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ASTM 1748 Test of Metkool 10122, Nalco Protech 1300 RTU, and VpCI-377

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Project #: 15-019-1825

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Background:

Two rust preventatives were sent with a request to test their corrosion protection in ASTM-1748 conditions against VpCI-377 at 4 wt% concentration. A sample of water was also received for chloride testing.

Sample Received:

Samples Received 1/27/15

- 1. 10 metal samples were received in fair condition with one side noticeably duller in appearance than the other.
- 2. 12 small Metkool bottles
- 3. 12 small Protech 1300 bottles
- 4. Water sample marked "City Water"

Method:

ASTM-1748 (high temperature humidity chamber with rotation) (CC-018)

Materials:

- 1. VpCI-377 (Batch #21434)
- 2. Lab grade methanol
- 3. Ohaus Scale F (#8331210147)
- 4. Koehler Humidity chamber
- 5. Quantab Chloride Strips (Hach Cat. 27499-4)

Procedure:

The samples were cleaned with methanol and allowed to dry before being coated with the various rust preventatives (4% VpCI-377, 100% Metkool, and 100% Protech 1300).

Results:

Chloride Concentration in Water: 0.014% NaCl (84 ppm Cl⁻)

Sample	Days before	% Corrosion
	Corrosion Started	After Test
V-1	9	0.5
V-2	9	0.5
V-3	9	0.5
P-1	9	0.5
P-2	9	0.5
P-3	9	0.5
M-1	6	15
M-2	6	15
M-3	6	15
Control	< 2	90

Table 1: Corrosion time and severity by sample (V = VpCI-377; P = Protech; M = Metkool)

Photos:



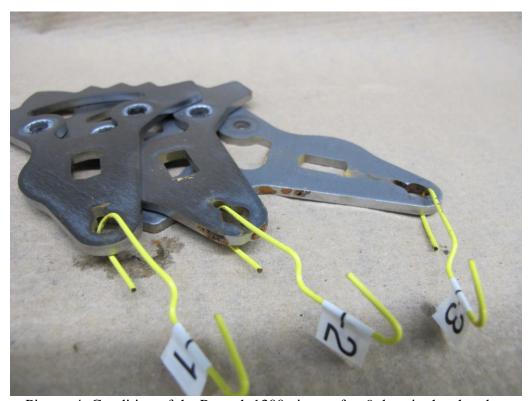
Picture 1: Initial Condition of the metal pieces



Picture 2: Condition of the control piece after less than 2 days in the chamber



Picture 3: Condition of the VpCI-377 pieces after 9 days in the chamber



Picture 4: Condition of the Protech 1300 pieces after 9 days in the chamber



Picture 6: Condition of the Metkool pieces after 9 days in the chamber

Interpretations:

The results of the test indicate that even at only 4 wt% VpCI-377 provides significantly more corrosion protection than Metkool at 100 wt% and similar corrosion protection to Protech 1300 at 100 wt%. Additionally, Protech is a solvent based product with barium components which are not considered safe.