

Pacific Northwest Snow Fighters (PNS) Qualified Product List - PRODUCTS
Date of Listing: December 5, 2017

Category 1 - Corrosion Inhibited Liquid Magnesium Chloride

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
Iceban 200*	Earth Friendly Chem.	8.4	26%	8/15/2002
Caliber M1000 AP	Envirotech Services Inc.	20.8	28%	8/2/2004
Meltdown with Shield AP	Envirotech Services Inc.	25.9	30%	8/2/2004
Hydro-Melt Green	Cargill	24.3	28.5%	8/1/2005
Meltdown APEX with Shield AP	Envirotech Services Inc.	25.1	30%	1/25/2006
FreezGard CI Plus	Compass Minerals	12.2	30%	8/28/2006
Ice B'Gone II HF	Sears Ecological Appl.	28.6	25%	8/9/2007
FreezGard LITE CI Plus	Compass Minerals	12.3	27%	6/13/2011
HydroMelt Liquid Deicer	Cargill	28	28.6%	8/15/2011
FreezGard CI Plus Sub Zero	Compass Minerals	14.1	27.5%	10/11/2011
Ice Ban 305	GMCO Corporation	25.3	26.6%	1/10/2013
FreezGard 0 CCI	GMCO Corporation	21.2	30.0%	1/10/2013
Meltdown Apex	Envirotech Services Inc.	22.4	30.0%	4/16/2014
Meltdown Inhibited	Envirotech Services Inc.	24.1	30.0%	4/29/2014
ProMelt MAG 30 INH	Innovative Surface Solutions	25.2	30.0%	7/31/2015
ProMelt Ultra 1000 INH	Innovative Surface Solutions	28.2	27.0%	7/31/2015
NexGen Torch	GMCO Corporation	25	30.0%	12/17/2015
NexGen Liquid De-Icer	Paradigm Group	25	30.0%	5/12/2017

Note-Iceban 200 was formerly Iceban Performance Plus M

Those products marked with an asterisk (*) indicates that the stratification can be seen and agitation is required.

Category 2 - Corrosion Inhibited Liquid Calcium Chloride

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
Liquid Dow Armor	Dow Chemical	26	30%	6/25/1999
Winter Thaw DI	Tetra Technologies	16.5	32%	9/13/1999
Corguard TG	Tiger Calcium Services	27.7	29%	1/9/2001
Road Guard Plus	Tiger Calcium Services	16	25%	6/5/2006
Calcium Chloride with Boost (CCB)	America West	18.4	32%	4/10/2014
MeltDown Apex-C	EnviroTech Services Inc.	24.5	29%	8/21/2015
C1000 Pro	EnviroTech Services Inc.	28	27%	9/8/2015

Category 3 - Non Corrosion Inhibited Liquid Calcium Magnesium Acetate

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
Liquid CMA 25%	Cryotech	-11	25%	5/19/1998
SC CMA 25%	Sure Crop Farm Services	-2.8	25%	9/13/1999

Category 4 - Corrosion Inhibited Solid Sodium Chloride

Category 4A- Corrosion Inhibited Solid Sodium Chloride (Corrosion Percent Effectiveness of 30% or less)

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
Inhibited Ice Slicer	Envirotech	30	N/A	5/19/1998
CG-90 Non-Phosphate 2.8%	Cargill	27	N/A	5/19/1998
IMC CI SALT A 3.5	Compass Minerals	28	N/A	8/21/2001
IMC CI SALT B 4.5	Compass Minerals	18.6	N/A	8/21/2001
Clear Lane PNS Enhanced Deicer	Cargill	28.9	N/A	8/1/2005
Ice Slicer Elite	Envirotech Services Inc.	16	N/A	8/1/2005

Category 4B- Corrosion Inhibited Solid Sodium Chloride - Modified Gradation (Corrosion Percent Effectiveness 31% to 85%)

