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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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**Approved by:**

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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<sup>-</sup>)

Sample	Days before Corrosion Started	% Corrosion 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.