

SCS Corrosion Resistance - Post Paint #2

OBJECTIVES

- Determine how SCS samples perform in salt spray creep tests where rust is induced by scribing through the paint.
- Compare the SCS results to P&O samples prepared in the same manner and tested side-by-side with the SCS.

APPLICABLE STANDARDS

ASTM B117-97
Practice for Operating Salt Spray Apparatus

ASTM D1193
Standard Specification for Reagent Water

Testing Lab is A2LA Accredited

TEST PROCEDURE

Four (4) flat-rolled steel parts were prepared. All were 8"x6" and pressbrake bent in the center. All were powder coat painted and scribed through the paint in the same locations. Sample differences are:

S1 is SCS (stretched and brushed) that received only solvent pre-treatment prior to painting.

S5 is identical SCS and received standard paint pre-treatment, including phosphate wash.

TESTING LAB

St. Louis Testing Laboratories, Inc.
Lab No. 03C-0158
Report dated March 10, 2003

P1 is P&O material of the same base steel specs as the SCS. It received only solvent pre-treatment.

P5 is identical P&O material and received standard paint pre-treatment, including phosphate wash.

All four samples were placed in the same salt spray fog chamber having a 5% salt solution and operating between 93 and 95 °F. Samples were exposed for 250 hours without interruptions.

TEST RESULTS

Hours of Exposure	SAMPLE	Rust Creepage			Interpretation of Results
		MAX	MIN	AVG	
192	S1	10	10	10	The scribe marks through the paint expose the metal surface directly to the salt spray. This induces rusting and causes the paint to "creep" away from either side of the scribe mark under continued exposure. Blistering of the paint in this area indicates reduced adherence and less corrosion protection. Creepage is measured as: 10 = 0 inches of creep 9 = between 0 and 1/64th inches of creep 8 = between 1/64th and 1/32nd inches of creep 7 = between 1/32nd and 1/16th inches of creep
	S5	10	10	10	
	P1	10	10	10	
	P5	10	10	10	
216	S1	9	10	9	
	S5	9	10	9	
	P1	9	10	9	
	P5	9	10	9	
250	S1	8	10	9	
	S5	8	10	9	
	P1	7	10	9	
	P5	9	10	9	

No paint blisters were observed on any samples

CONCLUSIONS

1. This more severe (but limited duration) test of resistance to corrosion with different paint preparations shows SCS and P&O parts to be comparable in performance.
2. While SCS samples showed slightly less creep at test conclusion, differences are not statistically significant.
3. Complete absence of blisters on any samples indicates no apparent problems with paint adherence that would lead to accelerated corrosion.