SafeStep®

THE REFERENCE & BUYER'S GUIDE FOR HIGH-PERFORMANCE ICE MELTERS

All the facts & how to profit from them

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Questions? Call us. After all, we're here to help you succeed.

Compass Minerals
1-877-462-7258

THE REFERENCE & BUYER'S GUIDE FOR HIGH-PERFORMANCE ICE MELTERS

Guiding customers to the ice melter that best fits their needs can be a daunting task. But when you deliver a successful match, you will forge lasting partnerships and keep them coming back. We've created this comprehensive reference guide to help you best match their needs with our products.

This easy-to-use guide covers the full range of Safe Step® ice melters, the most complete line in the industry. It will help quickly and clearly differentiate the unique performance capabilities of each product. Their benefits, ingredients, specific uses and safety precautions are listed along with a convenient FAQ section and glossary.

GUIDING CUSTOMERS TO THE RIGHT ICE MELTER

MEETING THE NEEDS OF CUSTOMERS *WITH PRODUCTS THAT EXCEED EXPECTATIONS.*

Safe Step® ice melters were formulated to provide customers with a wide array of ice melting capabilities – regardless of the elements. Perfect for clearing walkways and driveways in a variety of weather conditions, Safe Step features the most comprehensive line of ice melters in the industry, with products that meet every customer need.

KNOWING EACH CUSTOMER'S UNIQUE NEEDS

Guiding customers to the right ice melter starts with understanding their unique needs. Ice melters can be separated into four categories. The customers for each of these product categories have different needs and buying behaviors.

3300

ROCK SALT

Customers may choose a Rock Salt ice melter based almost exclusively on price. These customers typically are in areas where the winter weather conditions are milder, so they do not require a more powerful ice melter. However, they may still need to cover large areas of concrete, making Rock Salt an ideal choice.

4300
4300 Blue
5300

ECONOMY BLENDS

Customers who choose an Economy Blend tend to be price sensitive as well, but they may also need a product that is more effective at lower temperatures. Plus, if they have additional interest in covering large areas of concrete, Economy Blends will do so without sacrificing performance.

Sure Paws
6300

PREMIUM BLENDS

Customers who buy Premium Blends are concerned with the dependability and consistent melting performance that a high-quality product provides. They may also have an interest in an ice melter that is safer for concrete and less harmful for people, pets and the environment.

8300
7300

ADVANCED POWER

Customers in the Advanced Power category are especially concerned about safety in high-traffic areas. They demand fast, powerful performance to help control potentially hazardous ice build-up. They may also have an interest in an ice melter that is safer for concrete and less harmful for people, pets and the environment.

ABOUT MELTING AND MELTERS

THE MELTING PROCESS

All conventional ice melters work in the same way. Once they are applied, they begin to dissolve and melt the ice or snow, forming a brine solution. The dissolved ice melter in the brine acts to lower the temperature at which the brine solution will freeze. The higher the concentration of ice melter in the brine solution, the lower the freezing point and the less chance that ice will form.

As the melting process continues, the concentration of the dissolved ice melter will continue to decrease, which can ultimately cause the brine to re-freeze. Therefore, a key to effective, long-lasting melting performance is to prevent or delay a brine solution from re-freezing.

MELTING SPEED AND DURATION

Like its effective melting temperature, an ice melter's melting speed and ability to melt ice over a long period of time is influenced by its ingredients and the outdoor temperature. As the temperature decreases, the melting speed slows, regardless of the ice melter's ingredients.

EFFECTIVE MELTING TEMPERATURE AND EUTECTIC TEMPERATURE

Ice melters are often compared by their effective melting temperature and eutectic temperature. Effective melting temperature is the lowest temperature at which an ice melter will melt under real-world conditions. Eutectic temperature is the lowest temperature at which an ice melter will melt under laboratory-controlled conditions, measured by the standardized American Society of Testing Material [ASTM-d1177] procedure. There are factors that can affect an ice melter's effective melting temperature, such as the temperature and humidity of the air. However, as far as ice melter buyers are concerned, the ice melting industry recognizes the effective melting temperatures and eutectic temperatures as shown in the chart below.

