Pour on performance,

profits with de-icing salt

by ROBERT GUY / Highway Field Sales Manager, Akzo Nobel Salt

It's that time of year again. September not only marks the children's return to school, but also signals the time to begin planning for the business that occupies the winter months: de-icing.

An understanding of how the various de-icing products work, coupled with knowledge of proper application techniques, will provide for safe stepping in winter, a green landscape in spring—and satisfied customers all year round.

The four halide salts used as de-icers are:

- magnesium chloride,
- calcium chloride,
- sodium chloride ("salt") and
- potassium chloride ("potash").

They all have the same chemical-melting capacity. (If you took a pound of each, and kept pouring ice on them until they stopped melting the ice, they'd all melt about the same amount.) The differences are in the melting rates, which are related to the chemical activity of the individual products.

Magnesium chloride provides a very fast melting action and a high penetration rate. However, the melting action does not last very long. Magnesium chloride is so active that it will drain moisture from the air until it dilutes itself so much that the water will freeze again.

Calcium chloride has a somewhat faster melting action compared to sodium chloride. It, too, however, draws moisture from the air in a manner similar to magnesium chloride, but at a lesser rate.

Sodium chloride provides a long-lasting melting action as a result of the product's chemistry and mixture of fine and coarse crystals.

Potassium chloride's melting action is quite slow and therefore not the best choice for de-icing.

Which is best?

Salt (sodium chloride) is the most common melter used today. While other melters have different performance characteristics, salt melts the most ice and snow per dollar. A cost comparison of the four de-icing products reveals that potassim, calcium and magnesium chlorides are 4, 7 and 14 times costlier, respectively, than sodium chloride.

Salt is used as a de-icer because it lowers the freezing point of water. The melting action of salt forms a brine layer below the surface of the snowpack. The brine layer prevents water from bonding to the pavement or walkway.

How much?

The amount of de-icer needed to achieve a desired

Tip #5:

Install salt-tolerant plants around the edges of landscapes where you plan to be spreading de-icing materials.

pavement condition is a function of temperature and weather conditions.

When the temperature drops, two things happen to the ability of any de-icing product to melt ice and snow:

1) the total amount of ice a de-icer can melt decreases as the temperature falls, and

2) the speed at which the de-icer melts also decreases, resulting in a longer period of time required to melt the same amount of ice per pound of de-icer applied.

The keys to the effective use of any de-icer, including salt, are to apply the proper amount based on the weather conditions and to allow sufficient time for the melter to work. This is particularly important at lower temperatures.

The effective temperature range for many common melters is often a point of discussion among snow-fighting professionals. Frequently, a set temperature is given for each di-icer; however, most de-icers continue to work well in the low-temperature range. Allowing adequate working time—usually 20 to 30 minutes—for the de-icer to perform can significantly reduce the amount of melter used overall. Pouring the salt on, five applications five minutes apart, is very wasteful and very expensive.

Another salt application procedure in the experimental stages is "pre-salting." The idea behind pre-salting is to apply de-icing salt to the surface area prior to the winter storm. An application of de-icing salt 20 minutes before a snowfall delays the initial application of salt during the snowfall and can ultimately eliminate the final application of salt, thereby reducing product and labor costs.

Akzo Nobel has 95 depots across the country. It also offers valuable information on salt storage, application and estimation through a serives of seminars. For more information, phone toll-free (800) 752-SALT.

Application tips

Different conditions call for different approaches to de-icing salt applications. Salt industry manufactuers, working with snow-fighting professionals, have formulated the following guidelines for various weather conditions.

Temperature: near 30° F.

Snow and sleet: Apply .40 lb. of de-icing salt per 100 sq. ft. surface area. If snow accumulates, plow and salt at the same time.

Freezing rain: Apply 0.20 lb. per sq. ft. of surface area.

Temperature: below 30° F.

Snow and sleet, surface starting to get slushy: Apply 0.25 to 0.67 lb. of de-icing salt per 100 sq. ft. surface area. If snowfall builds up, plow and repeat de-icing procedure.

Snow turning to freezing rain: Apply 0.25 to 0.30 lb. per sq. ft. of surface area.

Temperature: below 20° F.

Dry snow: Plow only; wait to apply salt. Apply de-icer to wet or icy areas.

Snow and sleet, wet road surface: Apply 0.45 to 0.67 lb. per sq. ft. of surface area. If snow or sleet accumulates, plow and salt simultaneously. If temperatures rise, reduce salt amount to 0.45 lb. per 100 sq. ft. of surface area. Allow salt to act before plowing.

Temperature: below 10° F.

Snow, sleet, with packed snow or ice: Apply 0.67 lb. of de-icing salt per 100 sq. ft. of surface area. When snow or ice turns to slush, start plowing. Continue applying salt and plowing until you have safe surface.

SALT-TOLERANT SPECIES

Plant type	Excellent	Good
Cool-season turf	tall fescue creeping bent	perennial rye colonial bent
Deciduous trees	Norway maple horsechestnut tree of heaven honeylocust cottonwood black locust	shagbark hickory Russian olive white ash largetooth aspen Lombardy poplar trembling aspen choke cherry pear mountain ash red oak
Deciduous shrubs	Siberian peashrub sea buckthorn staghorn sumac	burning bush honeysuckle Japanese tree lilac common lilac
Conifers	blue spruce jack pine mugo pine Austrian pine	red cedar juniper