Corrosion Prevention Product Comparison

XCP™ Rust Blocker and Hammerite-AksoNobel Waxoyl

Introduction

Comparison of the efficacy of XCP™ Professional Rust Blocker and Hammerite-AkzoNobel product Waxoyl (Clear) with respect to the corrosion prevention on mild steel was required.

Waxoyl is widely used in automotive corrosion prevention with recommended application areas being inside doors and box sections, internal structures and vehicle undersides.

Procedure

Corrosion resistance is measured according to ASTM B117, where metal test pieces that have been treated with the products under review are subjected to a constant salt fog in a controlled environment and the progression of apparent corrosion is assessed and recorded. Test protocol ASTM B117 is the recognised industry standard methodology for this type of assessment.

Mild steel test panels were cleaned with isopropanol and acetone and dried thoroughly. They were then are coated with the products under review. Waxoyl is a viscous waxy coating and when sprayed in excess on to a smooth metal surface the film cannot support its own weight and slides off. The application instructions for Waxoyl are not explicit with regard to an optimum film thickness so three levels of coating were applied to separate panels. The first is a "single-pass" application, with a single continuous spray giving full-face coverage of the panel. The second is a thicker coating and the third thicker still. These applications are termed light, medium and heavy in the report. The heavy application is considered to be the heaviest film thickness that can be applied without the coating sliding off the panel under its own weight.
Following treatment with the products, they were left to stand for 16 hours at room temperature before being placed in the test chamber. The controlled-environment chamber produces a constantly-aspirated spray of 5% salt solution which creates an accelerated corrosive atmosphere.
A periodic visual and photographic assessment of the progression of the corrosion on each of the steel panels was carried out over the test period.

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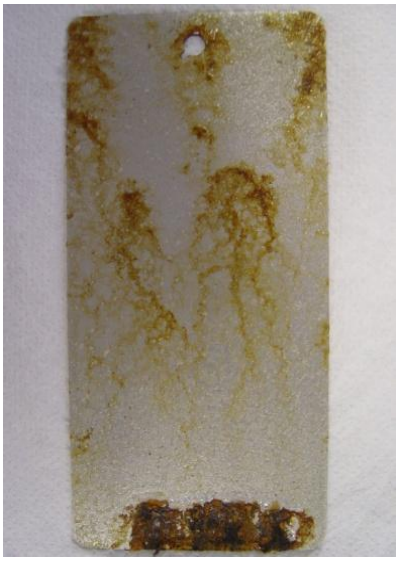
Results

The photographs below show the progression of the corrosion on the steel test panels. Time intervals indicate total test period in the corrosion chamber.

Waxoyl Light Application

24 Hours



72 Hours

144 Hours

216 Hours

264 Hours

336 Hours

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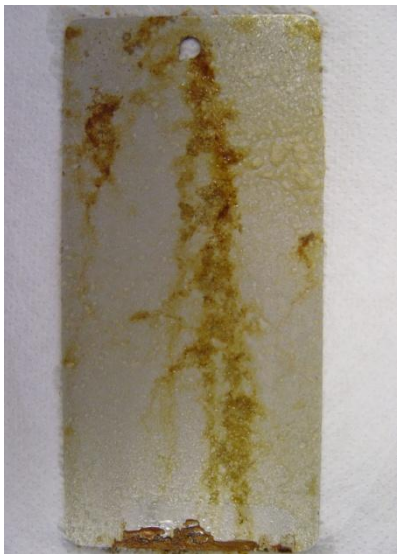
Results (cont.)

The photographs below show the progression of the corrosion on the steel test panels. Time intervals indicate total test period in the corrosion chamber.

Waxoyl Medium Application


24 Hours


72 Hours


144 Hours


216 Hours


264 Hours


336 Hours

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Results (cont.)

The photographs below show the progression of the corrosion on the steel test panels. Time intervals indicate total test period in the corrosion chamber.

Waxoyl Heavy Application

24 Hours

72 Hours

144 Hours

216 Hours

264 Hours

336 Hours

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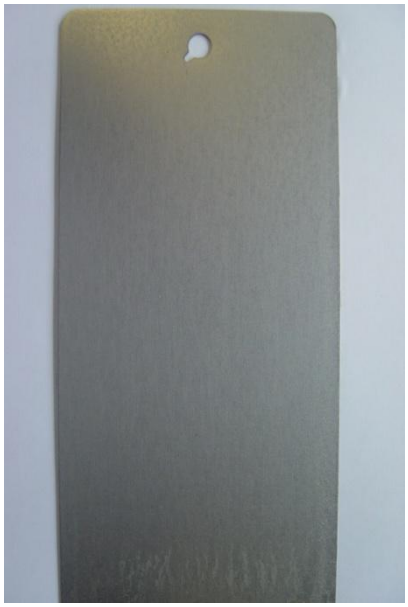
Results (cont.)

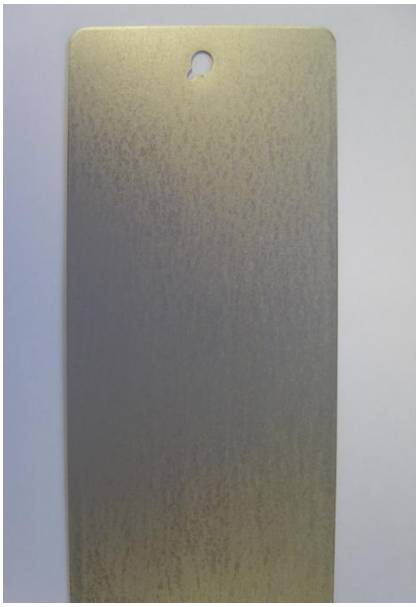
The photographs below show the progression of the corrosion on the steel test panels. Time intervals indicate total test period in the corrosion chamber.

XCP™ Rust Blocker

24 Hours

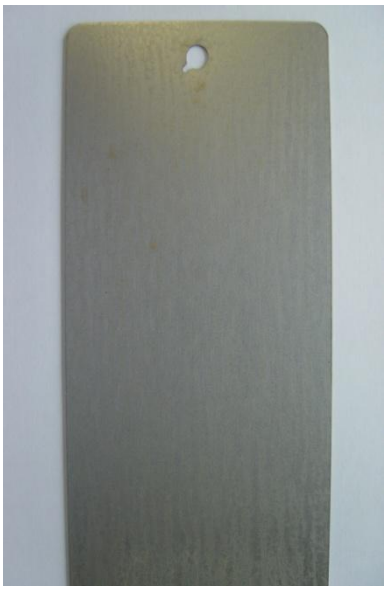


48 Hours



120 Hours

336 Hours



432 Hours

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Conclusion

It can be seen from the analysis results shown that XCP™ Rust Blocker outperforms Hammerite - AkzoNobel Waxoyl by a significant margin with regard to corrosion inhibition. Corrosion is apparent on each of the test panels treated with Waxoyl within 24 hours of the commencement of analysis, and the marked deterioration of the metal surfaces is evident as time progresses. The first evidence of corrosion is seen on the surface of the Rust Blocker-treated section after 432 hours (18 days).
In addition to the performance differential, it can be seen from the panel appearance that XCP™ Rust Blocker provides a clear, thin product film. This can be removed easily if required with a light solvent such as white spirit. In comparison, Waxoyl spray application results in a thick, non-uniform waxy film that has the tendency to contain entrained air in the form of bubbles which, when they burst, leave weak spots in the coating that are comparatively easily penetrated by weathering. The product film is also of a consistency that is difficult and time-consuming to remove if work is required to be carried out on the metal surfaces that it is coating.