GENERAL MELTING TEMPERATURES OF COMMON ICE MELTER INGREDIENTS

INGREDIENTS	EFFECTIVE MELTING TEMPERATURES		EUTECTIC TEMPERATURES	
	Degrees ˚C	Degrees ˚F	Degrees ˚C	Degrees ˚F
Potassium Chloride	-7˚	20˚	-9˚	15˚
Sodium Chloride	-15˚	5˚	-21˚	-6˚
Magnesium Chloride	-26˚	-15˚	-32˚	-25˚
Calcium Chloride	-32˚	-25˚	-48˚	-55˚

PARTICLE SIZE AND PURITY

An ice melter's performance is influenced by the size and surface area of the individual particles. Because small particles have more surface area that can come in contact with ice or snow, they melt more quickly. However, smaller particles have two drawbacks. First, they have an increased chance of being blown away on windy days. Second, less weight per particle may result in only melting on the ice surface because the particles are not heavy enough to penetrate the ice as they melt.

On the other hand, large particles have less surface area and more weight per particle. But because of their weight and rapid melting ability, they may not completely dissolve or create a brine solution before penetrating the ice. This may result in unused material and poor melting efficiency.

BOTTOM LINE:

The most effective ice melters are the ones that use an optimally sized particle (medium) with both ice-penetrating and brine-forming characteristics. Safe Step ice melters are screened to ensure an optimally sized particle for the best melting performance.

SurePaws® PET-FRIENDLY ICE MELTER

THE ALL-NATURAL SOLUTION.

Environmentally friendly, fast-acting Safe Step® Sure Paws® is safer for people, pets and plants, and clears driveways and walkways quickly and efficiently.* This premium ice melter was developed using a patented formula and is gentler for concrete and vegetation.*

Key features

- Melts ice to -15°F (-26°C)
- Clears driveways and walkways quickly and efficiently
- Gentler on pets' paws and skin, and safer for concrete and vegetation*

Quality care for people and pets

Sure Paws is the naturally produced solution for the environmentally conscious. Keep loved ones safer with a formula that is gentler for people, pets and lawns.*

Performance you can trust

Sure Paws ice melter is a patented, 100% all-natural formula that melts ice fast at extreme temperatures, while also being gentler for the environment.*

Designated a "Safer Choice" by the U.S. EPA

Sure Paws has earned a Safer Choice designation from the United States Environmental Protection Agency (EPA), providing a product that is effective and safer for health and the environment.

** Compared to conventional ice melters, when used as directed*

AVAILABLE SIZES

8 lb. Jug **20 and 40 lb. Bags**

MELTS TO -15°F (-26°C)

SALT-FREE PET-FRIENDLY ICE MELTER

8 lb. Jug

0 73841 56708 7

20 lb. Bag

0 73841 56720 9

40 lb. Bag

0 73841 56754 4

8300 MAG CHLORIDE ICE MELTER

SAFER CHOICE
Meets U.S. EPA Safer Product Standards

A DISTINCT COMPETITIVE ADVANTAGE.

One of the fastest-acting, premium ice melters on the market, Safe Step® Mag Chloride 8300® works in extremely cold temperatures. The unique crystal shape provides rapid ice penetration and prevents product from scattering where you don't need it. Safe Step Mag Chloride 8300 is 100% magnesium chloride hexahydrate, which means it is gentler for vegetation and concrete.*

Key features

- Melts ice to -15°F (-26°C)
- Safer for people, pets, lawn and concrete*
- Faster than other ice melters at melting ice and snow due to its unique hygroscopic action that quickly attracts moisture
- Doesn't blow or roll away like other ice melters that use a flake or pellet form — unique crystal shape helps it stay where you put it

Maximum performance

Safe Step Mag Chloride 8300 is specially formulated for maximum performance, melting ice quickly at extremely low temperatures.

Designated a "Safer Choice" by the U.S. EPA

Safe Step Mag Chloride 8300 has earned a Safer Choice designation from the United States Environmental Protection Agency (EPA), providing a product that is effective and safer for health and the environment.

