

# Webpages for Residential BMPs

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## Document description:

The sections below will be broken into 3 different webpages. The first webpage “Snow and Ice Maintenance Tips for Residents” will be the primary landing page for residential BMPs, with the other two webpages, “Materials to Treat Snow and Ice” and “Temperature Ranges and Terminology for Salts” being two secondary, topical pages nested below “Snow and Ice Maintenance Tips for Residents.” This document contains the content that will ultimately be uploaded to a SaMS webpage at the completion of the SaMS development process.

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## Snow and Ice Maintenance Tips for Residents

### Do you know...

- Salt seeped into the environment can:
  - Raise sodium levels in our drinking water and increase treatment costs.
  - Harm fish, plants and other wildlife.
  - Corrode vehicles, roads, bridges and parking lots.
- Salt can make it safer for us to walk and drive around. It helps keep roads open, and allows businesses, government and social services to stay open with little interruption.
- Since there’s no easy or cheap way to remove salt from our environment, we can all do our part to reduce the amount of salt we use and be #WinterSaltSmart by following the below tips.

## What should you do before a storm?

- Have your shovel or snow blower ready
  - Shovels may be all that you need around NoVA. To make it easier on your back, there are versions with wheels. Remember to take breaks and avoid overloading your shovel with wet snow.
  - For big storms or heavy weight snow, snow blowers can be helpful.
- Gather all the provisions you'll need to stay home for a few days
  - Make sure to stock up on enough food, drinks and medicine (including prescriptions) before the storm.
  - Always make sure to assemble an emergency or [storm preparedness kit](#).
- Have your salt and/or traction materials ready (for more details visit "[Materials to Treat Snow and Ice](#)")
  - Always store your materials indoors and away from rain and snow.



## Choosing the right salt

Below is a table with temperature ranges for some of the more common salts. For more information on these salts and some alternatives, visit "[Materials to Treat Snow and Ice](#)," and for more information on the temperature ranges of the different salts visit "[Temperature Ranges and Terminology for Salts](#)."

Type of Salt	Chemical	Lowest Practical Melting Temperature <sup>1</sup>	Eutectic Temperature <sup>2</sup>
Salts that contain chloride	NaCl (sodium chloride) also called "Rock Salt" <sup>3</sup>	15 F	-6 F
	MgCl <sub>2</sub> (magnesium chloride) <sup>3</sup>	-10 F	-28 F
	CaCl <sub>2</sub> (calcium chloride) <sup>3</sup>	-20 F	-60 F
	KCl (potassium chloride) <sup>4</sup>	25 F	13 F
Salts that do not contain chloride	CMA (calcium magnesium acetate) <sup>3</sup>	20 F	-18 F
	KAc (potassium acetate) <sup>3</sup>	-15 F	-76 F

<sup>1</sup>The temperature that a salt will melt ice in a reasonable amount of time. Also called "Lowest Effective Temperature."

<sup>2</sup>The lowest temperature that a salt can melt ice. This is not a practical temperature to reference (see the warnings below).

<sup>3</sup>Source: [https://stormwater.pca.state.mn.us/index.php?title=Lowest\\_practical\\_melting\\_temperature](https://stormwater.pca.state.mn.us/index.php?title=Lowest_practical_melting_temperature)

<sup>4</sup>Source: <http://www.dot.state.oh.us/Divisions/Operations/Maintenance/SnowandIce/Snow%20and%20Ice%20Best%20Practices/Liquid%20Chemicals%20Presentation.ppt>

## What to look out for when purchasing salt

- Labels like "safe," "pet-safe" and "environmentally friendly" can be used inaccurately on certain products, so be sure to read the ingredients.
- Choose the material based on the "Lowest Practical Melting Temperature" not the "Eutectic Temperature."
  - To understand this better, visit "[Temperature Ranges and Terminology for Salts](#)."
- Materials to avoid: All nitrogen and phosphorus salts are [illegal in Virginia](#).
  - Nitrogen salts include urea, ammonium sulfate and potassium nitrate, etc.
  - Phosphorus salts may have "phosphate" (PO<sub>4</sub>) in the ingredients, although these are rare.