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
Ice Slicer RS	Redmond	80	N/A	10/13/2009
Ice Slicer Super Blend Plus	Redmond	60.4	N/A	10/13/2009

Category 4C- Corrosion Inhibited Solid Sodium Chloride - Standard Gradation (Corrosion Percent Effectiveness 31% to 85%)

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
Clear Lane Enhanced Deicer	Cargill	54.3	N/A	10/2/2015
Ice Kicker	SaltWorx	50	N/A	7/5/2016
SOS Treated Salt	Envirotech Services Inc.	66.4	N/A	5/12/2017
Ice Slicer CB	Envirotech Services Inc.	61.3	N/A	5/12/2017

Category 5 - Corrosion Inhibited Sodium Chloride Plus 10% Magnesium Chloride (Solid)

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
CG-90 Surface Saver 10%	Cargill	15	N/A	5/19/1998
Meltdown 10	Envirotech	30	N/A	5/19/1998
Surface Saver PNS 10%	Cargill	27.2	N/A	8/21/2001

Category 6 - Corrosion Inhibited Sodium Chloride Plus 20% Magnesium Chloride (Solid)

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
CG-90 Surface Saver 22%	Cargill	26	N/A	5/19/1998
Meltdown 20	Envirotech Services Inc.	27	N/A	8/8/2000
Surface Saver PNS 20%	Cargill	22	N/A	8/21/2001

Category 7 - Calcium Magnesium Acetate (Solid)

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
CMA	Cryotech	-7	96%	5/19/1998

Category 8 - Non Corrosion Inhibited Solid Sodium Chloride

CATEGORY 8A-B Standard Gradation, Brining Salt, Insoluble Material less than 1%, and Moisture less than 0.5%.

Product Name	Manufacturer			Date Approved
DriRox Coarse Salt*	Compass Minerals			9/21/2012
Bulk Coarse Solar	Morton Salt			4/21/2006
Intrepid Coarse Salt	Intrepid Potash			6/3/2010
Kiln Dry Coarse Salt	Broken Arrow			12/17/2015

* Product was renamed from NASC Salt (Coarse). The product has been approved since 8/2000.

CATEGORY 8A-R Standard Gradation, Road Salt, Insoluble Material less than 10%, and Moisture less than 0.5%.

Product Name	Manufacturer			Date Approved
Cargill Dry Salt	Cargill			6/1/1998
Mineral Melt	NSC Minerals			6/1/1998
DriRox Coarse Salt*	Compass Minerals			9/21/2012
Kayway Salt (Coarse)	Kayway Industries			12/23/2003
Bulk Coarse Solar	Morton Salt			4/26/2005
Ice Slicer Super Blend	Redmond Mineral			8/2/2006
ISCO Bulk Rock Salt	K+S			6/23/2008
Natural Alternative Ice Melt	NaturalLawn of America			5/17/2010
Intrepid Coarse Salt	Intrepid Potash			6/3/2010
Kiln Dry Coarse Salt	Broken Arrow			12/17/2015
Vanscoy Coarse	NSC Minerals			12/5/2017
Sodium Chloride	Independent Salt Co.			12/5/2017
Bulk Rock Salt	Hutchinson Salt Co.			1/17/2018

* Product was renamed from NASC Salt (Coarse). The product has been approved since 8/2000.

CATEGORY 8B - Insoluble Material less than 10%, and Moisture less than 5.0%.

Product Name	Manufacturer		%Moisture	Date Approved
Ice Slicer RS	Redmond Mineral		1.95	2/9/2003
QwikSalt	Compass Minerals		2.54	6/30/2004
Type C Treated Salt	Broken Arrow		2.94	8/2/2004
SS-5.0	Shelton's Salt		0.90	9/16/2004
Bulk Type C Road Salt	Morton Salt		2.63	4/26/2005
ESSA Salt	ESSA		0.84	6/26/2007
Rapid Thaw	Broken Arrow		2.49	3/4/2009
Bulk Deicing Salt	Central Salt		2.39	6/24/2013
Ice Kicker	SaltWorx		3.10	5/12/2017
Ice Slicer CB	Envirotech Services Inc.		0.59	5/12/2017

CATEGORY 8C-B Fine Gradation, Brining Salt, Insoluble Material less than 1%, and Moisture less than 0.5%.

