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***Comparing EcoLine 3690 to Condaprotect
4010 Currently Used by Capital Steel***

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Project #: 14-118-1825

Results reported by:

A handwritten signature in black ink that reads "Eric Uutala".

Eric Uutala
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Date: June 25, 2014



Background: Capital Steel is a leading producer of hot rolled steel wire, cold finished long products, and steel bars. Capital Steel currently uses Condaprotect 4010 as a rust preventive at the end of their process. The effectiveness of this product will be evaluated and compared to EcoLine 3690.

Sample Received: -Two steel bars, ~8” each
-Condaprotect 4010, ~4 ounces in a plastic water bottle. The bottle was packed in a plastic shopping bag, and liquid had leaked in the bag. No holes were found in the bottle.

Method: ASTM D-1735 Water Fog Cabinet

Materials: Two steel bars
Condaprotect 4010 liquid, ~8 ounces
EcoLine 3690, Batch #02334
Plain polyethylene zip top bags
Laboratory grade methanol

Procedure: The following procedure was used:

- 1) Both steel bars were visually inspected upon receipt.
- 2) Both bars were then cleaned with methanol.
- 3) After cleaning, the steel bars were treated as follows:
 - a. Coated with Condaprotect 4010
 - b. Coated with EcoLine 3690
- 4) After coating, both bars were allowed to dry overnight.
- 5) Both bars were then packed (individually) in plain polyethylene zip top bags.
- 6) Both bars were then placed in ASTM D-1735 water fog cabinet.
- 7) Both bars were visually inspected periodically.
- 8) After 504 hours, both bars were removed from ASTM D-1735 water fog cabinet.
- 9) Both bars were unpacked, visually inspected, and photographed.

Results: The following results were found:

Treatment	Time to Corrosion (Hours)
Condaprotect 4010	80-144*
EcoLine 3690	No corrosion at 504 hours

*Corrosion occurred during a weekend.

Photos: See below.



Figure 1: Capital Steel rods, after 504 hours in ASTM D-1735 testing. Condaprotect treated rod (14-118-1) and EcoLine 3690 treated rod (14-118-2).

Interpretations: EcoLine 3690 provided excellent corrosion protection in ASTM D-1735 water fog testing, when compared to Condaprotect 4010, on rods from Capital Steel.

EcoLine 3690 is USDA certified biobased product.