## Can salt be applied before a storm?

- Yes, this is called "anti-icing," because the salt can prevent the snow and ice from bonding to the pavement.
- To anti-ice, salts can be applied as a liquid brine or as a solid (e.g., rock salt).
  - To apply liquid brine, mix a little over two pounds of rock salt into a gallon of water and put it in a sprayer. Apply at one liquid ounce per square yard or nine square feet.
    - *Note: A pound of salt is about equal to a 12-ounce coffee mug.*

- To apply solids, see the information on how much to apply in the section below.
- *Note: For other salts, look for manufacturer application rates and experiment in a small area to find the correct and lowest amount to apply.*

## What to do during and after a storm

- Clear snow by shoveling early and often.
- Make sure to clear snow and apply salt only where it is needed.
- Apply salt *after* clearing snow. Never use salt to “burn off” snow. It will quickly dilute and requires excess use.
  - Salts should be applied as follows:
    - Sodium chloride: a handful per square yard or nine square feet.
      - Aim for about 3 inches between pieces of rock salt

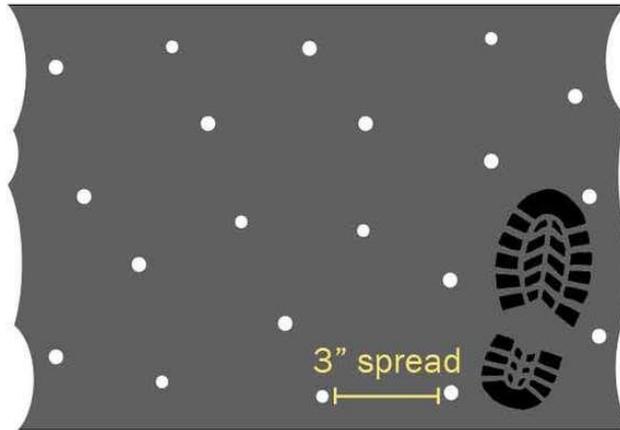


Image Credit: Vadnais Lake Area Water Management Organization

- Calcium chloride: a handful per three square yards or 27 square feet.
- *Note: when applying dry material, it's best to use a hand spreader, like those used for fertilizer.*
- Be patient and give the salt time to work. The colder it is, the longer it will take for the salt to melt what snow or ice remains after shoveling.
- If the sun comes out and you can wait, let the sun do some of the work before you apply salt.
- If it is too cold for your salt to work, or you'd rather not use salt, use traction materials instead. These include, sand, bird seed (make sure to use a native blend) and zeolite crystals (like EcoTraction™).
- After the storm, sweep up the extra salt or traction material and use it again next time.

## Materials to Treat Snow and Ice

### Types of materials

- **Salts** – Materials that melt ice or prevent snow and ice from sticking to a surface, like a driveway.
- **Homemade alternatives to salt** – These materials can work similarly to store bought salts, but can have less of an impact on the environment. Plus, they can be made from supplies you may have around your home.
- **Traction materials** – Substances spread on top of snow and ice to provide better traction. Depending on your circumstances, these can be used anytime instead of salts or their alternatives.

### I. Salts

- Salts dissolve in water and lower the freezing temperature, so snow and ice cannot form. Different salts are effective at different temperatures and the amount needed varies a lot. For information on the temperature

ranges of different salts, visit "[Temperature Ranges and Terminology for Salts](#)," and for salt application rates, see "[Snow and Ice Maintenance Tips for Residents](#)."

- Types of salts used to melt or prevent snow and ice from sticking to a surface include:
  - Salts that contain chloride
    - Rock salt, also known as sodium chloride (NaCl)
    - Magnesium chloride (MgCl<sub>2</sub>)
    - Calcium chloride (CaCl<sub>2</sub>)
    - Potassium chloride (KCl)
  - Salts that do not contain chloride and have less of an impact on the environment
    - Calcium magnesium acetate (CMA)
    - Potassium acetate (KA)

## II. Homemade alternatives to salt

- Rubbing alcohol
  - In a bucket, combine half a gallon of hot water and one-quarter cup of rubbing alcohol. Once you pour the mixture onto your sidewalk or driveway, the snow and ice will begin to melt. Just keep a shovel handy to scrape away any leftover ice.
- Wood ash
  - Contains potash or potassium salts, which work like the salts described above. If you already own a fireplace or wood stove, this option has the added benefit of being free. Plus, wood ash also provides great traction.
- *Note: For homemade alternatives to salt, the correct amount to apply will change with each storm and the concentration of your material. You should experiment in a small area to find the correct measurements.*

