



Liquid deicers are passed through a #10 sieve to check for the presence of solids as part of Clear Roads' rigorous chemical testing.

Taking the guesswork out of deicer selection

Every product on the Clear Roads Qualified Products List has been independently tested and verified, giving transportation agencies a boost in making safe, effective, and environmentally protective choices.

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The 2016-17 winter season was a turning point for the city of Portland, Oregon. Typically, the city gets a manageable one to two inches of snowfall between December and February. But that year, Portland was hit hard with several back-to-back storms that each dropped measurable snow, including a January event that left more than 16 inches in a 24-hour period.

It was a three-month stretch that became known—and is still referred to—as "Snowpocalypse." Vehicles were abandoned on impassable roads, the city's public schools shut down for nine days, and Portland's leaders felt immense and unprecedented political pressure to change how the city responds to winter storms.

It was the season that convinced the city to use salt on its roads.

“It was monumental,” says Corey Maciulewicz, who had just started his job as emergency manager for the city’s transportation agency. “Before that season, we had only used a liquid deicer because it was thought to be less corrosive and safer for the environment. But after that, there was immediate support for a switch.”

To begin the search for a suitable product, Maciulewicz and the Portland Bureau of Transportation consulted the Pacific Northwest Snowfighters (PNS), a collective of state departments of transportation (DOTs) that were known for maintaining a list of deicing products for its members.

After experimenting with different options from the list, Portland applied a solid salt product to the city’s roads for the first time the following season with great results.

“And since then, we have only purchased products that are on that list,” Maciulewicz says.

Strength in numbers

The PNS established the Qualified Products List (QPL) nearly 30 years ago to document the products that its member states had reviewed, tested, and qualified. When the organization was restructured in 2018, the Clear Roads Pooled Fund (a winter maintenance consortium) stepped up to manage the list, which has since grown to include more than 100 different deicers and winter chemicals.

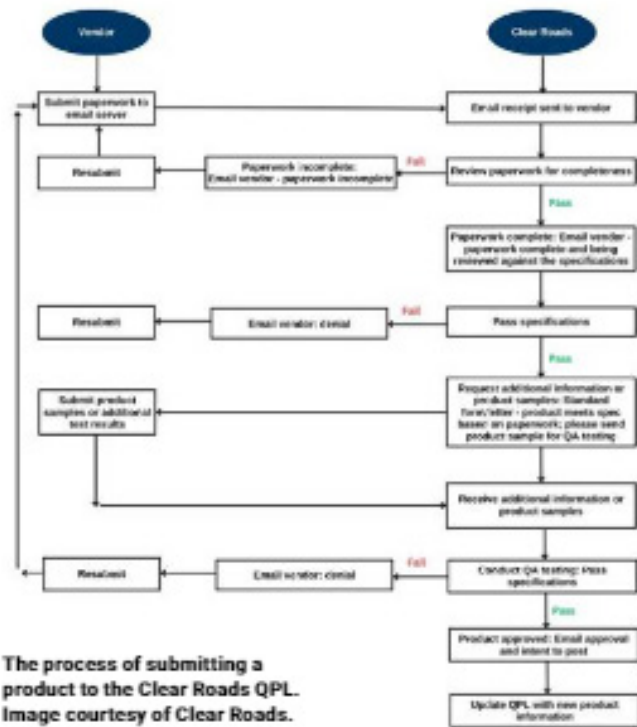
While many state DOTs maintain their own list of qualified products that staff can use, smaller transportation agencies often don’t have the resources to vet specific products themselves. The QPL can serve to level the playing field, says Patti Caswell, Maintenance Environmental Manager for Oregon DOT and chair of Clear Roads’ QPL subcommittee.

“The list is highly regarded,” she says. “It’s an invaluable asset to state and local maintenance managers as they decide which deicing materials to use for snow and ice removal.”

Products are listed on the QPL in 16 categories, with additional subcategories for gradation, moisture, and insolubility as needed. With multiple products of each deicer type, an agency has more flexibility to distinguish between reputable vendors to find a product that works for the agency’s particular needs and budget. As an added benefit, Clear Roads also provides suggested language to guide all agencies in making a product purchase.

“There is power in working together,” says Doug McBroom of Montana DOT, who also serves on the Clear Roads subcommittee. “If every agency uses the QPL, manufacturers know what requirements they have to meet and it makes the entire process—from procurement to quality assurance—easier and less expensive for everyone.”

Clear Roads QPL Submittal Process



The process of submitting a product to the Clear Roads QPL. Image courtesy of Clear Roads.

Getting on the list

In the five years since it assumed management of the QPL list, Clear Roads has worked to ensure that product testing and administration have largely remained the same. A few modern improvements, such as a new online submission form (<https://clearroads.org/qpl-submission-form/>) unveiled this summer, have helped to streamline processes behind the scenes.

“Before, vendors had to mail or fax their documents,” Caswell says. “Now it’s all electronic, which makes it easier to submit and track everything.”

The biggest change to the QPL, however, may simply be its increased exposure. Backed by its 39 member states, Clear Roads has helped to propel the list—and the benefits it can provide—far beyond its origins in the Pacific Northwest.

With demand on a national scale, vendors are more incentivized to develop products that meet Clear Roads members’ priorities of safety, environmental preservation, cost-effectiveness, and performance.

Getting a product added to the list is a straightforward process. Vendors must first submit documentation that includes a product information sheet, laboratory test results, safety data sheet, and proprietary information if applicable. After

verifying the completeness of the submission and reviewing the test results, Clear Roads requests samples for quality assurance testing. To ensure the integrity of the list, the organization may also perform random testing of products already approved.

