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The Testing Issue

While there's plenty of anecdotal evidence that these new anti-icing agents cause more corrosion than regular road salt, scientific evidence is harder to come by, and often contradictory.

That's because the standard test that has long been used to evaluate how well things stand up to road salt doesn't reflect today's real-world conditions.

The ASTM B117 test puts parts in a salt-spray cabinet where they are continuously wet. Yet in the real world, parts are exposed to wet-and-dry cycles. Other differences include the temperature changes that occur in the real world, and the fact that in the real world, vehicles are exposed to salts other than the basic sodium chloride used in the ASTM test.

Some coating and treatment processes performed well in the ASTM salt fog test, but were a disaster when put into the field -- and vice versa. Some materials have done poorly in the ASTM test yet performed well in the real world.

One test that many believe is superior is SAE J2334, "Cosmetic Corrosion Lab Test," which was developed by a consortium whose membership includes U.S. automakers and major steel producers. This test includes a humid stage at 100% humidity, a salt application stage, and a "dry stage" at 50% humidity. Researchers compared the lab test with real-world effects on trucks run for five years and found that 80 cycles of the SAE J2334 test corresponded to five years of on-vehicle testing.

A 2002 paper published by the Colorado Department of Transportation and the University of Colorado illustrated the problems with corrosion testing. The study sought to compare the corrosion effects of magnesium chloride and sodium chloride on automobile components.

When they used the SAE J2334 test, it showed that magnesium chloride was more corrosive than sodium chloride. But the results of the ASTM B117 test showed the opposite - that the magnesium chloride was less corrosive.

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