Product Name	Manufacturer			Date Approved
Mineral Melt	NSC Minerals			3/1/2006
Quick Brine RF	NSC Minerals			3/1/2006
Rocanville Standard Road Salt	NSC Minerals			10/6/2006
Medium Solar Salt	Compass Minerals			8/12/2009
Mixing Solar Salt	Compass Minerals			8/12/2009
Intrepid Medium Salt	Intrepid Potash			6/3/2010
Kiln Dry Medium Salt	Broken Arrow			12/17/2015

CATEGORY 8C-R, Fine Gradation, Road Salt, Insoluble Material less than 10% and Moisture less than 0.5%.

Product Name	Manufacturer			Date Approved
Mineral Melt	NSC Minerals			3/1/2006
Quick Brine VS	NSC Minerals			3/1/2006
Quick Brine RF	NSC Minerals			3/1/2006
Rocanville Standard Road Salt	NSC Minerals			10/6/2006
Medium Solar Salt	Compass Minerals			8/12/2009
Mixing Solar Salt	Compass Minerals			8/12/2009
Intrepid Medium Salt	Intrepid Potash			6/3/2010
Ice Slicer Near Zero	Redmond Minerals			12/3/2010
Kiln Dry Medium Salt	Broken Arrow			12/17/2015

Category 9 - Corrosion Inhibited Liquid Sodium Chloride

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
Salt Brine + Brine Cl	Cargill	25.4	23.3	8/12/2009
Brine with Headwaters Inhibitor	Rivertop Renewables	25.6	22.5	11/24/2014
Brine with Headwaters 10F Inhibitor	Rivertop Renewables	26.7	22.4	11/24/2014

Category 10 - Corrosion Inhibited Liquid Sodium Chloride Plus Calcium Chloride

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
TC Econo*	Tiger Calcium Services	20.5	20/2 ⁽¹⁾	8/12/2009
Beet Heet Severe	K-Tech Specialty Coatings	21.1	15.3/5.4 ⁽²⁾	7/13/2011
ESB	America West	21.0	18.8/2.3 ⁽³⁾	4/14/2014
SO-CAL	Custom Spray Services	27.8	20.8/2.5 ⁽⁴⁾	4/14/2014

1 - 20% NaCl and 2% CaCl₂

2 - 15.3% NaCl and 5.4% CaCl₂

3- 18.8% NaCl and 2.3% CaCl₂

4 - 20.8% NaCl and 2.5% CaCl₂

Category 11 - Corrosion Inhibited Liquid Chloride Blended Brines

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
Road Guard Plus*	Tiger Calcium Services	16	27 ⁽¹⁾	8/12/2009
Road Guard TC	Tiger Calcium Services	21.3	32.1 ⁽²⁾	8/12/2009
Road Guard XCEL	Tiger Calcium Services	20.3	33.2 ⁽³⁾	8/12/2009
IB 7/93-Thermapoint	Millennium Roads	24	26.7 ⁽⁴⁾	5/1/2013

1 - 25% Calcium Chloride and 2% Magnesium Chloride

1 - 27.3% Calcium Chloride and 4.8% Magnesium Chloride

2 - 28.5% Calcium Chloride and 4.7% Magnesium Chloride

4 - 17.8% Calcium Chloride, 5.4% Sodium Chloride, and 3.5% Magnesium Chloride

Those products marked with an asterisk (*) indicates that the stratification can be seen and agitation is required.