While only three to five new products are submitted by vendors each year, an expiration date on every listing in the QPL ensures that the listing is periodically reviewed and updated.

Jasmine Dondlinger, Nebraska DOT's Highway Chemical Tests Manager, works closely with Clear Roads to perform tests on liquid and solid products for the QPL.

"A product on the list means it meets our high standards," she says. "It's a really valuable resource for agencies unable to perform testing on their own."

An evolving tool

With Clear Roads at the helm, research that explores new avenues to expand the QPL and increase its value is to be expected. Two new projects, one that will investigate the viability of non-chloride deicers and another to define pH values, are currently in the works.

"The QPL is a living document," Caswell says. "Clear Roads is constantly striving to make it the best it can be and benefit as many agencies as possible."

The product we buy this year will be listed on the Clear Roads QPL, and we will get it at a fair price.

As a typical winter season only brings a few inches of snow to the Portland area, Maciulewicz and his agency have traditionally piggybacked off the state's existing salt contract. But this year, it will develop its own road salt contracts directly with QPL-listed vendors for the first time.

"We don't know yet what product we'll end up buying," he says, "But we do already know two things: It will be listed on the Clear Roads QPL, and we will get it at a fair price," he says.



Steel coupons after exposure to product samples in Nebraska DOT's laboratory for corrosion testing.

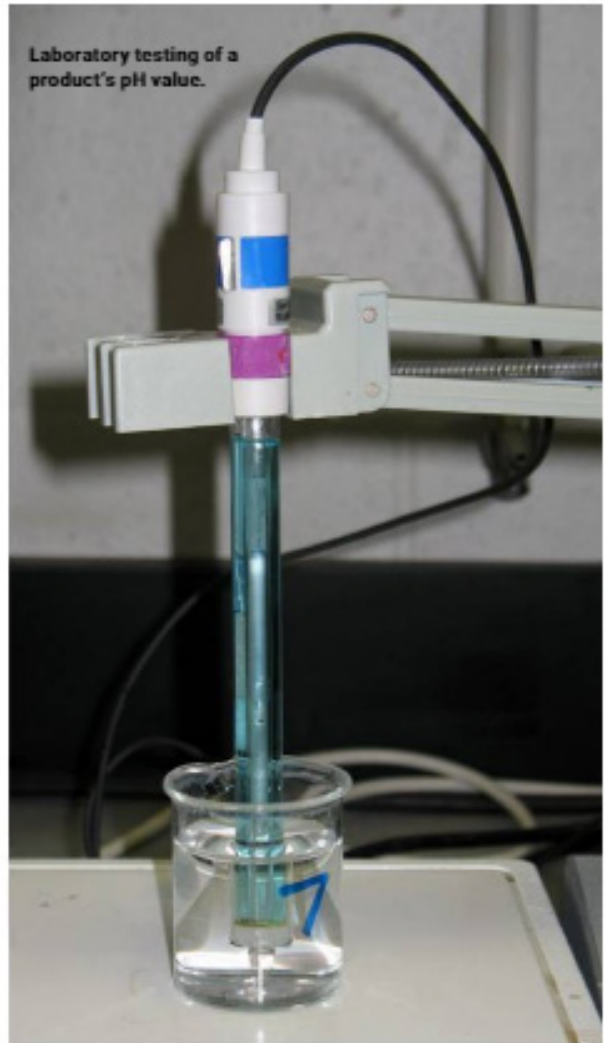
| Test | Specified Limits | Method Name |
|--|--------------------------------|----------------|
| Corrosion Rate (corrosion inhibited products only) | ≥ 70% less corrosive than NaCl | Test Method 5 |
| Phosphorous | ≤ 2500. ppm | Test Method 7 |
| Cyanide ¹ | ≤ 0.20 ppm | Test Method 8 |
| Arsenic | ≤ 5.0 ppm | Test Method 9 |
| Barium | ≤ 100.0 ppm | Test Method 9 |
| Cadmium | ≤ 0.20 ppm | Test Method 9 |
| Chromium | ≤ 1.0 ppm | Test Method 9 |
| Copper | ≤ 1.0 ppm | Test Method 9 |
| Lead | ≤ 1.0 ppm | Test Method 9 |
| Selenium | ≤ 5.0 ppm | Test Method 9 |
| Zinc | ≤ 10.00 ppm | Test Method 9 |
| Mercury | ≤ 0.05 ppm | Test Method 10 |
| pH | varies | Test Method 4 |

¹Salt for highway use is usually treated with either Ferric Ferrocyanide, also known as Prussian Blue, or Sodium Ferrocyanide, also known as Yellow Prussiate of Soda (YPS), to prevent the salt from caking. The amount of Prussian Blue added is 70 to 165 parts per million (ppm), equivalent to 0.33 to 1.14 pounds per ton of salt. YPS is added in the amount of 50 to 250 ppm, equivalent to 0.1 to 0.5 pounds per ton of salt. YPS is also used as an anti-caking agent in table salt and has approval of the U.S. Food and Drug Administration. Based on exhaustive testing no evidence of toxicity was demonstrated. If used, the presence of these products will not be assessed towards the total cyanide concentration when testing this product. However, the total cyanide concentration of the original material must meet specifications

Clear Roads requires products on the QPL to have chemical specifications within the limits in this table. Image courtesy of Clear Roads.

Learn more about the resources and research discussed in this article:

- Clear Roads Qualified Product List: <https://clearroads.org/qualified-product-list/>.
- Efficacy, Cost, and Impacts of Non-Chloride Deicers: <https://clearroads.org/project/21-03/>



Laboratory testing of a product's pH value.



- pH Waiver for Deicing Products and the Qualified Products List: <https://clearroads.org/project/22-06/>

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