



## Environmentally Friendly Winter & Summer Road Maintenance Products

### *SAFE MELT*<sup>®</sup> "Cheat Sheet"

#### Application Methods and Rates

#### 1) STOCKPILE TREATMENT

Begin by applying 6 gal/ton to straight salt and 6 gal/ton to salt/sand mix depending on amount of sand in mix and variability of sand consistency, and 6 gal/ton to straight sand, observe results, if product runs out of pile reduce application rate. If stockpile appears too dry increase application rate. This is a trial and error process and will require some practice. Too much moisture and too many fines in the material will cause a substandard result. We will be happy to make an onsite visit to help you assess the suitability of your salt and sand stockpiles for stockpile treating.

**NB:** Applying to straight sand will prevent sand from freezing, make it stick to the pavement and may add minimal ice melting capacity. **Manufactured sand should be analyzed before applying *SAFE MELT*<sup>®</sup>.**

*SAFE MELT*<sup>®</sup> can be applied to a stockpile by using a pugmill, conveyor or by spraying and mixing with front end loaders. **Please note that it is recommended to apply the 6 gal/ton to all of the material to be used for an application.** Mixing *SAFE MELT*<sup>®</sup> treated salt with untreated sand will obviously provide better results than using untreated salt, but it is better to have the sand treated as well so that it won't dilute the melting power of the treated salt.

Ideally, you should be considering gradually reducing the amount of sand in your mix, since its effectiveness as a traction agent is temporary, and more perceived than real (confirmed by FHWA studies). The clean-up and disposal cost is several times the purchase price (some estimates are \$140.00/yd or greater - Maine Local Roads Survey 2005). In addition, EPA air quality regulations such as PM-2.5 severely regulate sand use in some western states already. For example, in Denver, CO, sand must be picked up within 24 hours after its use. In Massachusetts, sand in catch basins must be treated as "special" or hazardous waste and disposed of accordingly. The "crackdown" on sand use in New England is already upon us with enforcement of Storm Water Run-Off Phase II regulations being stepped up.

*SAFE MELT*<sup>®</sup> treated salt is **30% less corrosive** than regular rock salt and since you will be able to **cut your usage by up to 50% (fewer applications due to most of the salt staying on the roadway, and working down to pavement temps of -0° F)** the effective corrosion index will be nearly **80% less than straight rock salt.** In addition, *SAFE MELT*<sup>®</sup> treated salt has demonstrated the ability to **drastically reduce and even stop corrosion damage to equipment** by encapsulating salt crystals thus protecting ferrous metal surfaces. This protective film has also demonstrated the ability to **remove rust.**



## 2) ON BOARD PRE-WETTING AGENT

**SAFE MELT**<sup>®</sup> can be used with existing on-board pre-wetting equipment with minor and inexpensive adjustments. According to our equipment manufacturer, 8006 nozzles are generally used with liquid calcium systems. In order to convert to **SAFE MELT**<sup>®</sup>, he recommends the use of 8010 nozzles. The first two digits indicate 80°, which is the spray pattern; the second two digits indicate GPM @ 35 psi. This rating is for water. Liquid calcium and liquid mag would fall within this rating. The 8010s would put out 1 GPM @ 35 psi for water and about .8 -.85 GPM @ 35 psi for **SAFE MELT**<sup>®</sup> due to its greater viscosity. These numbers may vary depending on the condition of the system, age of the nozzles etc. Nozzle ratings should be stamped somewhere on the surface and cost about \$2.00 ea.

**NB: Mesh screens should be removed from the plastic filter bowl when using SAFE MELT<sup>®</sup>.**

An application rate of 8-10 gal/ton to salt or salt/sand mix should empty a 7 yd. spreader box and a 80 gallon tank at about the same time. Pre-wetting at the spinner w/**SAFE MELT**<sup>®</sup> can ultimately reduce the use of salt or salt/sand mix by as much as 50% for the same reasons outlined above. Corrosion damage would be dramatically reduced around the spinner and any other areas that would normally come in contact with salt at the rear of the truck. The same recommendations regarding reducing the proportion of sand in your mix would also apply. **Annual calibration** of sanders is highly recommended.

