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# *Determination of Best Rust Preventative on Steel Rods*

**To:** Customer

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**Project** #: 12-222-1825.bis

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**Background:** The customer wants to compare a current rust preventative to 3 different Cortec products on steel rods.

**Sample Received:**

- Five steel rods that range between 5 and 7.5 inches in length and approximately 1.5 inches in diameter with highly polished finish.
- One container of Wallover rust preventative

**Method:** ASTM D-1748 Modified (120ºF, ~99% relative humidity)

**Materials:** Metal parts for testing
VpCI-414 for cleaning parts
BioCorr
VpCI-325
Ecoline 3690
Wallover rust preventative
Clear VCI-free polyethylene bags

**Procedure:** The following procedure was used:

1) Clean all 5 steel rods using VpCI-414 in dip tank and let dry.
2) Apply each of the rust preventatives by dipping:
    a. Wallover RP
    b. BioCorr
    c. VpCI-325
    d. Ecoline 3690
    e. No rust preventative (Control)
3) Stand the steel rod on the end to let excess rust preventative run off the part overnight
4) Place each steel rod in a clear VCI-free polyethylene bag with label to identify the rust preventative used.
5) Put all 5 parts in the humidity chamber and monitor the parts for corrosion

**Results:** Table 1: Results of ASTM D-1748 Modified

| Rust Preventative | Time Until Failure (Hours) |
|---|---|
| None (Control) | < 24 |
| Wallover | 72 |
| Ecoline 3690 | 240 |
| BioCorr | 144 |
| VpCI-325 | DNF* |

* Did Not Fail (DNF) during 240 hours of testing

**Interpretations:** After 240 hours of humidity testing VpCI-325 performed the best according to both failure time and visual inspection. Ecoline 3690 provided the next best protection, with only 3 minute corrosion spots after 240 hours of testing. Both BioCorr and Wallover RP slightly outperformed the part with no rust preventative. From these results it is apparent that a water based rust preventative is not suitable for long term corrosion inhibition on these highly polished steel rods.

**Photos:** The following photos were taken after 240 hours in the humidity chamber:

Figure 1: No Rust Preventative (Control)

Figure 2: BioCorr

Figure 3: Wallover RP

Figure 4: Ecoline 3690

Figure 5: VpCI-325