

QUALIFIED PRODUCTS LIST (QPL) FOR WINTER ROAD MAINTENANCE

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Safe roads and bridges during winter weather events are the goal of every municipality, and a good winter maintenance plan will make sure that removal practices don't harm the environment.

Partly due to municipal separate storm sewer system (MS4) regulations, many public works agencies are switching from a deicing to an anti-icing strategy to combat Mother Nature. The move away from deicing, the old strategy of treating roads with a mix of antiskid (sand, cinders, or aggregate) and road salt during or after the start of the storm, has almost eliminated the use of antiskid materials.

The preferred anti-icing approach involves applying a layer of brine on the road surface before a storm to prevent snow and ice from bonding to the roads and freezing. This new strategy requires municipalities to determine which, if any, chemical concoctions to add to the liquid brine. When deciding among magic salt potions, municipalities must balance the deicer's harmful effects, including its impact on vehicles, roads, bridges, and the environment, against improved road safety and positive economic impacts from effectively and promptly clearing roads and bridges.

This tech sheet is based on information from CLEAR ROADS (clearroads.org), a national research consortium focused on rigorous testing of winter maintenance materials, equipment, and methods for use by highway maintenance crews. PennDOT is one of 36 member agencies to fund research and technology transfer efforts.

Qualified Products List

CLEAR ROADS evaluates winter maintenance materials, equipment, and methods under real-world conditions to take the guesswork out of deciding which magic salt potions to use. These efforts to study and promote innovative techniques help municipalities save money, improve safety, and increase efficiency.

The Clear Roads Qualified Products List (QPL) strives to serve the traveling public by evaluating and establishing specifications for products used in winter maintenance that emphasize safety, environmental preservation, infrastructure protection, cost-effectiveness, and performance. The current QPL (February 7, 2021) can be found online at clearroads.org/qualified-product-list.

PennDOT Bulletin 15 (Publication 35) allows for the purchase and use of specific qualified products for snow and ice control. The exact product names listed in PennDOT Bulletin 15 are based upon the specific approval and listing on the Pacific Northwest Snowfighters (PNS) Qualified Product List, which partnered with CLEAR ROADS in 2018 to jointly fund and operate the QPL.

All specific compositional, usage approvals and restrictions, and other noted criteria listed on the PNS Qualified Product List also apply to a product's use in Pennsylvania. If a product is removed from the PNS QPL or fails to meet the required minimum standards, it may be removed from the PA Bulletin 15. Refer to the individual manufacturer's website for a product data sheet. Approval information and resources, including the PNS QPL, can be found at pnsassociation.org.

Approved Chemical Products

Within the current (3/19/2021) PennDOT Bulletin 15 (Publication 35) Section MISC, various chemical products fall into the following categories:

- **Category 1:** Corrosion inhibited liquid magnesium chloride
- **Category 4C:** Corrosion inhibited solid sodium chloride – standard gradation (corrosion percent effectiveness 31-85%)
- **Experimental Category:** Approved liquid corrosion inhibited products. This category is designed for potential products that do not fit the current chemical profiles of the existing categories in the QPL.
- **Inhibitor Category A3:** Corrosion inhibitor for sodium chloride (minimum 15% NaCl). This is material approved as additions to concentrated sodium chloride (salt) brine.

