ROAD GUARD PLUS +8

Liquid Deicer for De-Icing, Anti-icing and Prewetting at Extremely Low Temperatures

Road Guard Plus-8 is a corrosion inhibited liquid form of calcium chloride and magnesium chloride brine developed especially for anti-icing and pre-wetting at extremely low temperatures down to – 45 ^{o}C. The active ingredients for de-icing are 26.5% calcium chloride, 3.1% magnesium chloride, 2.2% alkaline chlorides including sodium chloride and potassium chloride, 8% highly effective corrosion inhibitors. The corrosion rate is 85% lower than sodium chloride.

Quick Facts on Road Guard Plus-8 :

- A concentrated calcium chloride brine with 8% corrosion inhibitor added.
- Ability to cut through snow and ice more quickly than salt or magnesium chloride.
- Ability to melt snow and ice below –45^{o}C (-49^{o}F).
- Requires a minimum amount of agitation or recirculation while in storage.
- 85% less corrosive than rock salt, or sodium chloride.
- Environmental friendly product. Molasses is used as a major ingredient of corrosion inhibitor in Road Guard Plus.
- Can be mixed with customers' sodium chloride brines in storage tanks.
- Available in bulk tank truck or rail car.

Application Rates Recommendation

As an anti-icer / deicer, Road Guard Plus-8 is typically applied at rates of 35 – 70 liters per lane kilometer. The end user is recommended to adjust application rates based on weather conditions, level of service goals and experience. As a prewetting agent, Road Guard Plus is typically used at rates of 30 – 50 liters per tonne of salt or sand.

Composition

Calcium Chloride, $CaCl_2$	26.5 %
Magnesium Chloride, $MgCl_2$	3.1 %
Sodium Chloride, NaCl	1.3%
Potassium Chloride, KCl	0.9 %

Corrosion Inhibitors (Sugar Beets Malasses and other Ingredients)	8.0%
Total Chlorides Content	31.8%
Total Active Ingredients	36%

Physical Properties

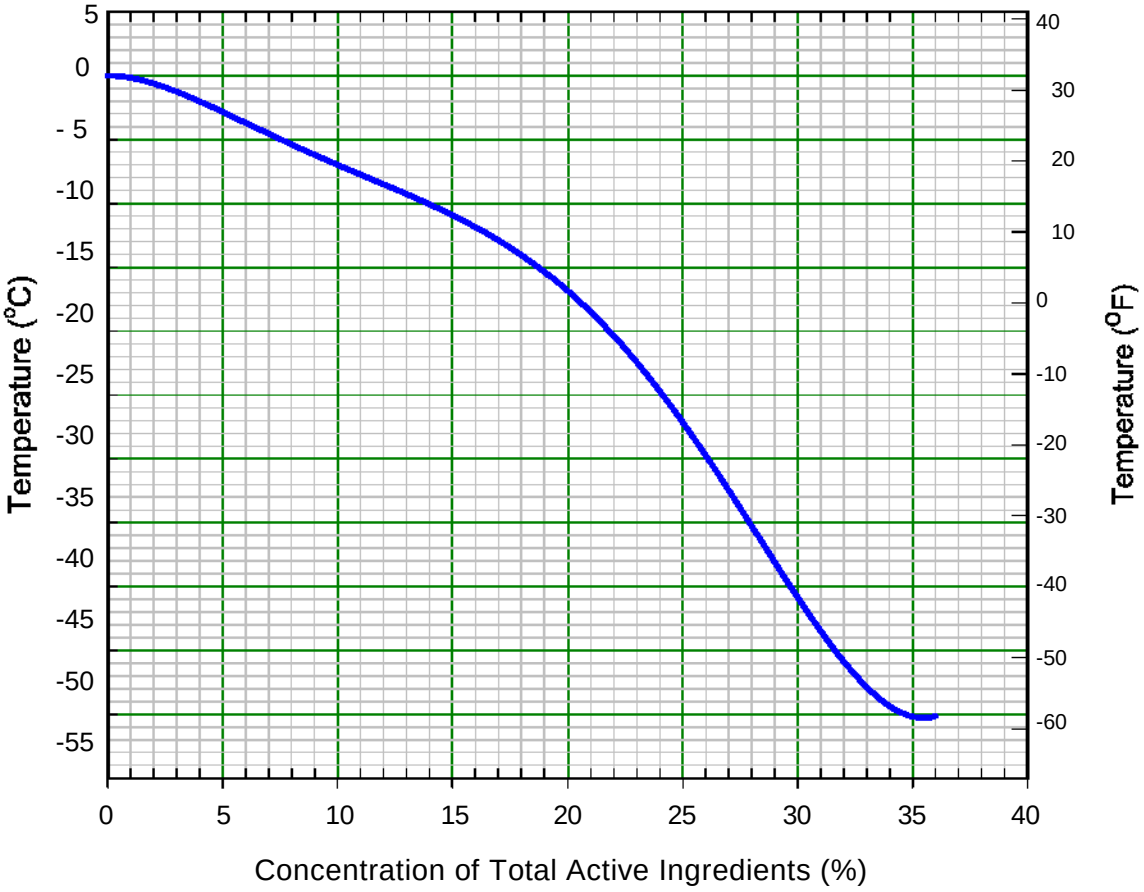
Appearance	Brown Liquid
Odor	Slight
Specific Gravity	1.330 kg/litre
Freezing Point	Free of solid down to -45°C
pH	6.5
Miscibility with water	Complete

