Greater Sudbury Watershed Alliance

A Decision Aid for Common Residential Ice Melts and Traction Aids - 1

Using ice melts (also called de-icers) and traction aids on roads, parking lots, driveways and pathways to prevent skids, slips and falls is likely part of our winter. Most ice melts will contain salt. **Using these products wisely can maintain safety while reducing the negative impact salt can have on facilities and the environment.**

How to use less salt while staying safe. From the Smart about Salt Council (SASC)®: http://www.smartaboutsalt.com/

- **Prevent ice:** Direct downspouts away from walkways and driveways and keep eavestroughs and storm drains clear.
- **Clear away the snow first:** Mechanically remove the snow as soon as possible with a shovel, snowblower or plow, before it gets packed down and turns to ice. Do not use salt to melt snow; save salt for icy areas only.
- **Create traction:** Rock salt doesn't work below -7 C. Consider using 'grits' (e.g. sand, cat litter) when it's very cold.
- **Break up the ice:** Before reaching for the salt, try using a steel ice chopper to break up the ice.
- **Use salt wisely:** In many cases, **about one tablespoon for one-metre square** area (the size of a sidewalk slab) is all you need. Choose a salt or ice melt with a smaller grain, evenly spread it on icy areas only and give it time to work.

'Salt' includes products with chloride. Whether the product says salt, ice melt, pet friendly or 100% natural, if it melts ice it most likely contains a chloride salt, and in excess is harmful to our waterways and what depends on them (us).

Where does all the salt go? Salt doesn't go away after it melts ice. It may soak into the ground to mix with ground water or **drain into municipal storm systems that empty into lakes.** Think: Greater Sudbury-The City of Lakes.

The Environmental Effects of Common Components of Ice Melts & Traction Aids

(see over for examples of common residential Ice Melts and Traction Aids)

Environmental Effect:	Most Harmful	Harmful	Less Harmful	Least Harmful

Component	Lowest Effective Working Temperature*	Corrosion of Metal/ Concrete Reinforcing	Concrete Matrix Harm (scaling, paste attack)	Vegetation Harm	Freshwater Quality/ Aquatic Life Harm**
Sodium Chloride (NaCl) 'rock salt'	-7 C	High	Low/ moderate	High	Moderate/ high
Calcium Chloride ($CaCl_2$)	-29 C	High	Low/ moderate	High	Moderate/ high
Magnesium Chloride ($MgCl_2$)	-23 C	High	Moderate/ high	High	Moderate/ high
Potassium Chloride or muriate of potash (KCl)	-4 C	High	Low/ moderate	Excess can burn foliage	Moderate/ high
Calcium Magnesium Acetate (CMA)	-7 C	Low	Moderate/ high	Low	When biodegrades in water, can increase biological oxygen demand & decreases the dissolved oxygen in water
Modified Agricultural By-products (e.g. sugar beet)	-17 to -23 C	Low	Low	Low	
Urea (carbonyl diamide) $CO(NH_2)_2$	-4 C	Low	Low	Excess can burn foliage	Potential for nitrogen loading - increasing plant & algae growth
Traction Aids /Grits (e.g. volcanic material, sand, cat litter)	Traction only. These do not 'melt' ice.	Low	Low	Low	Sand, silt & sediments increase turbidity. Can be Least Harmful if 'cleaned-up' ***

*A single component (e.g. NaCl) may melt ice below its lowest effective working temperature, but to reach this effect, will require repeated application of the product, leading to an increased environmental harm effect. It will also take more than a reasonable time to melt.

**Most harmful when excessive run-off leads to chloride concentrations >120 mg/L. Chloride cannot be practically removed from freshwater aquatic ecosystems.
***Homeowners should clean-up & dispose traction aids away from water run-off paths that enter municipal storm systems. Municipalities should sweep streets in the early spring & maintain catchment basins & oil-grit separators to reduce the amount of silt and sediment entering waterways via municipal storm systems.

