

Evaluating Various Protection Methods for Copper Tubing from Erico International

- Background:** ERICO is a leading designer, manufacturer and marketer of precision-engineered specialty metal products serving global niche product markets in a diverse range of electrical, commercial and industrial construction, utility and rail applications. Erico would like Cortec to examine various corrosion protection methods for copper rods.
- Purpose:** To compare the Baracoat liquid currently used by Erico International to VpCI-316 for the protection of copper. Additionally, compare VpCI-126 to Armor VCI film and another light blue film sent in by Erico.
- Method:** ASTM D-1748 Humidity Cabinet
- Materials:** Nine copper rods, provided by Erico International
 Baracoat liquid, provided by Erico International
 Unknown light blue film, provided by Erico
 Armor VCI film, provided by Erico
 VpCI-126 Blue Film
 VpCI-316
- Procedure:** The following procedure was followed:
- 1) All copper rods were cleaned with methanol prior to testing.
 - 2) After cleaning, the following treatments were used:
 - a. One rod was set aside as a control.
 - b. One rod was packaged in unknown light blue film.
 - c. One rod was packaged in Armor VCI film.
 - d. Two rods were dipped in Baracoat liquid.
 - e. Two rods were dipped in VpCI-316 liquid.
 - f. Two rods were packaged in VpCI-126 blue film.
 - 3) After treatment, all rods were allowed to sit overnight.
 - 4) Parts were then placed in ASTM D-1748 humidity cabinet.
 - 5) All parts were visually inspected periodically.
 - 6) After 500 hours, all parts were removed from ASTM D-1748 humidity cabinet.
 - 7) Parts were visually inspected and photographed.

Results: The following results were found:

Treatment	Time to Failure (Hours)
Control	<24
Light Blue Film	72
Armor Film	72
Baracoat Liquid	<24
VpCI-316	168
VpCI-126	DNF*

*DNF – Did not fail during 500 hours of testing.

Conclusion: The use of Cortec product significantly improved corrosion resistance for copper rods from Erico International. The use of Cortec VpCI-316 liquid provided greater than seven times as much protection as the Baracoat liquid and more than twice as much protection as the two competitor films. VpCI-126 film provided protection for greater than the 500 hours of testing that was conducted.

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