestion of product and paw irritation are the two main threats a de-icing chemical can have on the well-being of a house pet. Both threats can be avoided very easily if proper precautions are taken before, during, and after the application of an ice melting product. It is important to keep your pet indoors or away from the area of application while applying the product. Many de-icing products are hygroscopic, which means they draw in

moisture from their surroundings. If a pet's paws are exposed to hygroscopic material for an extended period of time, their paws can become dry and irritated. Luckily, a case of irritated paws can be easily treated by cleaning off your pet's paws with soap and water. Similarly, the same precautions should be taken to lessen the amount of product your pet could potentially ingest. It is highly unlikely that a pet will continually ingest de-icing product to the point that they become ill, but it

is suggested that the material be stored where pets do not have access to the product. It is also important to reseal the package tightly.

If your pet comes in contact with a de-icing product and experiences persistent paw irritation or becomes sick from ingestion, contact your local veterinarian for further advice.



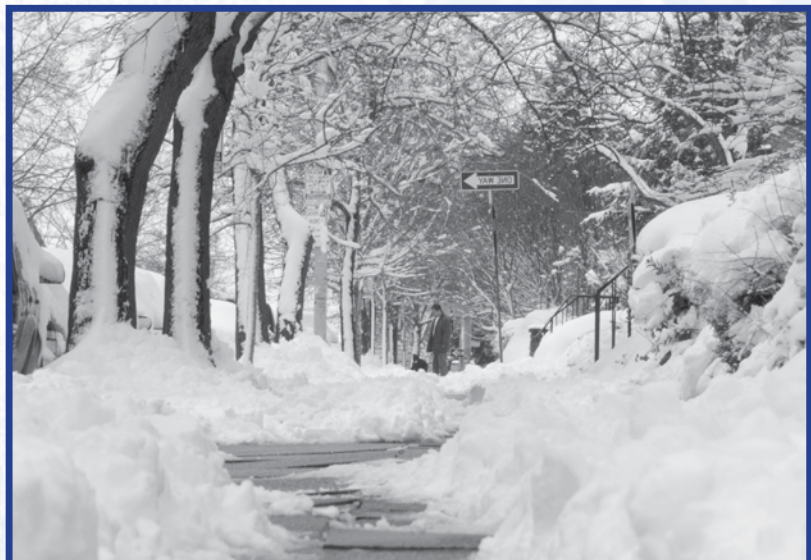
Corrosion

The natural characteristics of chlorides have the potential to corrode metal. However, when used properly, the effect can be minimized. Magnesium is the least corrosive of all the chlorides as the product consists of about 50% magnesium and 50% water. This reduces the probability of chloride brine coming in contact with metal and causing corrosion. The higher the magnesium content in a blend, the less corrosive the product will be. Sodium, calcium, and potassium chloride are corrosive to metal. To minimize the potential for risk of corrosion, products with high percentages of these chlorides should not be spread near metal objects or metal framework.

Select de-icing products have characteristics that are less corrosive than other. Products like CMA and urea are gentle to surrounding metal and can be effective in reducing the amount of corrosion that may occur when using a de-icing product. However, negative factors like high raw material costs and

poor melting performance make the use of these two products prohibitive. CMA can be found in many blended products, but often times it makes up less than 5% of the blend. For CMA to be effective and reduce corrosion, it needs to be blended at a minimum of 40%. Anything less and the blend

will remain predominantly chloride based and CMA will not reverse the effects that these chlorides will have on metal. It is important to remember that the more CMA in a blend, the less effective the ice melter will become. This will inevitably lead to additional applications and higher costs.



Concrete Damage

Any and all effective ice melting products have the potential to create a circumstance where concrete damage may occur. De-icing products will not chemically damage high quality concrete. However, damage can occur when a de-icing product works properly and causes water to seep into naturally occurring cracks and air pockets in concrete and other hard surfaces. When the de-icing material dissipates, the water eventually re-freezes. When the water re-freezes, it expands. This expansion of water causes a hydraulic effect on the concrete walls and causes the disruption and weakening of the overall concrete.

To avoid damaging the concrete, applicators should follow the application directions on the back of the bag or container and remove the slush or pooled water that is produced as soon as possible. If the de-icing product is over applied, there will be a greater melting period, allowing for more freeze / thaw cycles. Also, establishing strong, properly air entrained, and properly finished

concrete will also increase resistance to the re-freezing of water and reduce the potential for concrete damage.



This is an example of concrete that would be at risk of damage to increased freeze/thaw cycles. The concrete either has not been given ample amounts of time to dry, or there was too much water added to the concrete mix

Vegetation

When using a de-icing product, the potential to damage vegetation that borders driveways, sidewalks and other treated areas may be a concern. To minimize the risk of damage, always read and follow the label instructions and control the spread of the product.

