

# Test Report

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## Corrosion Resistance of 50% Coated Steel Panel by Oxifree TM198 Coating System

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For

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## 1. Report Title:

**Corrosion Resistance of 50% Coated Steel Panel by Oxifree TM198 Coating System**

## 2. Test Method:

ASTM B117 Practice for Operating Salt Spray (Fog) Apparatus, as shown in Fig. 1.



**Figure 1 Q-fog Chamber for the Corrosion Resistance Testing, ASTM B117**

## 3. Test Samples

Test samples prepared by Oxifree Co are listed in Table 1. The 50% coated steel panels were used for the corrosion testing is to (1) evaluate the corrosion resistance of the Oxifree TM198 coating, (2) measure the rust creepage underneath the coating.

**Table 1 50% Coated Test Panels by Oxifree TM198 Coating System**

<b>Sample ID#</b>	<b>Test Time, hr</b>	<b>DFT. mil (mm)</b>
121009-7	2,000	76 (1.9)
121009-8	2,000	73 (1.8)
121009-12	3,000	77 (2.0)
121009-11	4,000	83 (2.1)
121009-10	5,000	151(3.8)

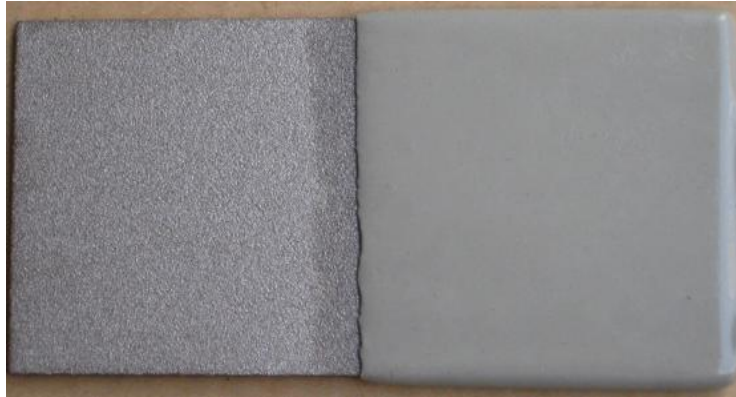


Fig. 2 A new 50% Coated Oxifree TM198 Coating System

### 4. Test Result

After 2,000 hr, 3,000 hr, 4,000 hr, and 5,000hr ASTM B117 salt fog exposure, the 50% coated steel panels before and after film removal are shown in Fig 3-10.

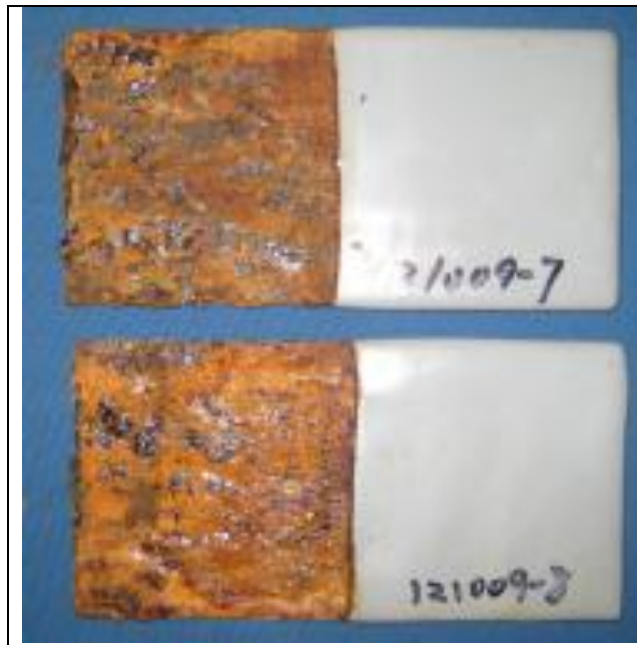


Fig. 3 50% Coated Oxifree TM198 Coating System after 2,000 hr ASTM B117 Salt Fog Exposure