** Compared to conventional ice melters, when used as directed*

AVAILABLE SIZES

8 lb. Jug | 20 and 50 lb. Bags

MELTS TO -15°F (-26°C)

SafeStep® PRODUCT MELT-OMETER®

GOOD	BETTER				BEST
3300	4300	5300	6300	7300	8300

™

Ranked by melting temperature, speed and environmental safety

8 lb. Jug

0 73841 53808 7

20 lb. Bag

0 73841 53820 9

50 lb. Bag

0 73841 53851 3

7300 CALCIUM CHLORIDE ICE MELTER

MAXIMUM MELTING POWER. LOW MELTING TEMPERATURE.

Ice and snow begin to melt when they come in contact with Safe Step® 7300 Calcium Chloride, which offers one of the lowest melting temperatures available. A powerful, self-initiating chemical reaction generates heat, so melting occurs even in exceptionally cold weather.

Key features

- Melts ice to -25°F (-32°C)
- Exothermic action instantly generates heat
- Hard-working pellet shape penetrates ice more deeply, also comes in flake

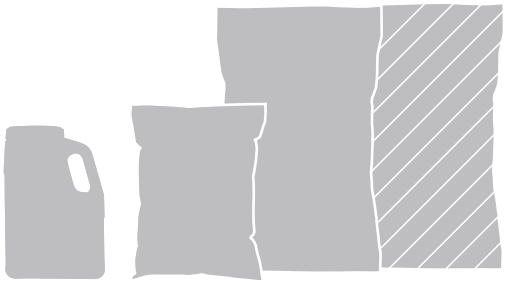
Exceptional performance under extreme conditions

Safe Step 7300 Calcium Chloride generates its own chemical reaction on contact with ice, offering performance and protection no matter what the weather brings.

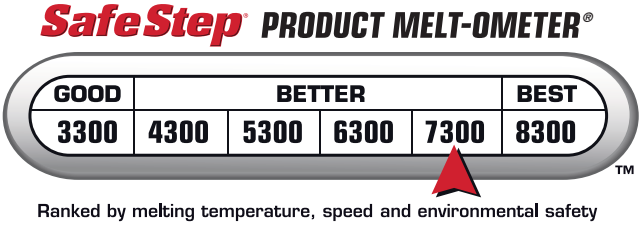
Exothermic action instantly generates heat

Safe Step 7300 Calcium Chloride is a dependable, professional-grade formula. When used as directed on air-entrained, cold-weather concrete, it is one of the most powerful ice melters available. In addition, this product won't leave behind any residue, allowing for easier cleanup.

AVAILABLE SIZES



8 lb. Jug | 20 and 50 lb. Bags / 50 lb. Bag-Flakes



Ranked by melting temperature, speed and environmental safety

8 lb. Jug

20 lb. Bag

50 lb. Bag

50 lb. Bag-Flakes

6300 ENVIRO-BLEND® ICE MELTER

SAFER CHOICE
Meets U.S. EPA Safer Product Standards

BEST COMBINATION OF MELTING POWER AND ENVIRONMENTAL SAFETY.

Safe Step® 6300 Enviro-Blend® is safer for people, pets and vegetation,* but has a melting power that outperforms other ice melter blends. The patented formula contains our powerful melting catalyst, MG 104®, which helps prevent re-freezing substantially longer than conventional ice melters.*

Key features

- Melts ice to -10°F (-23°C)
- Contains the proprietary, powerful melting catalyst, MG 104®
- Helps prevent re-freezing up to 2½ times longer than conventional ice melters
- Less harmful for plants, pets, shoes or carpet*

Environmentally gentle, but proven tough on ice

Safe Step 6300 provides optimum melting power right out of the bag. Each granule contains the action of multiple ice melting ingredients — for true melting power down to -10°F (-23°C). Plus, it prevents re-freezing longer than conventional ice melters, which reduces concrete-harming freeze/thaw cycles.*

Designated a "Safer Choice" by the U.S. EPA

Safe Step 6300 has earned a Safer Choice designation from the United States Environmental Protection Agency (EPA), providing a product that is effective and safer for health and the environment.