Over application is the most common reason for vegetation damage when using an ice melting product. To minimize the risk of damage, apply the product according to the label instructions using a spreader or other recommended device. The philosophy "more is better" is not the case with de-icing products as excess product will not only be less effective but the potential for damage to treated areas and vegetation also increases. To further minimize the chance for vegetation damage, be sure to apply only to targeted areas and do not allow the product to come in contact with non-targeted areas (ice melting products that contain a dye will assist in showing the treated area).

Buyer beware. A trend in the marketplace is for companies to label products as "Environmentally Friendly" or "Green". You may also see statements like "Biodegradable" or "All Natural Ingredients". These buzzwords are commonplace with ice melting companies that market to consumers that are looking for a more environmentally-friendly solution. On many occasions, these products contain ingredients such as urea, CMA or potassium chloride. While these products claim to have a lesser chance for vegetation damage, they often contain small percentages of these environmentally-friendly products to be effective or limit vegetation damage—resulting in having to use more of the product to get the desired results.

In all cases, to minimize the potential for vegetation damage, read and follow the product label instructions and do not over apply.



Tracking

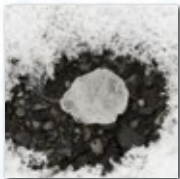
A main area of concern for businesses, institutions, government facilities, and homeowners comes during and after the storm in the form of ice melt residue and tracking. All ice melters have the potential to be tracked indoors. Although it is impossible to avoid tracking altogether, applicators can take steps to dramatically reduce the amount tracked indoors. The degree of tracking is based on three things:

1) Melting Speed: Ice Melting products geared for speed track less because they penetrate the ice quickly and dissolve into a liquid brine faster. Once in a liquid form, the slush and brine can be tracked into buildings, where they will dry out and leave a powdery, chalky residue. This residue is easily swept or mopped up and is not a threat to cause long term damage.

2) Ice Melt Composition: Ice Melting products with high percentages of calcium and magnesium chloride tend to track less than other formulations. This is true because the faster a product breaks down and activates, the

less likely it is to be tracked indoors. Calcium and magnesium chloride tend to break down and leave a white, chalky residue, but the advantages of the speed enhancement they provide far outweigh the minimal residue created. AMC also aids in enhancing the speed of the product. The inclusion of this liquid, which encapsulates the granules, helps to cut down on tracking.

3) Over-application: When an ice melting product is over-applied, the risk of tracking increases as well. By applying too much product, the applicator increases the chance of having inactive material sitting on the surface. Inactive material increases the chance for granules to be tracked in on the soles of pedestrians' shoes.



Size and Shape of Ice Melting Granules

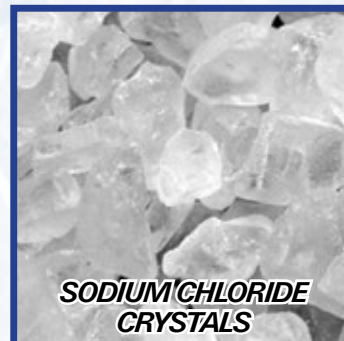
The size and shape of ice melting granules is important to the overall performance of the ice melting blend. Ice melting granules come in three basic shapes: crystals, pellets, and flakes. To assure even flow through a spreader, prompt activation, and an ample residual effect, strict quality control measures must be in place to monitor particle sizing and consistency. The following descriptions detail the advantages and disadvantages of the three basic granular shapes:

Crystals: Crystals are screened to separate them into three categories or sizes: fines, mediums, and overs. Fines, the smallest particles, and overs, the largest particles, are not effective ice melting crystals.

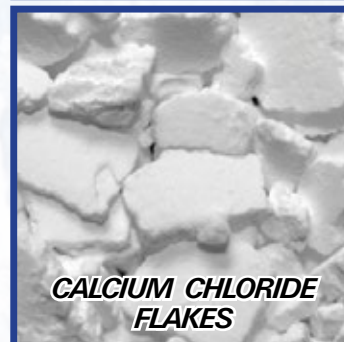
For the purpose of melting ice, the medium sized crystal provides the best results. It is the most effective, cleanest, and easiest product to spread and it has the mass to bore through ice and snow and activate quickly.

Flakes: While a flake covers a great deal of surface area, it is normally too thin to provide a great deal of melting power. However, when the flake is thick it becomes a very effective melter as it benefits from both the increased surface area and the mass to bore through ice and snow.

Pellets: Pellets are effective melting granules when they are sized correctly. Small pellets have limited melting power. The lack of size does not allow the product to effectively bore down through ice and snow. These small particles are also considered dangerous because they sit on the surface of the ice and snow and can cause slippage in very cold climates. Large pellets have the ability to bore through ice and snow quickly, which increases the melting performance and reduces the amount of slippage.



SODIUM CHLORIDE CRYSTALS



CALCIUM CHLORIDE FLAKES



MAGNESIUM CHLORIDE PELLETS

About EC GROW

EC Grow, Inc. was established in 1987 as a sales and marketing subsidiary for fertilizer and ice melt products produced in Eau Claire, WI. Since that time, we have expanded our warehousing, automated our production and increased our bulk storage to consistently meet our customer's needs.

