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Services, Systems, & Software

April 21, 1999 L983562KT

TEST REPORT - PITTING CORROSION TEST PER ASTM G43

Corrosion tests were performed by *InterCorr* International. These tests were conducted to examine the influence of proprietary surface treatments on the susceptibility of AISI 304 stainless steel coupons. The tests revealed improvement in pitting resistance for samples following surface treatment.

MATERIALS AND SPECIMENS

Four corrosion coupons of AISI 304 stainless steel were used in the test program. One specimen was tested without surface treatment. Another specimen was tested following an electrolytic treatment. Two additional specimens were tested following hand application of **RG-2400**® one of which contained a defected region consisting of a "X" across the face of the specimen.

TEST PROCEDURE

The test specimens were exposed according to ASTM G48 Method A (Ferric Chloride Pitting Test). These tests consisted of exposures to a ferric chloride solution (about 6 percent by weight) at room temperature for a period of 72 hours.

RESULTS

The results of the corrosion tests are given in Table 1. They indicate the order of corrosion performance in terms of maximum pit penetration rate (from best to worst) was as follows:

(1) Full **RG-2400**® treatment,
(2) Electrolytic treatment,
(3) **RG-2400**® treatment with "X" defects,
(4) No treatment. There were minimal visible signs of localized attack on the coupon with the full **RG-2400**® treatment.

However, all other conditions showed significant areas of pitting. Attack on the coupon with the full treatment and the "Y" defect was mainly limited to the region of the defect and on the ends of the coupon. The coupon with the electrolytic treatment suffered mainly end grain attack as did the non-treated coupon.

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President

TABLE 1 - RESULTS OF ASTM G48 PITTING TESTS

IC Number & Max. Pit Depth (mils)	Pit Penetration Rate (mpy)	Comments
6191-32 (Non-treated) 5.51	670	Largest pits on edges; smaller pits on surface
6191-33 (Electrolytic Treatment) 3.94	479	Largest pits on edges; smaller pits on surface
6191-34 (**RG-2400®** with "x") 4.72	575	Pits in area of "Y" and on edges
6191-35 (Full **RG-2400®** treatment) 0.24	28.7	Very limited pitting on edges only

TABLE 2 - ASTM G-48, 304 SS Coupons Exposure to Ferric Chloride, 72 Hours, Ambient Temperature

IC NUMBER	INITIAL WEIGHT	WEIGHT AFTER TEST	WEIGHT AFTER TEST-CLEANED	SCALE WEIGHT	WEIGHT LOSS (g)"	SURFACE AREA-Sq.In.	TIME (Hrs.)	DENSITY (g/cc)	CORROSION RATE (mp)
6191 - 32 (Bare Steel)	28.6496	27.7753	27.7279	-0.8743	0.9217	4.74	72	7.8	184.856
6191 - 32 (Elect Coating)	28.7378	28.2803	28.2702	-0.4575	0.4676	4.75	72	7.8	93.663
6191 - 34 (**RG-2400®** with X)	28.7616	28.6709	28.6663	-0.0907	0.0953	4.75	72	7.8	19.093
6191 - 35 (**RG-2400®**	28.6335	28.6267	28.6239	-0.0068	0.0096	4.72	72	7.8	1.934