** Compared to conventional ice melters, when used as directed*

AVAILABLE SIZES

11 lb. Jug | 10, 20 and 50 lb. Bags | 40 lb. Pail

MELTS TO -10°F (-23°C)

SafeStep PRODUCT MELT-OMETER®

GOOD	BETTER				BEST
3300	4300	5300	6300	7300	8300

Ranked by melting temperature, speed and environmental safety

11 lb. Jug	10 lb. bag	25 lb. Bag	50 lb. Bag	40 lb. Pail
0 73841 56811 4	0 73841 56810 7	0 73841 56825 1	0 73841 56850 3	0 73841 56840 4

5300 PERFORMANCE BLEND® ICE MELTER

MELTS ICE FASTER. KEEPS IT MELTED LONGER.

Enhanced with magnesium chloride and calcium chloride, Safe Step® 5300 Performance Blend® quickly melts ice on contact. It resists re-freezing, so fewer applications are necessary.

Key features

- Melts ice to -10°F (-23°C)
- Advanced, blended formula
- Enhanced with magnesium chloride and calcium chloride for increased melting power
- Resists re-freezing

Exceptional performance that lasts

Professional strength means it begins melting on contact — down to -10°F (-23°C) — and will also help resist re-freezing. That means fewer applications, less time out in the cold and a more efficient use of product.

Melting power

Safe Step 5300 Performance Blend will handle even the harshest of winters. Thanks to its advanced, blended formulation of magnesium chloride, calcium chloride and sodium chloride, it has dependable melting power.

AVAILABLE SIZES

12 lb. Jug | 10, 20 and 50 lb. Bags | 40 lb. Pail

MELTS TO -10°F (-23°C)

SafeStep® PRODUCT MELT-OMETER®

GOOD	BETTER				BEST
3300	4300	5300	6300	7300	8300

™

Ranked by melting temperature, speed and environmental safety

12 lb. Jug	10 lb. Bag	20 lb. Bag	50 lb. Bag	40 lb. Pail
0 73841 57812 0	0 73841 57810 6	0 73841 57820 5	0 73841 57850 2	0 73841 57840 3

4300 DUAL BLEND® ICE MELTER

MELTS ICE FASTER AT LOWER TEMPERATURES.

Melt ice fast with a quality blend of sodium chloride and magnesium chloride in Safe Step® 4300 Dual Blend®. Its formulation contains corrosion inhibitors, which make it gentler for concrete and metal.*

Key features

- Melts ice to -7°F (-21°C)
- Formulated with corrosion inhibitors
- Enhanced with magnesium chloride

A unique blend of melting power and corrosion inhibitors

Safe Step 4300 Dual Blend is ideal for minimizing surface corrosion. This advanced blend of sodium chloride, magnesium chloride and corrosion inhibitors delivers powerful performance.

Sized for effective spreading

Safe Step 4300 Dual Blend uses a unique screening process that results in optimum-sized particles for improved spreading and enhanced melting. For the ideal combination of performance and value, offer Safe Step 4300 Dual Blend.

** Compared to conventional ice melters, when used as directed*

AVAILABLE SIZES

12 lb. Jug | 20, 40 and 50 lb. Bags

MELTS TO -7°F (-21°C)