## 3) LIQUID ANTI-ICING (PROACTIVE)

This method calls for a direct application of liquid to a pavement surface prior to or during a storm using a spray bar. Material may be applied hours or even days in advance of a black ice, freezing fog or storm event depending on the forecast. However, the further in advance you make an application the greater the risk of rain or elevated relative humidity either washing the material away or causing slippery conditions. Ideally you should apply material to the roadway as close to the storm event as possible. Application should be in the 15-20 GPLM range initially and will require subsequent adjustment based on pavement temperatures, relative humidity, snowfall rate/moisture content and **observation and recording of previous results**. During a storm, this approach will delay ice and hard pack bonding to the pavement surface by keeping the pavement surface slushy.

Spray bar should be no longer than the width of the application vehicle in order to prevent contact with objects in the path of application. Nozzles should be placed on the ends of the spray bar and at approx. 24" intervals. Flood tip or raindrop nozzles are recommended for anti-icing. Spray bar should ideally be 12"-18" from pavement surface. Spray pattern should be a solid continuous line under the spray bar.

**Pavement temperatures of 38 ° F. or higher and holding with a relative humidity in the 50% range require dilution of SAFE MELT<sup>®</sup> 40/60 with 20% water to avoid excessively slippery conditions. Another and better option is not to apply any chemical at all under these conditions.** However, if the forecast calls for falling temperatures, an application may be warranted. For those just starting an anti-icing program we recommend applying at 32°F or less. After a comfort level is reached, you may begin experimenting with applying at slightly higher temperatures.

For example: Temperature at 12:00 Noon is 37° F with a forecast of an overnight low of 23 ° F. with temperatures beginning to drop by early afternoon. Under these conditions an application may be made.

The ability to accurately measure pavement temperature, temperature trends, application rates and material output is critical for a successful liquid anti-icing program and will also greatly improve the results of your application of granular materials. Recording results and keeping a log is also highly recommended. Liquid anti-icing can be a very effective tool in your snow and ice management portfolio.



#### 4) LIQUID DE-ICING (Reactive)

Essentially the same as above except that 1/4" streamer nozzles or hose barbs are recommended for de-icing and penetrating hardpack along with heavier application rates, i.e., 35-40 GPLM. Washington State test results have shown **SAFE MELT**<sup>®</sup> burning through 4"-5" of hardpack, spreading out on the pavement surface, breaking the bond and allowing crews to plow to bare pavement after about 45 minutes.

#### 5) STORAGE and AGITATION

**SAFE MELT**<sup>®</sup> should be stored in a suitable container. We recommend a high density polyethylene tank with a 1.5 specific gravity wall rating. Steel tanks may also be used since the product is non-corrosive. The product should be agitated before initial use if it has remained in the storage tank over the summer. Agitation may not be necessary during the winter months due to regular replenishment and provided that the storage tank is filled through the bottom tank valve. Foaming may occur if storage tank is filled through the top.

At the end of the season some users will drain their tanks by applying any left-over liquid to their stockpiles (the product will hold indefinitely in a stockpile) while others will use it up by applying it to their gravel roads for dust control (the product does very well as a dust control/base stabilization agent). Those that choose to leave it in their tanks over the summer simply siphon off the film that forms on the surface and then agitate the material by placing the discharge hose into the top of the tank and starting their transfer pump. Others will use compressed air applied through a crack chaser placed in the tank much like an aerator in an aquarium to achieve the same results. There is some question as to whether these methods will adequately "turn over" a sizeable amount of material left over in a storage tank. **We now have an inexpensive tank agitation device that will solve this problem.**

#### 6) SUMMARY

How you use the product will depend upon a number of different factors such as budgetary constraints, existing equipment, available storage and work space, size of crew, weather conditions, type, location and condition of roads etc.

**SAFE MELT**<sup>®</sup> treated salt will excel in the colder temperature ranges (20° F to 0° F); however, as the results from Wisconsin DOT, New York DOT and New York Thruway Authority have shown, **even in the warmer temperatures these agencies were able to achieve equal or better pavement conditions using significantly less treated salt than the dry salt control sections (HITEC report September 1999).**

**SAFE MELT<sup>®</sup>** turns salt brown allowing operators to see it coming off the spinner and causing the public to think that it contains sand. This feature has helped a number of municipalities, agencies and institutions to cut back significantly on their use of sand. In fact, some agencies have eliminated the use of sand entirely.