## III. Materials for traction

- Sand
- Bird Seed (make sure to use a native blend)
- Wood ash
  - Wood ash not only contains potash or potassium salts, but it also provides great traction!
- Zeolite crystals for traction and moisture absorption
  - Like products that contain EcoTraction™
- *Note: The amount necessary to provide traction will change with each storm. You should experiment in a small area to find the correct measurements.*

## [Temperature Ranges and Terminology for Salts](#)

Salts dissolve in water and lower the freezing temperature, so snow and ice cannot form. Different salts are effective at different temperatures and the amount needed varies greatly. For more information on the different salts, visit "[Materials to Treat Snow and Ice](#)."

### Terms Used to Describe Salt Temperatures

Below are the two most important phrases used to describe temperature ranges:

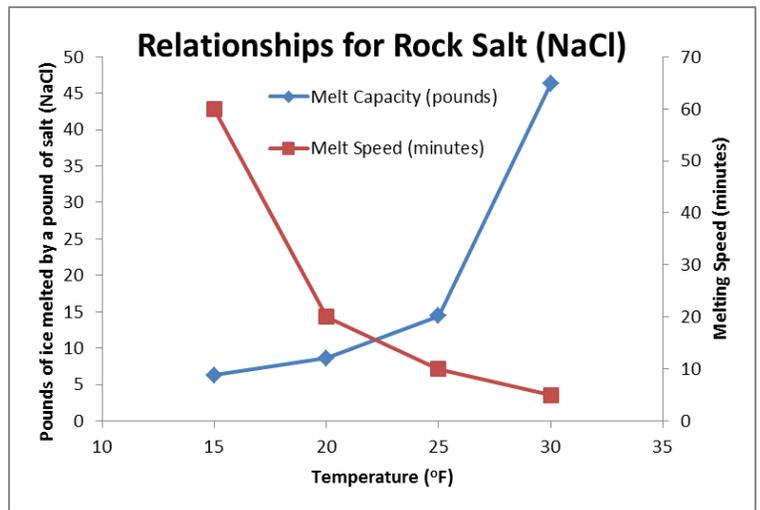
- **"Lowest Practical Melting Temperature" or "Lowest Effective Temperature"**
  - The temperature that a salt will melt ice in a reasonable amount of time. The melting rate slows down tremendously below this temperature until the "Eutectic Temperature" is met.

- Note: Different manufacturers and organizations may list different temperatures for the same salt.

- **“Eutectic Temperature”**

- The lowest temperature that a salt can melt ice.

To help explain the concept of a “Lowest Practical Melting Temperature” or “Lowest Effective Temperature” the graph on the right shows how the melting speed and capacity (or the amount of ice the salt can melt) reach a point where the salt will not be very “effective.” We put “effective” in quotation marks because that is a judgement call. For most homeowners rock salt may still be effective at 15 F.



### Temperature Ranges for Salts

Below is a table with temperature ranges for some of the more common salts:

Type of Salt	Chemical	Lowest Practical Melting Temperature	Eutectic Temperature
Salts that contain chloride	NaCl (sodium chloride) also called “rock salt” <sup>1</sup>	15 F	-6 F
	MgCl <sub>2</sub> (Magnesium Chloride) <sup>1</sup>	-10 F	-28 F
	CaCl <sub>2</sub> (Calcium Chloride) <sup>1</sup>	-20 F	-60 F
	KCl (Potassium Chloride) <sup>2</sup>	25 F	13 F
Salts that do not contain chloride	CMA (Calcium Magnesium Acetate) <sup>1</sup>	20 F	-18 F
	KAc (Potassium Acetate) <sup>1</sup>	-15 F	-76 F

<sup>1</sup>Source: [https://stormwater.pca.state.mn.us/index.php?title=Lowest\\_practical\\_melting\\_temperature](https://stormwater.pca.state.mn.us/index.php?title=Lowest_practical_melting_temperature)

<sup>2</sup>Source: <http://www.dot.state.oh.us/Divisions/Operations/Maintenance/SnowandIce/Snow%20and%20Ice%20Best%20Practices/Liquid%20Chemicals%20Presentation.ppt>