PNS Experimental Category - Approved Liquid Corrosion Inhibited Products

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration	Date Approved
CF-7	Cryotech	0.0	50 ⁽¹⁾	6/20/2001
CMAK	Cryotech	0.0	12.5/25 ⁽²⁾	6/20/2001
NC 3000	Glacial Technologies	-3.5	25 ⁽³⁾	3/13/2002
Alpine Ice-Melt	Nachurs Alpine Sol. Ind.	-4.8	50 ⁽⁴⁾	6/23/2008
Fusion 60/40	Eco Solutions	22.1	15.0 ⁽⁵⁾	11/23/2009
Beet Heet Concentrate***	K-Tech	14.8	21.7 ⁽⁶⁾	9/26/2012
AquaSalina+	Nature's Own Source	26.4	22.5 ⁽⁷⁾	9/19/2013
Isoway	Omex Environmental	-5.1	25.0 ⁽⁸⁾	4/15/2014
Geomelt S7	SNI Solutions	25.9	18.1 ⁽⁹⁾	4/17/2014
SOS AP***	Envirotech Services Inc.	21.0	26.0 ⁽¹⁰⁾	4/18/2014
SOS Inhibited***	Envirotech Services Inc.	25.3	26.0 ⁽¹¹⁾	8/28/2014
AQ+IceBite Liquid Brine Deicer	Nature's Own Source	11.4	20.4 ⁽¹²⁾	8/28/2014
Ecolution Liquid Deicer	State Industrial Products	26.5	24.6 ⁽¹³⁾	8/28/2014
Ice Bite S	Road Solutions Inc.	15.0	22.1 ⁽¹⁴⁾	10/21/2014
XO-Melt ₂	K-Tech	22.9	24.5 ⁽¹⁵⁾	11/3/2014
Biomelt AG7	SNI Solutions	26.3	18.3 ⁽¹⁶⁾	10/2/2015
Green Blast***	Cargill	27.8	28.0 ⁽¹⁷⁾	10/2/2015
SOS-C Inhibited***	Envirotech Services Inc.	24.7	29.1 ⁽¹⁸⁾	3/11/1016
Husker Plus	Smith Fertilizer and Grain	10.2	54 ⁽¹⁹⁾	7/7/2016
BetterBrine Pro powered by AMP	Envirotech Services Inc.	26.1	21.6 ⁽²⁰⁾	11/18/2016
ProMelt Ultra 2000 Inh	Innovative Surface Solutions	29.6	24 ⁽²¹⁾	5/12/2017
Magic Minus Zero (Concentrate)***	Innovative Surface Solutions	11.8	23 ⁽²²⁾	10/25/2017
Magic Minus Zero (Brine Enhancer)***	Innovative Surface Solutions	23.1	22.9 ⁽²³⁾	10/25/2017

