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***Evaluating Cortec Additives for Stamping  
Fluid Used by Customer***

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**Project #:** 10-205-1325(bis)

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**Date:** November 18, 2010



**Background:** Customer sent samples of metal brackets, as well as their stamping fluid and would like Cortec to evaluate possible corrosion inhibiting additives for the stamping fluid.

**Sample Received:** 2 pints IRMCO 536-37Z stamping fluid

**Method:** ASTM D-1748 Humidity Cabinet (120°F, ~95% relative humidity)

**Materials:** Steel brackets, provided by Customer  
IRMCO Fluids 536-37Z, provided by Customer  
Cortec M-95 additive  
Cortec M-370 additive  
Cortec M-435 additive

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

- 1) IRMCO 536-37Z was diluted to 10% with deionized water, as per test request.
- 2) Three solutions were made using Cortec products, which were added to IRMCO solution as follows:
  - a. M-95 – 1%
  - b. M-370 – 3%
  - c. M-435 – 3%
- 3) All solutions were mixed thoroughly.
- 4) Prior to testing, five steel brackets were cleaned with methanol.
- 5) After cleaning, one of the brackets was set aside as a control.
- 6) The other four brackets were dipped in one of the following:
  - a. IRMCO (10%)
  - b. IRMCO with M-95
  - c. IRMCO with M-370
  - d. IRMCO with M-435
- 7) After dipping, brackets were hung to dry.
- 8) All five brackets were then hung in ASTM D-1748 humidity cabinet.
- 9) Brackets were visually inspected periodically.
- 10) After 600 hours, all brackets were removed from ASTM D-1748 humidity cabinet.
- 11) All brackets were visually inspected.

**Results:** The following results were found:

Rust Preventive Solution	Time to Failure (Hours)
None (control)	<24
IRMCO only	336
IRMCO/M-95	504
IRMCO/M-370	600
IRMCO-M-435	504

**Interpretations:** All Cortec products provided added protection to the IRMCO fluid used by Customer. However, given the process used by Customer, the addition of Cortec products may not provide adequate protection. If the brackets are packaged wet, flash rust may still occur. To achieve the most effective protection, it would be best to package the brackets, clean and dry, in VpCI film.