



**TIGER CALCIUM**

**AMSA Fall Convention**

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## Reliability

- All Tiger products are produced, supplied, and, when requested, transported by Tiger's dedicated fleet, ensuring absolute quality control throughout the product delivery cycle
- As Canada's largest producer, consistently available local supply is ensured year-round

## Quality

- Industry-leading quality control driven by best-in-class production processes
- Consistent, batch-by-batch quality monitoring - validated by regular, independent lab testing - is a core component of Tiger's established protocol

## Expertise

- Years of work with both contractors and government bodies has provided a deep understanding of any possible circumstances you might encounter allowing Tiger to confidently support both everyday and urgent, atypical industry needs



# Tiger's Production Profile

- Canada's largest calcium chloride production capacity
  - daily production over 1.3M litres when required
  - annual production capacity in excess of 400M litres
- Industry-leading **Formula 35 Premium Dust Control**
  - The single most effective soil stabilization and dust abatement solution available
  - Dust control applications exceeding 100M litres annually
- **Road Guard Plus** and **Clear Guard** liquid anti-icers
  - Optimal, corrosion-inhibited snow and ice management formulations
- Supply and apply services available across the western Provinces, the Territories and into the U.S.
  - 20M+ litres remote storage to support local execution



# Production Processes

## Production:

State-of-the-art chemical production facility in Slave Lake, AB.

Tiger has the largest known reserve of calcium chloride in North America



## Quality Control:

Only production facility of its kind in Canada with a unique, closed-system process to ensure specifications and quality

- Processed for the removal of excess contaminants including iron, salt and other heavy metals
- Five separate quality control check points during the production cycle in addition to retained samples taken during delivery
- Validated weekly with independent, third-party lab testing

# Logistics & Delivery Capabilities

- 60+ Tiger-owned & operated spray trucks supported by an additional 50+ company transfer trucks all with onboard GPS tracking
- In-cab, computer controlled Raven Application Spray Systems to ensure applications precisely matching customer requirements
- 150+ railcars supporting 28 remote storage facilities across western Canada



- With 40+ years of dust control applications, Tiger has hundreds of man-years of staff experience gained over hundreds of thousands of treated kilometers
- Only company with expertise derived from servicing all western Canadian provinces as well as the Yukon and NWT

# The Tiger Calcium Difference

- **Reliable product availability** - our production facility and storage capacity ensures product is available every day in every season
- **Consistent product quality** - ensures a reliable treatment of your roads with product optimally developed for purpose
  - Government agencies have done the vetting for you:
    - » British Columbia – Recognized Product List
    - » Alberta Transportation – Proven Product List
    - » Saskatchewan Highways
    - » Manitoba Infrastructure Approved Product
    - » Alaska and Minnesota Approved Product
    - » PNS – Pacific Northwest Snowfighters Approved Product
- **Uniform application** on every meter of road you have without waste or shortfall thanks to onboard GPS and computer controlled spray systems
- The **Tiger team's experience** and expertise is unequaled in the industry
- **Controlling product and process within our closed system from the wellhead to the final drop of product application guarantees a quality outcome**



# Tiger Calcium Products

## Formula 35 Premium Dust Control

- **More liters of Formula 35 are sprayed for dust control than any other product in Canada.**

## Tiger 32 Premium Dust Control

- **Fully processed at our production facility to a 32% active chloride concentration.**

## Formula 35 Plus Premium Dust Control

- **Same premium product as F35 but with the addition of a proprietary corrosion inhibitor.**

## Road Guard Plus Liquid Anti-Icer

- **Best in class for both corrosion and toxicity for protection of the environment.**

# What to look for in an anti-icing product?

## 1. Certified/Approved Product

- *Pacific Northwest Snowfighters* (PNS) is the industry's benchmark for product certification, establishing and validating through lab-testing, standards for safe and effective anti-icing products

- While a handful of chloride products appear on the approved list, **Tiger Road Guard Plus** received the highest rating for corrosion effectiveness and is the only Canadian-made approved product

## 2. Eutectic vs Effective Temperatures

- *Eutectic*: the point where a mixture freezes or melts
- *Effective*: the temperature where applied product is melting snow/ice and forming the anti-icing layer

## 3. Corrosion Protection

## 4. Toxicology and the Environment



# PNS Corrosion Rate Rankings

## PNS Category 2: Chlorides / Calcium Chlorides

Product Name	Manufacturer	Corrosion Rate % Effectiveness	% Concentration
<b>Road Guard Plus</b>	<b>Tiger Calcium</b>	<b>16.0%</b>	<b>25+%</b>
Winter Thaw DI	Tetra Tech	<b>16.5%</b>	32%
Boost with CaCl <sub>2</sub>	America West	<b>18.4%</b>	32%
MeltDown Apex-C	EnviroTech	<b>24.5%</b>	29%
Liquid Dow Armor	Dow Chemical	<b>26.0%</b>	30%
C1000 Pro	EnviroTech	<b>28.0%</b>	27%

# Toxicology and the Environment

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## Ranking

### Ranking by Total Product Mass

Product	Relative Toxicological Rank
Watershed Cl: Inhibitor + Salt (NaCl)	1
Boost (CaCl <sub>2</sub> )	2
Road Guard Plus (CaCl <sub>2</sub> )	3
Beet 55: Inhibitor + Salt (NaCl)	4
FreezGard Cl Plus (MgCl <sub>2</sub> )	5
Apogee (Glycerol)	6
Meltdown Apex (MgCl <sub>2</sub> )	7
CF-7 (K-Acetate)	8

less toxic

### Ranking by Salt Mass

Product	Relative Toxicological Rank
Watershed Cl: Inhibitor + Salt (NaCl)	1
Boost (CaCl <sub>2</sub> )	2
Road Guard Plus (CaCl <sub>2</sub> )	3
FreezGard Cl Plus (MgCl <sub>2</sub> )	4
Meltdown Apex (MgCl <sub>2</sub> )	5
Beet 55: Inhibitor + Salt (NaCl)	6
CF-7 (K-Acetate)	7

resourceful. naturally.



Source: Barr Engineering, MN.

# Tiger Road Guard Plus™

- Effectively melts snow and ice at a typical application rate of 75-125 litres per lane kilometer
- Up to 84% less corrosive than traditional rock salt brine
- Better for the environment and safer for vehicles and roads
- Consistent and reliable product quality pre-vetted by users:
  - PNS Qualified Products list
  - BC Recognized Products list
  - Manitoba Infrastructure approved product
  - Only product on Alberta Transportation's "Proven Proprietary Product for De-Icing" list
  - Minnesota State DOT Approved Products list
  - Alaska State DOT Approved Products list



# Information Links

<http://pnsassociation.org/wp-content/uploads/PS-QPL-1-24-18.pdf>

<http://pnsassociation.org>

<http://pnsassociation.org/wp-content/uploads/PNSSPECS.pdf>

<http://pnsassociation.org/wp-content/uploads/PNS-16-Toxicity-and-PNS-QPL.pdf>

<https://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/recognized-products-list>

<http://www.transportation.alberta.ca/Content/docType253/Production/DeicingChemicals.pdf>