

Natural Melt SM Plant-based Chloride-free Anti-icing / De-icing Fluid

Natural Melt SM, a plant-based, chloride-free, eco-friendly de-icing fluid, is a product of new biochemical technologies and is made as a combination of various organic electrolytes and glycols. It contains no chlorides, no sulfates and no nitrates and is proved to be non-toxic and non-harmful in natural surroundings, where 100% degradation can be achieved in soil. Natural Melt SM features versatile ice control and ice remove performance. Natural Melt SM passes the strict laboratory requirements of the Pacific Northwest Snow fighters.

Chloride-free Anti-icing/De-icing liquids made from renewable plant-source

Typical Properties

Appearance.....Light yellow
Dry Solids.....>60%
Specific Gravity.....1.26 Kg/L (10.5 Pounds per Gallon)
Freezing Point.....-31 °F (-35 °C)
pH.....8.6 ± 0.5
Biochemical oxygen.....237000 mg/L
Corrosion Rate.....-3.8% (less than water)
Water Miscibility.....Complete

Advantages

- **Competitive price:** Natural Melt SM is 50% less expensive than other chloride-free de-icing fluid such as acetate-based de-icing fluids.
- **Excellent corrosion-inhibiting ability:** Tests showed that the annual corrosion rate of Natural Melt SM against Type 1 ASTM F436 hardened steel washers was 0.01 miles penetration per year (MPY) less than that of deionized water (0.13 MPY).
- **No damage to various paving materials:** Field trials showed no noticeable damage and spalling on new concrete, brick sidewalks and other high end paving materials.
- **Lower damage to road and bridge system:** Natural Melt SM can reduce maintaining and repairing cost for road systems and snow management equipment.
- **Highly friendly to environments:** Natural Melt SM contains no chloride, sulfate or other inorganic salts and adds no negative effects to plants. It can be completely bio-decomposed in natural surroundings after six months.

Applications

All suggested usage levels should be considered as starting points and should be adjusted as needed based on operator experience to meet local conditions such as current and forecasted road and air temperatures, precipitation, traffic volume, etc.

Anti-icing - Application

- Use Natural Melt SM as-is or blend Natural Melt SM with water (4:1 when temperature is above 20 °F) and mix thoroughly.
- Apply initially at 45 gallons per lane mile (used as-is).
- Adjust the amount as needed to meet local conditions.
- Apply Natural Melt SM when the pavement temperature is expected to drop to 32 °F (0 °C) or below, preferably just before precipitation begins.

Benefits

- Natural Melt SM prevents ice and snow from bonding to the pavement, making ice and snow removal easier.
- Lowers maintenance costs by reducing the number of applications and quantities needed.
- No dust-causing abrasives needed.
- Eliminates the use of salt in straight stream direct application.
- The Natural Melt SM water 4:1 blend's freezing point is -23 °F (-30 °C).

ROAD SOLUTIONS INC.



Road Solutions, Inc · 5616 Progress Road · Indianapolis IN 46241
Toll Free 888-888-3615 · Office 317-243-3248 · Fax 317-244-8461
www.roadsolutionsinc.com

Deicing - Application

- Use Natural Melt SM as-is or blend Natural Melt SM with water (4:1 when temperature is above 20 °F) and mix thoroughly.
- Apply initially at 50 gallons per lane mile (used as-is) depending upon the accumulation, adjusting the amount as needed to meet local conditions.
- Apply using stream nozzles.
- Allow to penetrate the accumulation then apply as usual.

Benefits

- Natural Melt SM eats through hardpack to melt snow and ice when spread along the pavement.
- Breaks the bond between the ice, snow and the roadway, making ice and snow removal easier.
- No dust-causing abrasives needed.

Bulk Material Freeze Proofing - Application

- Use Natural Melt SM as-is. Do not dilute with water.
- Apply 4 to 5 pints per ton by overhead spray to pea gravel, aggregates, coal, glass, or other bulk materials during storage or before shipment.

Benefits

- Natural Melt SM is safe to use with most materials.
- Keeps materials free flowing, prevents freezing or chunking during transfers and shipment.
- Reduces for corrosive properties of treated materials.

Natural Melt SM Performance & Specifications

Natural Melt SM whether used as-is, or mixed with water provides superior anti-icing and de-icing performance (See attached Eutectic Curves of Natural Melt SM with water). Whether mixed with water or not, Natural Melt SM is compatible with all existing brine storage tanks and spray equipment. Natural Melt SM works at temperatures where salt brines alone are no longer effective. The snow-melting capacity of Natural Melt SM is 50% of salt brines. Performance superior to salt brines is achieved while using *less* Natural Melt SM anti-icing/de-icing fluid. *Fewer gallons of Natural Melt SM yield the same performance as salt brines alone.* That means more lane miles per truckload, improved efficiency and less equipment corrosion.

Freezing Point Depression

Natural Melt SM anti-icing fluid not only offers performance superior to salt brine, its superior anti-icing performance remains even after subsequent precipitation dilutes the product. Example: even after diluting to 30% of its original strength Natural Melt SM still performs better than freshly applied full-strength salt brine (see table 1).

Corrosion

Test results from an independent lab approved by the Pacific Northwest Snow fighters showed that Natural Melt SM is less corrosive than water. In fact, Natural Melt SM with common anti-icing / de-icing salts will help reduce your equipment corrosion. Make Natural Melt SM an effective part of your corrosion control programs.

Storage

Natural Melt SM is stable during storage, summer or winter. Unlike some other organic anti-icing products, Natural Melt SM will not solidify during the winter nor spoil during the summer. For best results, recycle storage tanks every month.

Viscosity

Natural Melt SM is more viscous than salt brine at all temperatures making it especially suited for anti-icing applications where roadway runoff is a problem. Yet, Natural Melt SM is still fluid enough to flow readily through your application equipment. The viscosity advantage helps to hold it on the roadway; and that provides a residual anti-icing effect. It's like putting a barrier between the road and the precipitation.

The information and recommendations in this publication are, to the best of the seller's knowledge, accurate. However, because of numerous factors affecting test results, seller makes no warranty of any kind, expressed or implied other than the product conforms to its applicable current standard specifications. Statements concerning the use of the products of formulations described herein are not to be construed as recommending the infringement of any patent.

Table 1: Freezing points and Snow-melting capacity of diluted Natural Melt SM.

Water Wt% blended with Natural Melt SM (%)	Freezing point (°C)	Freezing point (°F)	Snow-melting capacity relative to 20% NaCl solution (%)
0	-35	-31	269
10	-35	-31	257
20	-32	-25	237
30	-22	7	216
50	-14	6.8	150
67	-9	16	100
75	-7	19	65

Figure 2: Eutectic curve and specific gravity diagram of diluted Natural Melt SM