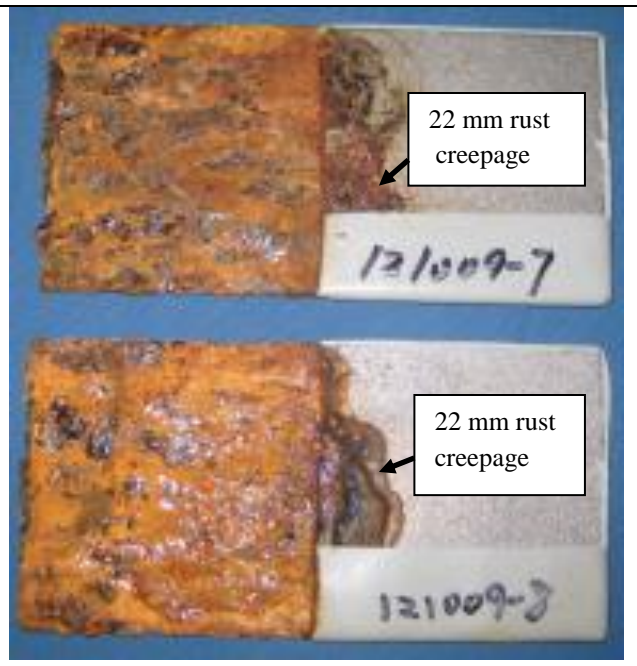



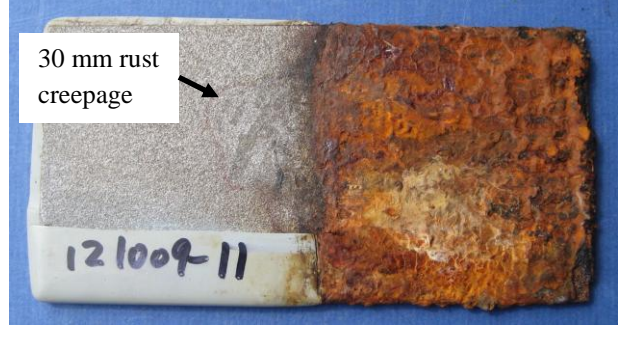

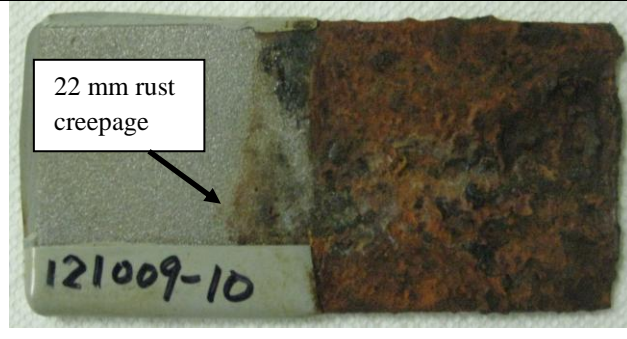


Fig. 4 50% Coated Oxifree TM198 Coating System after 2,000 hr ASTM B117 Salt Fog Exposure, 22 mm rust creepage is observed.

	
<p>Fig. 5 50% Coated Oxifree TM198 Coating System after 3000 hr ASTM B117 Salt Fog Exposure</p>	<p>Fig. 6 50% Coated Oxifree TM198 Coating System after 3,000 hr ASTM B117 Salt Fog Exposure, 22 mm rust creepage is observed.</p>
	
<p>Fig. 7 50% Coated Oxifree TM198 Coating System after 4000 hr ASTM B117 Salt Fog Exposure</p>	<p>Fig. 8 50% Coated Oxifree TM198 Coating System after 4,000 hr ASTM B117 Salt Fog Exposure, 30 mm rust creepage is observed.</p>
	
<p>Fig. 9 50% Coated Oxifree TM198 Coating System after 5000 hr ASTM B117 Salt Fog Exposure</p>	<p>Fig. 10 50% Coated Oxifree TM198 Coating System after 5,000 hr ASTM B117 Salt Fog Exposure, 22 mm rust creepage is observed.</p>

## 5. Test Summary

Test Results of 50% coated Oxifree TM198 Coating System after 5,000 hr ASTM B117 salt fog exposure are summarized in Table 2.

**Table 2 Corrosion Resistance of 50% Coated Oxifree TM198 Coating System after Salt Fog Exposure**

Sample ID#	Test Time, hr	DFT, mil (mm)	Corrosion Resistance
121009-7	2,000	76 (1.9)	22 mm Rust Creepage into the steel underneath the coating
121009-8		73 (1.8)	22 mm Rust Creepage into the steel underneath the coating
121009-12	3,000	77 (2.0)	22 mm Rust Creepage into the steel underneath the coating
121009-11	4,000	83 (2.1)	30 mm Rust Creepage into the steel underneath the coating
121009-10	5,000	151(3.8)	22 mm Rust Creepage into the steel underneath the coating

## 6. Conclusion

1. Oxifree TM198 coating system has good barrier property to provide corrosion protection to the steel from rusting.
2. The amount of rust creepage underneath the Oxifree TM198 coating system will depend on the steel-coating interfacial tightness, which is the result of the coating cooling shrinkage. For a flat steel panel, a very low compression force is expected between the coating and the steel. However, for a normal application on round shaped steel structures, the interfacial compression is expected to be higher and the rust creepage should be lower than the one for flat panels.