CARGO 15	Cargill, Inc., 24950 Country Club Blvd., Suite 450, North Olmsted, OH 44070 http://www.cargill.com		
Facility	Salt Mines: Avery Island, LA; Cleveland, OH; Lansing, NY		
	PNS Category 4C - Corrosion Inhibited Solid Sodium Chloride - Standard Gradation (Corrosion Percent Effectiveness 31% to 85%)	ClearLane enhanced deicer	2018-107
	<i>Conditionally approved per manufacturer's specifications for winter road maintenance. Liquid pre-wetting facility located in Newark, CA.</i>		
	Manufacturer's specifications for ClearLane enhanced deicer		
ETECH 15	EnviroTech Services, Inc., 4676 284th Street East, Randolph, MN 55065-0000		
	PNS Inhibitor Category A3 - Corrosion Inhibitor for Sodium Chloride (Minimum 15% NaCl)	AMP	2016-075
	<i>Conditionally approved per manufacturer's specifications for winter road maintenance. Material approved for addition to concentrated sodium chloride (salt) brine.</i>		
ISS-1 15	Innovative Municipal Products US Inc. (dba Innovative Surface Solutions), 454 River Road, Glenmont, NY 12077 http://www.innovativecompany.com		
	PNS Category 1 - Corrosion Inhibited Liquid Magnesium Chloride	ProMelt Ultra 1000 INH	2018-109Q
	<i>Conditionally approved per manufacturer's specifications for winter road maintenance. Manufacturer's specifications for ProMelt Ultra 1000</i>		
	PNS Experimental Category - Liquid Corrosion Inhibited Products	Magic Minus Zero (MAGIC-0) Concentrate	2014-007
	<i>Conditionally approved per manufacturer's specifications for winter road maintenance. Material approved as a pre-wet material to solid salt. Not for direct application.</i>		
	PNS Experimental Category - Liquid Corrosion Inhibited Products	ProMelt Ultra 2000 INH	2018-108Q
	<i>Conditionally approved per manufacturer's specifications for winter road maintenance. Material approved as a pre-wet material to solid salt. Not for direct application. Manufacturer's specifications for ProMelt Ultra 2000</i>		
KTECH 15	K-Tech Specialty Coatings, Inc., P.O. Box 428, Ashley, IN 46705-0000		
	PNS Experimental Category - Liquid Corrosion Inhibited Products	BEET HEET Concentrate	2013-117
	<i>Conditionally approved per manufacturer's specifications for winter road maintenance. Material approved as a pre-wet material to solid salt. Not for direct applications as a liquid deicer.</i>		
NATOS 15	NATURES OWN SOURCE LLC, 7033 Mill Road, Becksville, OH 44141-0000		
	PNS Experimental Category - Liquid Corrosion Inhibited Products	AquaSalina+	2014-043
	<i>Conditionally approved per manufacturer's specifications for winter road maintenance.</i>		
SNIS1 15	SNI SOLUTIONS, 205 North Stewart Street, Geneseo, IL 61254-0000		
	PNS Inhibitor Category A3 - Corrosion Inhibitor for Sodium Chloride (Minimum 15% NaCl)	Biomelt AG	2016-024
	<i>Conditionally approved per manufacturer's specifications for winter road maintenance. Material approved for addition to concentrated sodium chloride (salt) brine.</i>		
	PNS Inhibitor Category A3 - Corrosion Inhibitor for Sodium Chloride (Minimum 15% NaCl)	Geomelt 55	2011-042
	<i>Conditionally approved per manufacturer's specifications for winter road maintenance. Material approved for addition to concentrated sodium chloride (salt) brine.</i>		

To help combat winter weather, municipalities may choose among the chemical products listed above to add to current anti-icing mixtures or blend with solid sodium chloride (road salt).

For more information on the evaluation of products related to winter maintenance, go to the CLEAR ROADS website, clearroads.org/product-experience-survey, and read about its informal product experience survey

from 2006 to 2019. This informal survey is meant to be a tool for states to share experiences with winter maintenance products, not a scientific evaluation of product performance. CLEAR ROADS does not endorse any of the snowplow blades, brine makers, cameras, lighting systems, spreaders, or windshield wipers evaluated.



Dover Township, York County, produces its own salt brine by mixing sodium chloride (road salt) purchased through the Department of General Services with potable water to produce a 23.3% mixture.



A worker uses a salometer to test for the proper brine mixture. A glass sodium chloride hydrometer costs about \$30 and can also be used to measure the percent of saturated salt solution on a scale of 0 to 26.4%. A good rule of thumb to follow while mixing sodium chloride and water is 2.3 pounds of salt per one gallon of water to produce 23.3% brine solution.



An example of an enhanced chloride deicer with a corrosion inhibitor and coloring agent.

Reference Materials

- Producing or purchasing salt brine – PennDOT Publication 447, MS-0470-0010 Salt Brine www.dot.state.pa.us/public/PubsForms/Publications/Pub%20447.pdf
- Material application rates – PennDOT Publication 23, Chapter 4 Winter Services www.dot.state.pa.us/public/pubsforms/publications/pub%2023/pub%2023-chapter%204%20.pdf