Safe Step® PRODUCT MELT-OMETER®

GOOD	BETTER				BEST
3300	4300	5300	6300	7300	8300

™

Ranked by melting temperature, speed and environmental safety

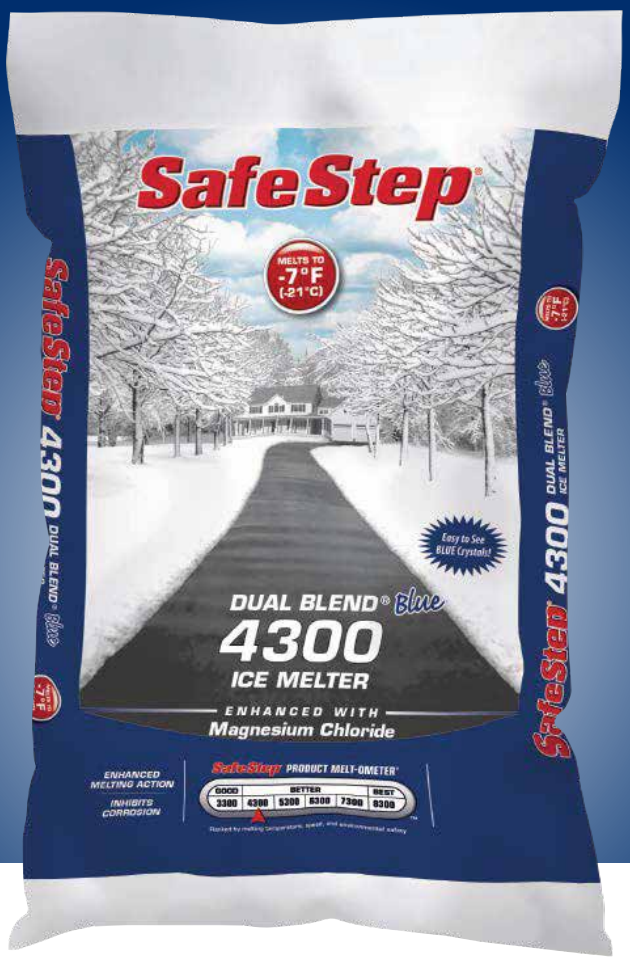
12 lb. Jug
0 73841 51088 5

20 lb. Bag
0 73841 51021 2

40 lb. Bag
0 73841 51044 1

50 lb. Bag
0 73841 51051 9

4300 DUAL BLEND® Blue ICE MELTER



MELTS ICE FASTER AT LOWER TEMPERATURES.

Melt ice fast with a quality blend of sodium chloride and magnesium chloride in Safe Step® 4300 Dual Blend® Blue. Its formulation contains corrosion inhibitors, which make it gentler for concrete and metal.

Key features

- Melts ice to -7°F (-21°C)
- Formulated with corrosion inhibitors and blue crystals
- Enhanced with magnesium chloride

A unique blend of melting power and corrosion inhibitors

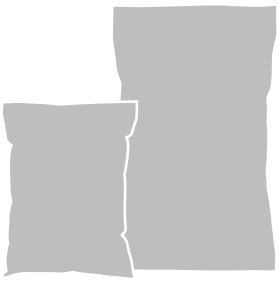
Safe Step 4300 Dual Blend Blue is ideal for minimizing surface corrosion. This advanced blend of sodium chloride, magnesium chloride and corrosion inhibitors delivers powerful performance.

Efficient and effective spreading

Safe Step Dual Blend Blue uses a unique screening process that results in optimum-sized particles for improved spreading and enhanced melting, while the easy-to-see blue crystals allow for an even and efficient application. Safe Step Dual Blend Blue is the ideal combination of performance and value.

** Compared to conventional ice melters, when used as directed*

AVAILABLE SIZES



20 and 50 lb. Bags

MELTS TO -7°F (-21°C)

SafeStep® PRODUCT MELT-OMETER®

GOOD	BETTER				BEST
3300	4300	5300	6300	7300	8300

™

Ranked by melting temperature, speed and environmental safety

20 lb. Bag

0 73841 51121 9

50 lb. Bag

0 73841 51151 6

3300 ROCK SALT/HALITE ICE MELTER

IT GETS THE JOB DONE, PURE AND SIMPLE.

Time-tested and proven under winter conditions, Safe Step® 3300 Rock Salt/Halite spreads efficiently and melts ice effectively. For melting ice economically, it just doesn't get any simpler.