PLEASE REFER TO THE FOLLOWING FOOTNOTES REGARDING SPECIFIC EXPERIMENTAL PRODUCT INFORMATION

- 1 - 50% Potassium Acetate
- 2 - 12.5% Calcium Magnesium Acetate and 25% Potassium Acetate
- 3 - The product contains a 25% Potassium Acetate concentration. The product also contains 30% Carbohydrate material which is still under consideration as an active ingredient but at this time has not be included.
- 4 - 50% Potassium Acetate
- 5 - 15.0% Sodium Chloride, blend of 60% Fusion/ 40% Salt Brine
- 6 - Total Chloride Salt Blend with CaCl_2 -11.9%, MgCl_2 - 3.4%, KCl -2.7%, NaCl -3.7% . Carbohydrate content-28.8%. ***Material approved as a pre-wet material to solid salt. Not for direct application as a liquid deicer.
- 7 - Total Chloride Salt Blend with CaCl_2 -9.0%, MgCl_2 - 2.5%, and NaCl -11.0% .
- 8 - 25% Potassium Acetate
- 9 - 18.1% Sodium Chloride, blend of 30% Geomelt 55/ 70% Salt Brine.
- 10 - 26.0% MgCl_2 with a thickening additive. ***Material approved as a pre-wet material to solid salt. Not for direct applications as a liquid deicer.
- 11 - 26.0% MgCl_2 with a thickening additive. ***Material approved as a pre-wet material to solid salt. Not for direct applications as a liquid deicer.
- 12 - Total Chloride Salt Blend with NaCl -13.0% and CaCl_2 -7.4%, blended with 15% IceBite.
- 13 - Total Chloride Salt Blend with CaCl_2 -9.8%, MgCl_2 - 2.3%, and NaCl -12.5% .
- 14 - 22.1% Sodium Chloride.
- 15 - Total Chloride Salt Blend with CaCl_2 -12.3%, MgCl_2 - 2.1%, and NaCl -10.1% .
- 16 - 18.3% Sodium Chloride, blend of 30% Biomelt AG/ 70% Salt Brine.
- 17 - 28.0% Magnesium Chloride with a thickening additive. ***Material approved as a pre-wet material to solid salt. Not for direct application as a liquid deicer. Material becomes very viscous at near 0°F temperatures.
- 18 - Total Chloride Salt Blend with CaCl_2 - 26.9%, MgCl_2 - 2.2% ***Material approved as a pre-wet material to solid salt. Not for direct application as a liquid deicer.
- 19 - 54% Mixed Matrix Organic/Inorganic Salt Compounds.
- 20 - Total Chloride Salt Blend with NaCl -18.2% and MgCl_2 - 3.4%
- 21 - 24% Magnesium Chloride
- 22 - 23% Magnesium Chloride. A 80/20 mixture of magnesium chloride with an organic agricultural product. Material resulted in a final pH of 4.1 as accepted by the PNS. ***Material approved as a pre-wet material to solid salt. Not for direct application.
- 23 - Total Chloride Salt Blend with NaCl - 15.5% and MgCl_2 - 7.4%. This is a 70/30 blend of salt brine with the Magic Minus Zero Concentrate. Material resulted in a final pH of 4.5 as accepted by the PNS. ***Material approved as a pre-wet material to solid salt. Not for direct application.

Pacific Northwest Snow Fighters (PNS) Qualified Product List - INHIBITORS
Date of Listing: April 4, 2016

Category A1 - Corrosion Inhibitor for Sodium Chloride Brine (Minimum 21% NaCl)

Product Name	Manufacturer	% NaCl		% Additive	Class	% Effectiveness	Date Approved
ArctiClear CI Plus	Compass Minerals	21.2		5	1	21.3	12/3/2010
Headwaters Corrosion Inhibitor	Rivertop Renewables	22.5		3.5	1	24.9	4/15/2014
Shield GLT Plus	Paradigm Chemical	22.6		5	1	28.7	4/15/2014
Headwaters 10F Corrosion Inhibitor	Rivertop Renewables	22.4		4.5	1	26.7	7/18/2014

Category A2 - Corrosion Inhibitor for Sodium Chloride and Calcium Chloride Brine (Minimum 15% NaCl & 2% CaCl₂)

Product Name	Manufacturer	% NaCl	% CaCl₂	% Additive	Type/Class	% Effectiveness	Date Approved
Boost SB	America West	18.8	2.3	20	1 / 2	21.0	4/14/2014

Category A3 - Corrosion Inhibitor for Sodium Chloride (Minimum 15% NaCl)

Product Name	Manufacturer	% NaCl		% Additive	Class	% Effectiveness	Date Approved
ArctiClear Gold	Compass Minerals	18.8		15	2	26.6	12/3/2010
Beet 55 Concentrate	Smith Fertilizer & Grain	17.2		35	2	23.1	9/19/2013
Geomelt 55	SNI Solutions	18.1		30	2	25.9	4/17/2014
Biomelt AG	SNI Solutions	18.3		30	2	26.3	10/2/2015
AMP	Envirotech Services	18.2		20	2	26.1	4/4/2016