

ODOT Highway Division

Frequently Asked Questions

ODOT Use of Solid Sodium Chloride

Since 2012 ODOT has been conducting a pilot in two locations (I-5 at Siskiyou and US 95 between Nevada and Idaho) to learn how to integrate the use of salt into our normal use of snowplows, sand and deicers. The pilot is focused on how to minimize the use of salt and to find the specific situations where it has the greatest benefit. As we enter the fifth year of the study, we are looking to expand the study in two ways. One will be to include more of the interstate highways in southern and eastern Oregon that routinely receive snow. The other aspect will be to evaluate how it can effectively be used in areas that receive snow much more infrequently, but where salt is needed in situations in which liquid deicers aren't adequate to meet management objectives and where the limited and targeted use of salt in a specific location could benefit safety and mobility. In this phase of the study we will refine the spot locations, types of storms and the benefit we see to the rest of the system in order to determine when and where to use salt.

It is important to know that ODOT does not foresee widespread use of salt or even using salt in every storm. We still need drivers to be prepared for winter conditions and take precautionary measures when snow is in the forecast. The amount of salt we foresee using will be within recommended best practices based on national research. Storage facilities will fully contain the material to minimize waste and runoff and protect the integrity of the product.

As we slowly step into integrating salt into our tools to fight snow and ice, we continue to work to find the right balance for safety and mobility versus cost and impact to the environment, infrastructure and vehicles.

How does ODOT typically manage winter weather?

ODOT uses several tools to clear roads during winter. Those tools include:

- Plowing
- Sanding
- Applying liquid deicer (magnesium chloride)
- Applying salt (in two limited locations as a pilot project)

Plows represent the real workhorse of winter maintenance. They work continuously to remove snow and ice from the pavement. In order to improve plowing effectiveness, deicer can be applied before and during a storm to prevent the bonding of snow and ice to the pavement. When snow and ice is not bonded to the pavement, it can be more easily plowed off by plow trucks.

Why doesn't ODOT use solid deicers instead of liquid?

Historically, sodium chloride (solid or liquid brine) has not been embraced in Oregon due to concerns regarding corrosion to vehicles and infrastructure, and the potential

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negative effects to the environment. When ODOT started a deicing program, corrosion inhibited liquid magnesium chloride was selected for its broader effective temperature range, lower application rate, and less risk to the environment, compared to sodium chloride brine or solid. The liquid magnesium chloride works well in most situations.

For many situations, especially west of the Cascades, corrosion inhibited liquid deicer works well, with the help of snow plows, to keep roads clear of snow and ice or to return snow and ice packed roads to clear sooner after a storm. Liquids are typically used proactively (called anti-icing) to prevent the bonding of snow and ice to the pavement, to allow the plows to do their job. Liquid deicers are less concentrated than solid so result in fewer chlorides per application.

Other snow states use solid deicer (typically salt) as their main deicer; these states are increasing their use of liquid deicers in an effort to reduce salt applications. ODOT has not embraced salt use in the past due to risk of environmental and infrastructure damage—much of which has been reported from Midwest and East Coast states. Recent research has shown that salt can be effective in much smaller quantities than those historically used in the Midwest and East Coast locations.

How will ODOT ensure environmental protection from salt damage?

ODOT follows nationwide best practices for the storage and application of salt to minimize its use and keep it on the pavement where it needs to work. Storage sheds are built to contain the material to prevent it from co-mingling with storm water and running off site, and to prevent it from being windblown. Sheds are built with four sides and a door for access. They are built large enough to load/unload under cover and to store salt application equipment inside.

Application rates range from 100-400 pounds per lane mile, depending on pavement, weather, and forecasted conditions and treatment objectives. Specialized equipment is needed in order to accurately apply these low rates. States that have been applying salt for decades have learned that salt can be effective at much lower application rates than have historically been applied in the Midwest and East Coast. These states are also learning that proactive use of anti-icing using liquids dramatically reduces the amount of chlorides applied and reduces the amount of solid needed compared to when just a solid is used.

ODOT is using these lessons learned to apply the minimum amount necessary and to protect salt in storage.

Tell me more about the ODOT 'pilot' project and its future?

ODOT is in year 5 of a 5 year pilot where salt is being tested on stretches of Interstate 5 near California (MP 0-11) and US-95 between Idaho and Nevada (121 miles). The pilot project so far has shown that having and using salt during extreme conditions has

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reduced the number of highway closures and chain restrictions, thus better maintaining mobility. ODOT also identified elevated chloride levels in streams on the Siskiyou pass on I-5, indicating that our practices are having an impact.

ODOT is currently evaluating expanding the salt pilot beyond the two current locations. Part of that effort includes considering how to get salt and use it in infrequent yet extreme events when the use of a solid deicer would significantly benefit pavement conditions compared to liquid. ODOT is drawing up criteria that will be used to determine whether liquid or solid deicer would be appropriate based on various parameters.