Key features

- Melts to 5°F (-15°C)
- Unique screening process for optimum-sized crystals
- 100% rock salt

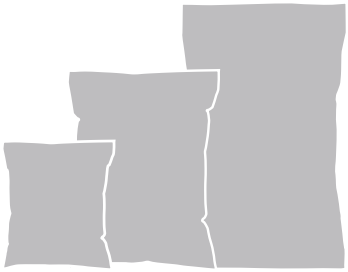
The one customers can count on

Winters can be long and harsh. When faced with many applications, the simple and proven ice melting power of Safe Step 3300 Rock Salt/Halite gets the job done.

Sized for effective spreading

Safe Step 3300 Rock Salt/Halite uses a unique screening process that results in optimum-sized particles for improved spreading and enhanced melting. For the ideal combination of performance and value, offer Safe Step 3300 Rock Salt/Halite.

AVAILABLE SIZES



10, 25 and 50 lb. Bags

MELTS TO 5°F (-15°C)

SafeStep PRODUCT MELT-OMETER®

GOOD	BETTER				BEST
3300	4300	5300	6300	7300	8300

™

Ranked by melting temperature, speed and environmental safety

10 lb. Bag

0 73841 49010 1

25 lb. Bag

0 73841 49025 5

50 lb. Bag

0 73841 49050 7

SAFETY PRECAUTIONS

EFFECTS ON VEGETATION

Direct or indirect contact with high concentrations of any ice melter can be harmful for vegetation. Dissolved ice melters can accumulate in soil over time and affect a plant's ability to absorb water and other nutrients essential for healthy growth.

Helpful hint to reduce harm to vegetation*:** **Immediately remove slush that forms from the melted snow and ice. Safe Step® Mag Chloride 8300® and Sure Paws® Ice Melters are gentler on vegetation than conventional ice melters, when used as directed.

EFFECTS ON CONCRETE

Concrete damage is the biggest concern regarding the use of ice melters. However, most of the damage that occurs during winter is not caused by ice melters, but by freeze/thaw cycles. When water seeps into concrete cracks and pores, it freezes and expands, putting stress on the concrete. With enough pressure over time, concrete will crack, scale, spall or fragment.

CONCRETE DAMAGE CAN OCCUR IN THREE WAYS:

1. Moisture is generated as ice melts, which can cause multiple freeze/thaw cycles.
2. When brine solutions re-freeze, they expand more than plain ice and can cause more concrete damage.
3. Some ice melters have been known to accelerate the corrosion of metal rebar inside the concrete and cause it to deteriorate faster.

Only ammonium nitrate and ammonium sulfate ice melters directly damage concrete. That's because they are corrosive substances that actually attack the surface they touch. Safe Step ice melters do not contain these ingredients.

Helpful hints to reduce potential concrete damage*:** **For best results, only use on air-entrained concrete more than one year old. Immediately remove slush that forms from the melted snow and ice. Also note that lower quality concrete materials are more prone to damage. It is also important not to use on brick surfaces. Safe Step Mag Chloride 8300 Ice Melter is safer on concrete than conventional ice melters, when used as directed.

EFFECTS ON ROOFS

Another area of concern is the use of ice melters on roofs. Ice melters are not recommended for use on roofs because they may damage some roofing materials, corrode nails and therefore destabilize a roof's structural integrity. They may also cause pitting of aluminum gutters and downspouts. In addition, the residual brine solution created by the ice melter may lead to damage of surrounding concrete surfaces and vegetation.

Helpful hints to reduce impact on roofs and related materials*:** **It is not recommended to use ice melter on roofs.

RESIDUALS AND SURFACE/CARPET DAMAGE

Some common ice melting ingredients can leave a residue on carpeting when tracked indoors. This residue is a nuisance because the dirt it attracts and the stains it leaves behind often require shampooing with special cleaning agents.

Helpful hints to reduce indoor flooring residue and damage*:** **Immediately remove slush that forms from the melted snow and ice outdoors to reduce tracking ice melter indoors.

** See Safe Step packaging for complete application instructions and safety precautions.*

COMMON INGREDIENTS

ICE MELT INGREDIENTS: BENEFITS AND ADVANTAGES

Ice melters contain a variety of ingredients, each with their own advantages. Ingredients differ by their melting temperatures, melting speed, environmental friendliness and safety. When choosing an ice melter, it's important to understand the ingredients that impact their performance.

