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LABORATORY ACCREDITATION BUREAU
ACCREDITED ISO/IEC 17025
Certificate # L2267 Testing

Evaluating Rust Preventive Additives

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Project #: 11-135-1825(bis)

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Background: Customer would like to explore possible additives to be used in seven process fluids.

Sample Received:
FB-349 oil (Benz oil)
FB-485 oil (Prosco)
FB-367 oil (Benz oil)
FB-384 oil (Benz oil)
FB-756 oil (Benz oil)
RO-7 Drawlub (Yushiro)
Inprotect 600 wash
20 fineblanking slugs

Method:
Standardized compatibility test
ASTM D-1735 water fog (100°F, >95% relative humidity)

Materials:
Liquid and metal samples, listed above
M-530
BioCorr

Procedure: The following procedure was used:

Standardized Compatibility Test

1) Six samples were created for this test:
    a. M-530 was added to all products at 3% by volume.
2) Each sample was mixed thoroughly and visually inspected for any incompatibilities (cloudiness, precipitate, separation)
3) After mixing, the samples were placed in 60°C oven for 16 hours.
    a. Each sample was removed and visually inspected.
4) The samples were then placed in a 2°C refrigerator for 8 hours.
    a. Each sample was removed and visually inspected.
5) Steps 3 and 4 constitute one cycle and testing was run for 5 cycles.

ASTM D-1735 Water Fog Testing

1) All metal pieces were cleaned with methanol prior to testing.
2) After cleaning, pieces were prepared as follows:
    a. One piece was dipped in each of the fluids, used as received.
    b. One piece was dipped in each of the fluids with 3% M-530 added.
    c. One piece was dipped in BioCorr.
    d. One piece was left as a control.

e. After dipping, all pieces were allowed to air dry overnight.
f. All pieces were then placed in ASTM D-1735 water fog cabinet.
g. Pieces were visually inspected periodically.
h. After 500 hours, all pieces were removed from ASTM D-1735 water fog cabinet.
i. Pieces were visually inspected and photographed.

Results: The following results were found:

Standardized Compatibility Test

	16 Hours	**24**	**40**	**48**	**64**	**72**	**88**	**96**	**112**	**120**
A	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC
B	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC
C	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC
D	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC
E	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC
F	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC

FC – Fully compatible

ASTM D-1735 Water Fog Cabinet

Protection	**Time to Corrosion (Hours)**
None (Control)	<24
Inprotect 600	<24
BioCorr	384
FB-349	DNF
FB-349 + M-530	DNF
FB-485	DNF
FB-485 + M-530	DNF
FB-367	360
FB-367 + M-530	408
FB-384	312
FB-384 + M-530	DNF
FB-756	312
FB-756 + M-530	408
RO-7	336
RO-7 + M-530	500

DNF – Did not fail during 500 hours of testing.

Photos:

Figure 1: MPI parts after 500 hours of ASTM D-1735 testing. Top row, from left to right: FB-349, FB-485, FB-367, FB-384. Bottom row, L-R: FB-756, RO-7, Inprotect 600

Figure 2: MPI Parts after 500 hours of ASTM D-1735 testing. Products are the same as above, with 3% M-529. The final part on the bottom right was treated with BioCorr.

Interpretations: M-530 provided increased corrosion protection for all process fluids. Additionally, BioCorr provided increased protection when compared to Inprotect 600.