Corrosion Inhibitor Performance Comparison

Marine Environment Soft Coatings Assessment

Introduction

Comparison of performance of corrosion inhibitors known for their suitability for application in a marine environment was required. The performance of the following products was assessed:

- Lanocote: Forespar Products Corporation
- ACF50: Lear Chemical Research Corporation
- Corrosion Block: Lear Chemical Research Corporation
- Corrosion X: Corrosion Technologies Corporation
- Quicksilver Corrosion Guard: Brunswick Corporation
- Boeshield T-9: PMS Products

The results obtained from the products listed above were compared with those seen with XCP™ Rust Blocker. Analysis was carried out using mild steel at the test substrate.

Procedure

The mild steel test plates were treated with the products under evaluation, placed in a controlled-environment corrosion chamber and subjected to a constant aspirated spray of 5% salt solution. The test protocol used is as described in the recognised industry standard methodology for this type of assessment, ASTM B117.

The test plates were initially cleaned with isopropanol and acetone and then dried thoroughly. They were sprayed in order that an excess of product was applied to each panel and left to stand for 16 hours at room temperature before being placed in the test chamber. A periodic visual and photographic assessment of the progression of the corrosion on each of the pieces was carried out over the test period.

NB – The Lanocote product is essentially a grease and as such the application of a uniform film on to test plates or any metal surface is problematic. A decision was made to test two application methods: a wipe-on application which is most likely to replicate how the product is applied in a practical situation; and application with a draw-down bar which gives a uniform film thickness. This method is not achievable in a field situation but allows an assessment of the product performance without consideration of the practical disadvantage of its use.
Results

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

Lanocote Wipe

Pre-Test

1 Hour

6 Hours

24 Hours
Results (cont.)

Lanocote Uniform

Pre-Test

6 Hours

24 Hours

48 Hours
Results (cont.)

ACF50

Corrosion Block
Corrosion X

Results (cont.)
Results (cont.)

Quicksilver Corrosion Guard

24 Hours 72 Hours 168 Hours

312 Hours 408 Hours
Results (cont.)

**Boeshield T-9**

![Image](image1)

**XCP™ Rust Blocker**

![Image](image2)
Conclusion

As can be seen from the photographic sequences, Quicksilver Corrosion Guard gives the best performance of the other products tested by some margin; however it is apparent that the corrosion protection provided by XCP™ Rust Blocker is a further step change ahead in inhibition characteristics. It should also be noted that the Quicksilver Corrosion Guard formulation is classified according to CLP regulations as “Toxic to Aquatic Life with Long-Lasting Effects”, which may be of some concern to customers considering the use of such a product in a marine environment.

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