Below you'll find a list of ingredients commonly found in ice melters. We've also included performance specifications and safety parameters.

ROCK SALT [NaCl, Salt, Halite]
- A naturally occurring mineral found in the deposits in the earth
- Effective melting temperature: 5˚F (-15˚C); Eutectic temperature: -6˚F (-21˚C)
- Ice melting crystals vary in size from table salt size to 1" in diameter

POTASSIUM CHLORIDE [KCl]
- A naturally occurring mineral that is mined from the earth's crust
- A common plant nutrient
- Effective melting temperature: 20˚F (-7˚C); Eutectic temperature: 15˚F (-9˚C)

CALCIUM CHLORIDE [$CaCl_2$]
- Primary source is calcium carbonate and hydrochloric acid or dried from calcium carbonate
- Attracts moisture and releases heat on contact
- Effective melting temperature: -25˚F (-32˚C); Eutectic temperature: -55˚F (-48˚C)

MAGNESIUM CHLORIDE HEXAHYDRATE [$MgCl_2 \cdot 6H_2O$]
- Naturally occurring mineral found in salt water
- Attracts moisture
- Effective melting temperature: -15˚F (-26˚C); Eutectic temperature: -25˚F (-32˚C)
- Safer to handle; gentler on skin*
- Less harmful for concrete, carpets and vegetation*
- May harden and clump in the package
- Three times less corrosive and safer on concrete*
- Less toxic than baking soda

CORROSION INHIBITORS
- Used in ice melters containing chlorides
- Mitigates damage to metal, concrete and the environment
- Ingredient has no significant melting action

** Compared to calcium chloride and other ice melter ingredients*

GLOSSARY

BRINE SOLUTION
A liquid comprised of water and dissolved ice melter that forms during the melting process.

CALCIUM CHLORIDE
An ice melter ingredient with an effective melting temperature of -25˚F (-32˚C); begins melting on contact due to a powerful self-initiating chemical reaction.

EFFECTIVE MELTING TEMPERATURE
The lowest temperature at which an ice melter will melt under real-world conditions.

EUTECTIC TEMPERATURE
The lowest temperature at which an ice melter will melt under laboratory-controlled conditions.

FREEZE/THAW CYCLE
When water seeps into the cracks and pores in concrete, freezes and expands, then thaws again. Repeated freeze/thaw cycles can cause surface damage to concrete.

HALITE (SODIUM CHLORIDE)
Halite comes from the Greek words halos, meaning “salt” and lithos meaning “rock,” and is, in fact, better known as rock salt. Halite is called an evaporite because it is formed by the evaporation of saline water in partially enclosed basins. It is very common worldwide, found in solid underground masses and as a dissolved solution in oceans and many arid-region inland lakes.

HYGROSCOPIC
The tendency of an ice melter ingredient to attract moisture.

MAGNESIUM CHLORIDE HEXAHYDRATE
An ice melter ingredient with an effective melting temperature of -15˚F (-26˚C); less harmful for concrete, vegetation, people and pets.

MG 104®
Compass Minerals’ patented ice melting ingredient in Safe Step® 6300 Enviro-Blend® Ice Melter; a proprietary melting catalyst that resists re-freezing up to 2½ times longer than conventional ice melters.

NON-HYGROSCOPIC
Ice melter ingredients that do not attract moisture.

POTASSIUM CHLORIDE
A common plant nutrient used as an ice melter ingredient; has an effective melting temperature of 20˚F (-7˚C).

RE-FREEZE POINT
The temperature at which a brine solution, generated from an ice melter, dilutes and re-freezes.

ROCK SALT
Also referred to as sodium chloride, salt and halite. An inexpensive ice melter mined from the earth.

SPALLING
The fragmenting of a concrete surface caused by freeze/thaw cycles by some ice melter ingredients.

SURFACE-TO-ICE BOND
The attraction formed between a surface and ice, snow, sleet or freezing water.

Compass Minerals®

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