Test Results

Constituents Analysis by Levelton Engineering, Sept. 1/04

	Constituents	Road Guard Plus (ppm)	P N S Specifications (ppm), Modified June, 2004	
1	Phosphorus	16	2500	Pass
2	Cyanide	0.16	0.2	Pass
3	Arsenic	<2.0	5	Pass
4	Copper	0.33	1	Pass
5	Lead	<0.5	1	Pass
6	Mercury	<0.01	0.05	Pass
7	Chromium	0.28	1	Pass
8	Cadmium	<0.02	0.2	Pass
9	Barium	53	100	Pass
10	Selenium	<1	5	Pass
11	Zinc	1.5	10	Pass

Phase Diagram of Road Guard Plus-8

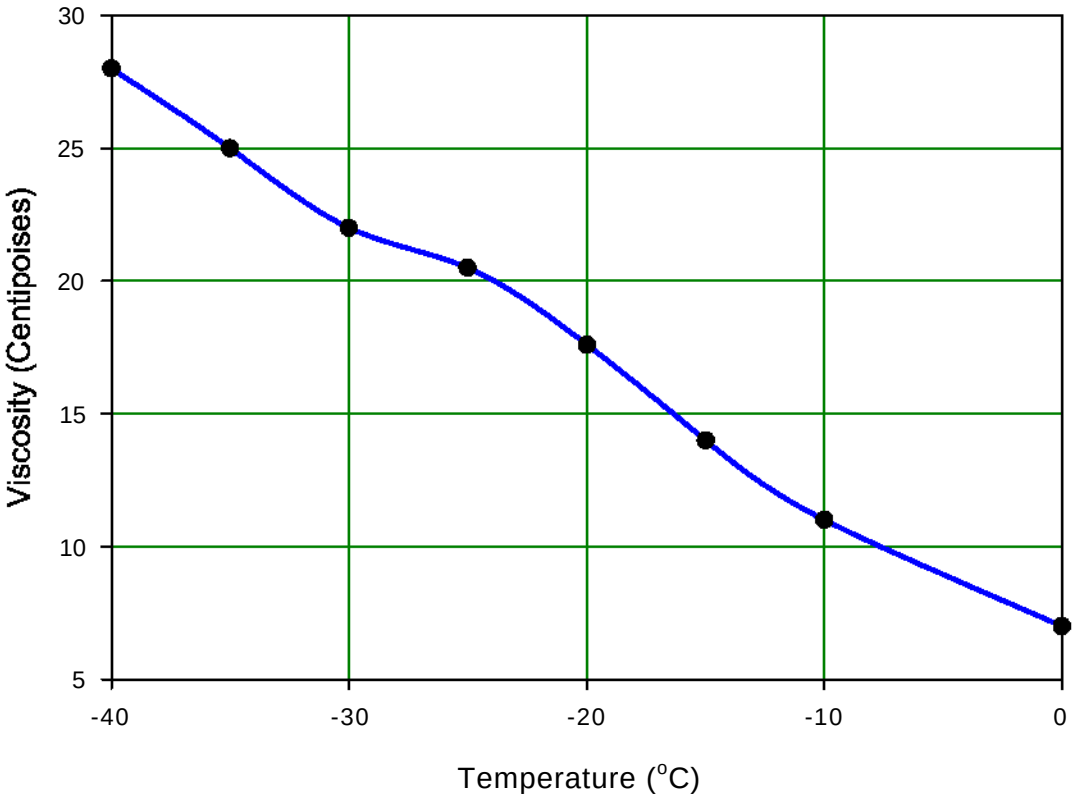


Freezing Points of Tiger's Calcium Chloride Brine

Road Guard Plus-8

Percentage of Total Active Ingredients %	Specific Gravity at 15 o_C	Freeze Point	
		o_C	o_F
0	1.000	0.0	32
2	1.014	-0.6	30.9
5	1.036	-2.8	26.9
6	1.043	-3.7	25.4
7	1.051	-4.5	23.8
8	1.059	-5.4	22.3
9	1.067	-6.2	20.8
10	1.074	-7.0	19.4
11	1.082	-7.8	18.0
12	1.091	-8.5	16.7
13	1.099	-9.3	15.3
14	1.107	-10.1	13.9
15	1.116	-10.9	12.3
16	1.124	-11.9	10.7
17	1.133	-12.9	8.8
18	1.142	-14.1	6.7
19	1.151	-15.4	4.3
20	1.160	-16.8	1.7
21	1.169	-18.5	-1.3
22	1.179	-20.4	-4.7
23	1.189	-22.4	-8.4
24	1.198	-24.7	-12.5
25	1.208	-27.1	-16.9
26	1.219	-29.7	-21.5
27	1.229	-32.5	-26.5
28	1.239	-35.3	-31.5
29	1.250	-38.1	-36.6
30	1.261	-40.9	-41.6
31	1.272	-43.5	-46.3
32	1.283	-45.9	-50.6
33	1.295	-47.9	-54.1
34	1.307	-49.3	-56.8
35	1.3 18	-50.1	-58.2
36	1.330	-50.2	-58.4

Viscosities of Road Guard Plus-8 at Different Temperatures



Temperature °C	Viscosity Centipoise
– 40	28
– 35	25
– 30	22
– 25	20.5
– 20	17.6
– 15	14
– 10	11
0	7