

# HOW DE-ICERS WORK

## THE BASICS

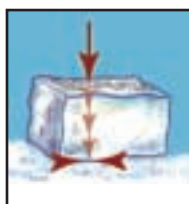
### HOT TIP



The key to effective melting begins by choosing the right product to use. Since it is necessary for dry-applied products to form a brine before melting occurs, be sure to pay particular attention to whether your de-icer is capable of forming a brine at the temperature applied and the rate used will provide an adequate brine concentration.

Of the snow and ice melter products available, nearly all are derived from seven or eight materials or blends of these components. Generally, all de-icing materials work much in the same way: they must first attract sufficient moisture to form a liquid brine. This solution then lowers the freezing point of water thus melting ice and snow.

Under normal conditions, de-icers begin by breaking the hydrogen bond that forms when water freezes. They then dissolve their way downward through the ice or snow until they reach the pavement. Once there, the accumulating brine undermines the ice to break its bond from the pavement. When loose, the ice or snow is easily removed.



- 1 Application is made to ice surfaces.
- 2 De-icer begins to absorb moisture and form brine.
- 3 Brine continues to bore through the ice.
- 4 Solution penetrates through the ice to pavement.
- 5 Brine fans out on pavement undermining bonded ice.



The ability for de-icers to remain effective depends on the concentration of the brine solution.

Basically, the greater the concentration, the better the performance in melting more snow and ice at lower temperatures. Some products (like calcium chloride) are greatly affected by the dilution of the brine once the melting process begins, becoming more prone to refreeze at higher temperatures. For example, at a brine concentration of 10%, a product may be effective to  $-2^{\circ}$  F. As it dilutes to 5%, it may refreeze at  $+18^{\circ}$  F. This is why a product may melt very quickly at first then slow down, or completely stop, as its brine concentration decreases.