

Transport Topics **Online**

Updated: 12/5/2011 4:30:00 AM

Harsh Road Chemicals Clear Ice and Snow, But Increase Wheel Corrosion, Experts Say

By Stephenie Overman, Special to Transport Topics

This story appears in the Dec. 5 print edition of Transport Topics.

The life expectancy of heavy-duty truck wheels depends primarily on where a truck runs, with regions where roads are subjected to chemicals that are used to reduce ice and snow creating the biggest problems, according to experts.

Ryder System Inc. is “definitely seeing corrosion of wheels and other components in areas where they are using magnesium and other chlorides,” said Scott Perry, vice president of supply management for the company’s fleet management solutions division. “As they moved away from salt to more advanced chemicals, there’s been more adhesions to vehicles” — and more damage.

Ryder, Miami, has about 165,000 vehicles at 850 locations in the United States and Canada.

“Our fleet is in all areas — the good and the bad,” Perry said, referring to weather conditions. In some places, a new wheel might last 10 years, while “in areas where [chemicals] are used heavily for snow and ice, it could be as short as three years,” Perry said.

Colorado was “the canary in the mine” that alerted the trucking industry to the dangers of these chemicals, said Robert Braswell, technical director of American Trucking Associations’ Technology & Maintenance Council. The state was an early adopter of aggressive de-icers such as magnesium chloride to clear roads. Since the late 1990s, the battle against icy roadways has translated into an industrywide attempt to find ways to protect wheels and prolong their lives, Braswell said.

However, Steve Nolan, maintenance supervisor at Alaska West Express Inc., Anchorage, Alaska, said his company is not worried about wheel corrosion. The carrier — a unit of Lynden Inc., which ranks No. 32 on the Transport Topics Top 100 list of the largest U.S. and Canadian for-hire carriers — uses aluminum wheels on its 85 power units and steel wheels on its trailers.

“Wheel maintenance is not an issue for us,” Nolan said. “Sure, they get corroded and unsightly, but they work. I cannot remember [the last time] we pulled a wheel because of corrosion.”

Nolan said that AWE does not have its wheels refurbished. Instead, the carrier replaces them.

“If we were to replace a wheel, it would be due to cracking,” he said, adding that approximately 12 aluminum wheels and six steel wheels are replaced a year.

Nolan also said that summer causes more damage to the carrier’s wheels than winter.

“Very seldom do they put anything on the road to combat snow and icing,” said Nolan, who works out of the

carrier's main terminal in Fairbanks. "Normally, when it's cold, the roads become sticky because [as] the tires warm up [from the rotation], they make the road sticky, and you get pretty good traction."

What's more, he said, "In the winter, we prefer snow on the roads, and they actually pour water on them" in order to keep the roads — which are made of dirt and gravel — smoother.

In the summer, Alaskan roads are covered with calcium chloride for dust control, Nolan said.

"Our corrosion [problem] is because of the gravel, which will chip the powder coating off the wheels, he said, adding that the Dalton Highway — a primary trucking route — is half gravel in the summer.

But aside from Alaska's peculiarities, manufacturers echoed the belief that winter de-icing solutions are responsible for the bulk of corrosion problems.

Dale Overton, who is manager of corporate product integrity for the wheels business unit of parts supplier Accuride Corp., Evansville, Ind., said the life of an original wheel depends upon location. Accuride's products include commercial vehicle wheels, wheel-end components and assemblies.

"I saw a 28-year-old wheel in Jacksonville [Fla.]. I saw one on a snow plow in South Dakota [that lasted only a year. So concern about corrosion] doesn't apply to all wheel customers," said Overton, who is based in Henderson, Ky.

He also said, "All wheels aren't created equal. Different manufacturers [provide] different levels of [protective] coating."

Ryder's Perry said wheel manufacturers are testing a variety of products to fight the chemicals.

"We've been involved in special factory-finished pretreatments to help combat corrosion. We're seeing good success," he said, adding that, for proprietary reasons, he could not identify which manufacturers were working with Ryder.

Perry did say, however, that Ryder also has tested various types of vehicle washes in an attempt to remove the chemicals.

"A lot of work is being done with different washes, soaps and detergents that are supposed to help," he said, but so far, "We've not seen definitive evidence that we have a solution that could be used in any market."

Once the chemicals have penetrated the finish of an original factory-produced wheel, the wheel needs to be shot blasted and repainted. However, the chemicals take their toll on these refinished wheels as well.

Perry said Ryder's refinished wheels used to last about five years. Now, he said, a refinished wheel that uses a zinc pretreatment lasts about two years and a wheel without the pretreatment may only last a year.

Most refinishing processes shot blast the wheel, then apply a powder coat to finish, Overton explained.

Surface preparation matters too.

Refinished wheels also "need more paint to make them look pretty," said Asa Sharp, an engineer, consultant and transportation industry veteran. But "too much paint causes all sorts of problems."

For example, if the paint film is too thick, it affects the lugs and "there's a risk of the wheel coming off," he said.

Wheels refinished in the aftermarket "are never as good as the original," Sharp said. "New wheels have a multistage process to protect the bare steel from the elements."

He said a few places have set up a longer, more expensive refinishing process that includes a primer under the powder coat.

Wheel refinishing is done by retread processing facilities or by the truck tire centers of major tire manufacturers, Sharp said.