References available upon request from the Greater Sudbury Watershed Alliance at gswalliance@gmail.com

To download a digital version of this Decision Aid, go to http://gswa.ca/ or https://www.nepahwinlake.ca/chloride

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Freshwater Ecosystem Effect:	Most Harmful	Harmful	Less Harmful	Least Harmful

Manufacturer/ Brand	Product	Listed Components	Product-claimed Lowest Effective Temperature (LET)# ^{0}C	Relative cost
#NOTE: A product-claimed LET may differ from a single component's lowest effective working temperature (see table on reverse side)				
Sodium Chloride (NaCl or rock salt) Ice Melts NaCl's lowest effective working temperature is -7 ^{0}C . To meet the LET, it will need repeat applications (thus more 'harms') & more time.				
Kissner	Ice Patrol Ice Salt	NaCl	-15#	$
Sable Marco	Ice Salt	NaCl	Not given	$
Sifto	Safe Step Ice Salt	NaCl	-15#	$
Windsor	Safe-T-Salt	NaCl	-15#	$
Mixed Chloride Ice Melts (may include CMA, Corrosion Inhibitors (Cin) and/or Organics) -$CaCl_2$ & $MgCl_2$ can reduce the volume of NaCl required, potentially reducing application rates & releasing less chloride to the environment. -CMA limits the corrosion of metal and has a residual effect, potentially reducing application rates & releasing less chloride to the environment. -Organics include urea, modified agricultural by-products, MCi3, or be non-specified, & may lower the effective temperature of NaCl.				
Alaskan	Liquid Ice Preventer	$CaCl_2$, $MgCl_2$, urea, Cin	-31#	$$$$
Alaskan	Premium Ice Melter	NaCl, $CaCl_2$, urea, grits	-31#	$$
Eco-Forma Inc.	Organic Melt Ultra Strength	NaCl, degraded sugar beets	-30#	$$
Groundworks	Natural Ice Melter	KCl & its by-products	-23#	$$
Home: Ice Mover	Ice Melter & Traction Aid	NaCl, KCl, urea	-18#	$$
Kissner	Landscaper's Choice Ice Melter	NaCl, $MgCl_2$, KCl, CMA	-25#	$$
Meltco Inc.	Premium De-Icer	NaCl, KCl, $MgCl_2$, MCi3, CMA	Not given	$$
North Element	Green Earth Pet Designed	NaCl, $MgCl_2$, organics	-17#	$$
Pestell Pet Prod.	Paw Thaw Ice Melter	NaCl, CMA, dolomite	-18#	$$
Project Source	Ice Melter	NaCl, $CaCl_2$, CMA, $MgCl_2$, KCl	-31#	$$
Scotts	EZ Melt	NaCl, $CaCl_2$, organics	-31#	$$
Sifto	Safe Step Xtreme Ice Melter	NaCl, $CaCl_2.2H_2O$, KCl	-31#	$$
Yardworks	Envirosafe Ice Melter	NaCl, CMA	-26#	$$
Windsor	Ice Melt Fast Acting	NaCl, $CaCl_2$	-31#	$$
Windsor	Ice Melt Safer for Concrete	NaCl, KCl, urea	-15#	$$
Urea Ice Melts				
Alaskan	Pet Friendly Ice Melter	Urea, zeolite (traction aid)	-11#	$$$
Giaia Enterprises	Safe Paw Ice Melter	Modified urea, glycols etc.	-19#	$$$
Windsor	Ice Melt Safer for Pets	Urea, propylene glycol	-12#	$$$
Yardworks	Paw Protect Ice Melter	Urea, proprietary glycols	-12#	$$$
Traction Aids/ Grits*				
CanLava Mining	LavaGrip Anti-Slip Traction Aid	Volcanic materials	For traction at any temperature These do not 'melt' ice *Should be 'cleaned-up' to avoid entry of silt and sediment into storm systems **Added as anti-clumping agent.	$$$
Earth Innovations	ecoTraction Ice Gripper	Volcanic material (zeolite)		$$$
Anti-Skid	Sand	Sand		$
Anti-Skid	Sand & Salt	Sand, 3% NaCl**		$
Sable Marco	Anti-Skid Sand	Sand		$
Sable Marco	Anti-Skid Stone	Calcium carbonate, <1% sand		$

How was this Decision Aid developed? Products were commonly available in-store at major department, grocery, home improvement and pet stores in Sudbury. Components and **Lowest Effective Temperatures** are given as listed on the package, store or brand website, or by a product representative. Product Safety Data Sheets were not always readily retrievable, or may not have listed some or all ingredients, therefore may limit the accuracy and extent of listed components. Price ranges were calculated using an average price of a product's 10 kg bag, or the jug size for specialty products. Ranges were categorized as:

$**: < 60 cents/kg; **$$: >60 cents/kg but < $2.50/kg; **$$$**: >$2.50 /kg but < $5.00/kg; **$$$$** > $5.00/kg

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