

### A HOW ROAD TREATMENTS DIFFER

- **Pre-treatment:** A form of anti-icing where chemicals are applied to dry pavement up to 48 hours before a winter storm. This prevents a bond from forming between the pavement and the snow and ice after the storm starts.
- **Anti-icing:** Application of chemicals to roads before a snow-pavement bond occurs when the temperature drops. Anti-icing emphasizes prevention.
- **De-icing:** The practice of removing snow or ice once it has bonded to the pavement. This involves plowing and continual application of chemicals and abrasives. Plowing generally begins when an inch or more of snow has accumulated on the road.

### CHEMICALS AND METHODS USED TO TREAT ROADS IN WINTER

Sodium chloride (salt), magnesium chloride, calcium chloride, calcium magnesium acetate and potassium acetate are chemicals used to prevent and remove snow and ice accumulation from roadways.

The Virginia Department of Transportation (VDOT) uses liquid magnesium chloride, calcium chloride and sodium chloride for anti-icing and pre-treatment.

Sodium chloride and calcium chloride in dry form are used for de-icing but can be used in some cases for anti-icing.

#### **Sodium Chloride (salt):**

Dry sodium chloride is VDOT's primary snow-removal and ice-control chemical. It is applied directly to the pavement once a storm starts. Salt is sometimes mixed with sand before it is applied to the road.

Dry salt is most effective after snow has accumulated about an inch and the temperature is 27 degrees or higher. If the temperature is below 27 degrees, salt may not melt enough snow and ice to form a barrier between the pavement and the snow, and it could even produce more ice as melted snow refreezes. At these temperatures, abrasives such as sand are put down to break up ice and increase traction. Liquid sodium chloride (brine) is an economical anti-icing and pre-treatment chemical.

#### **Magnesium Chloride and Calcium Chloride:**

These products can melt ice at lower temperatures than salt. Both chemicals in liquid form can be used for anti-icing. In its dry form, calcium chloride is used only as a de-icer.

#### **Abrasives:**

Small gravel or sand cannot melt ice or snow, but are often mixed with salt to provide additional traction and reduce the cost of applying chemicals.

Abrasives can be used on roads generally not treated with chemicals. De-icing chemicals, such as salt and calcium chloride, are detrimental to gravel-surfaced and surface-treated roads (those pavements with a salt-and-pepper appearance). Chemicals are used sparingly on these types of roads and only when absolutely necessary.

### ANTI-ICING

VDOT may use anti-icing in dry conditions when snow or an ice storm is predicted and when pavement temperatures are above 20 degrees. Anticipated temperature and type of precipitation at the start of a storm will determine its use.

VDOT's anti-icing program covers at least 200 miles of roads in each of its nine districts. VDOT also deploys anti-icing crews to major bridges, overpasses and areas prone to freezing to keep ice from forming.

If you see an anti-icing crew spraying chemicals on the road, slow down. For proper application, crews will be driving slower than highway speeds. Do not follow the trucks too closely, as the chemicals are slightly slippery for the first 30 to 45 seconds they are on the pavement. If you must pass an anti-icing truck, do so carefully.

It is a good idea to wash your vehicle if it comes into contact with these chemicals to protect its finish.

### AREAS PRONE TO ICE

Ice can form on the decks of bridges and overpasses before a roadway freezes because air circulates both above and below the surface, causing the deck's temperature to drop more rapidly. Ice also can form in shaded areas. Motorists should always use caution and expect slippery conditions when driving during winter weather.

### BLACK ICE

Black ice, also known as "glare ice" or "clear ice," refers to a thin coating of glazed ice on road. While not truly black, it is transparent, allowing you to see the asphalt pavement through it. Black ice often occurs along with wet roads, making it hard to see and especially hazardous for driving or walking.