SOLANUM, LLC

On-Site Machinery Service
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ETN 254001 B: Corrosion Prevention System Overview

Why act to prevent corrosion?

NJDOT is increasingly using brine de-icers which, by design, are clingy and difficult to remove. These chemicals (usually a mixture of calcium chloride and magnesium chloride) creep into the crevices, lap joints, and fastener threads of the vehicle underbody, causing extensive damage over time. While corrosion rates may have been acceptable in light of historical vehicle costs and the use of solid sodium chloride de-icers, many vehicle owners are concluding that current vehicle costs and increased corrosion rates warrant some action to reduce or prevent corrosion.

What can be done?

A good barrier to keep metal components separated from air, water, and de-icers is the best frontline defense. Paint and other coatings which fully cure, while aesthetically pleasing, do little to prevent corrosion, as they lack self-healing capability. A liquid or semi-liquid coating works well.

The other action we recommend is washing the vehicle every 3-5 days after contact with salt. This is particularly important when air temperatures fluctuate above and below freezing on a daily basis- when temperatures remain below 20*F all day, washing has no corrosion reduction benefit since no liquid water is present. We do not recommend pressure washing on a regular basis, as it tends to force water into U-joints, electrical connectors, and Bowden cables.

How does Solanum's treatment work?

We use air-assisted sprayers to apply soybean oil to the vehicle underbody.

Why use soybean oil?

In our 10+ years of informal experimentation with this, we've found soybean oil is the best material for underbody corrosion protection, period. It lasts much longer than any petroleum oil, is environmentally benign and won't leave a trail of iridescent rainbows, and is inexpensive compared to petroleum oil. Soybean oil coatings offer 12-18 months of corrosion protection between treatments; the best petroleum oils we've ever found offer 6 months at best. Peanut oil can create a noxious odor as it cures and is expensive. Canola oil performs well all around and we sometimes do use it. Soybean oil has been the easiest for us to get in bulk, so that's what we use most of the time.

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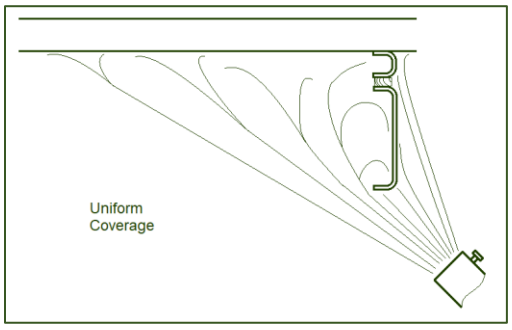
Why is Solanum's corrosion treatment so much cheaper than others?

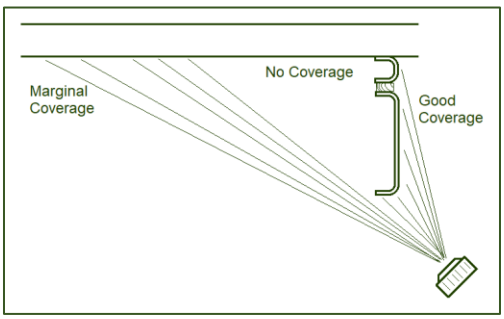
We use a different process and application method than most other providers of undercoating, so it's an apples to oranges comparison. Most providers use a paint sprayer to carefully apply the oil, by hand, to every crevice they can find. This process is effective, but expensive, and has quickly diminishing marginal returns on additional expense due to the difficulty of accessing confined areas with a paint sprayer.

Given that treatment needs to be repeated annually anyway, we use an air-assisted sprayer to achieve 85%-95% coverage in as little as 5 minutes, which allows us to offer the service at a price considerably lower than providers who take several hours to complete the treatment. After 1-2 years of treatment the coverage will be better than repeated hand application. Our view is that the money is better spent on overlapping repeated treatments, than on "perfect" one-time treatments; our price structure and application methods are built around this philosophy.

Solanum system- Air turbulence creates uniform coverage in one pass



Traditional approach- Partial coverage by each pass requires extensive labor to apply well



I'm not into these "eco-friendly" snake oils. Can you do it with something toxic?

If your sole goal is corrosion protection, use plant oils, **because they work better**. Not everything that happens to be eco-friendly is weak compared to the toxic version.