Having the right product, **when you need it**, is critical given the unpredictability of the weather. We value the importance of product availability and have recently acquired another 35+ acres—specifically to store raw materials. This acquisition provides us the increased flexibility to react to winter events and provides our customers timely delivery.

When quality and consistency is a must, products produced by EC Grow deliver time and time again. Highlighted below are a few examples of our commitment to compliance and quality to ensure our partners are receiving a value-added blend in every bag.

PRODUCTION FACILITY

- Computerized raw material and chemical delivery system
- Fully automated bagging lines
- High level palletizers

COMMITMENT TO QUALITY

- Screened materials for consistency and reduced dust
- Heavy-duty packaging
- In-line quality control monitoring

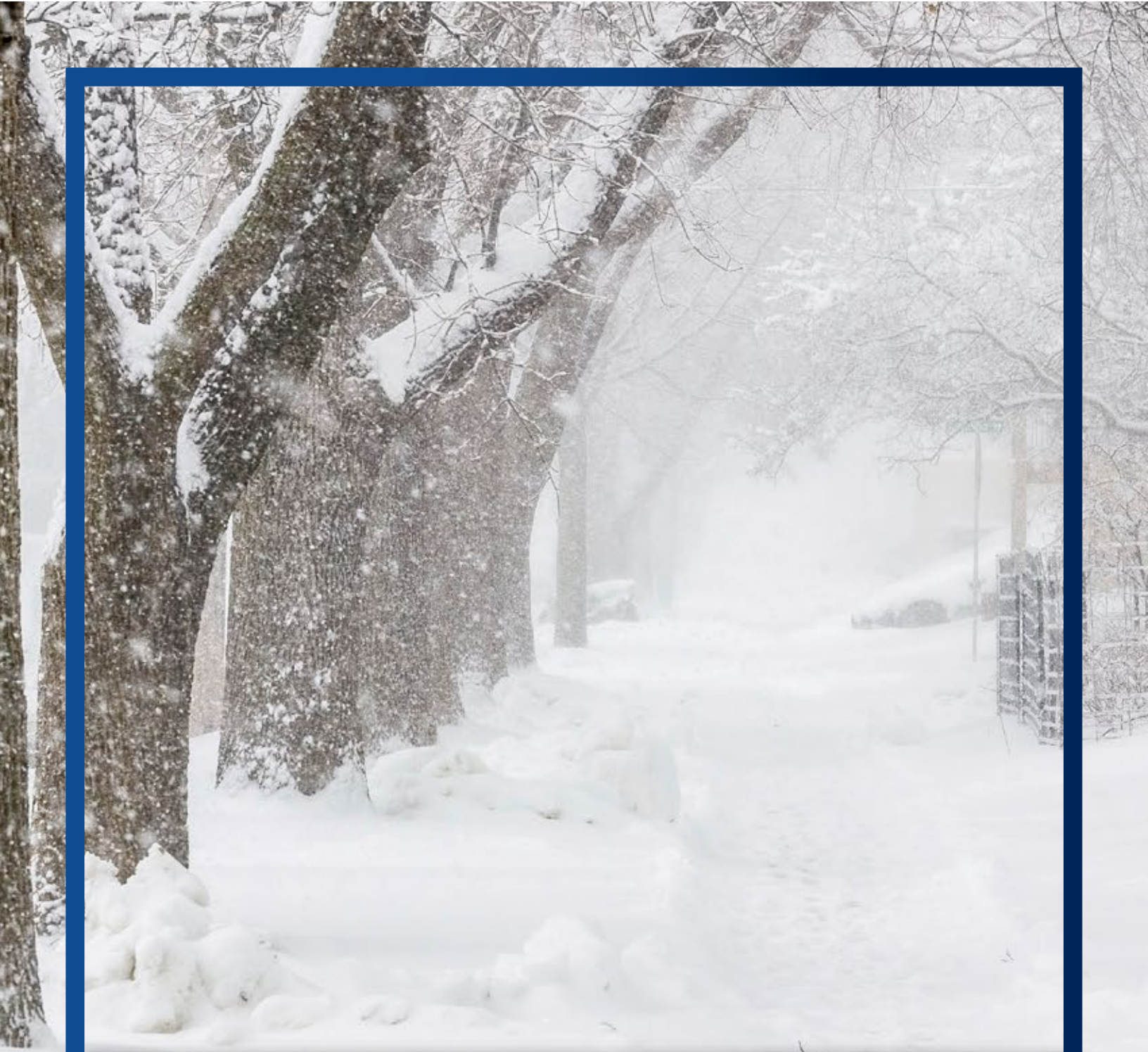
EC Grow is your source for high-quality products, on-time delivery, competitive pricing and unmatched customer service. Contact us today as we are "A Partner You Can Depend On."



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