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Preliminary Report: Comparing MetPro VCI Films to VpCI-126

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Background: Mike Gabor requested that comparative testing be done between Metpro VCI films and VpCI-126. In addition, it was requested that samples be packaged at Cortec Lab. The samples would then be run both at Cortec lab and concurrently. These results will be included in the final report.

Sample Received: Labeled by customer

- 1) MetPro 2.75 Mil film no UV, received 04/11/12, good condition
- 2) MetPro 4 mil no UV, received 04/11/12, good condition
- 3) MetPro 6 mil film, received 04/11/12, good condition
- 4) MetPro 7 Mil UV, received 04/11/12, good condition
- 5) Metpro 7-8 mil film, received 04/11/12, good condition
- 6) Metpro 10 mil film, received 04/11/12, good condition
- 7) Metpro Foam, received 04/11/12, good condition

Method:

- 1) VIA Test CC-027
 - 2) Razor Blade Test CC-004*
 - 3) FTIR Test CC-006
- *Cortec Laboratory is not accredited for the test marked

Materials:

- 1) VIA test kit
- 2) Razor Blade test kit
- 3) Paragon 1000 FTIR
- 4) VpCI-126 4 mil, Batch# 31957

Procedure:

- 1) The tests were performed according to standard procedures. The foam was too absorbent to run razor blade testing on, so it only was tested according to the VIA test method.

Results:

Razor Blade Carbon Steel

Sample	Panel 1	Panel 2	Panel 3
2.75 mils no UV Metpro	Fail	Fail	Fail
4 mils no UV Metpro	Fail	Fail	Fail
6 mils Metpro	Fail	Fail	Fail
7 mils UV Metpro	Fail	Fail	Fail
7-8 mils Metpro	Pass	Pass	Pass
10 mils Metpro	Pass	Pass	Pass
4 mils VpCI-126	Pass	Pass	Pass
Control	Fail	-	-

Razor Blade Copper

Sample	Panel 1	Panel 2	Panel 3
2.75 mils no UV Metpro	Pass	Pass	Pass
4 mils no UV Metpro	Pass	Pass	Pass
6 mils Metpro	Pass	Pass	Fail
7 mils UV Metpro	Pass	Pass	Pass
7-8 mils Metpro	Fail	Fail	Fail
10 mils Metpro	Pass	Pass	Fail
4 mils VpCI-126	Pass	Pass	Pass
Control	Fail	-	-

VIA Test Results

Sample	Plug #1	Plug#2	Plug#3	Pass/Fail
2.75 mils no UV Metpro	Grade 2	Grade 2	Grade 2	Pass
4 mils no UV Metpro	Grade 2	Grade 2	Grade 2	Pass
6 mils Metpro	Grade 2	Grade 2	Grade 2	Pass
7 mils UV Metpro	Grade 2	Grade 1	Grade 2	Fail
7-8 mils Metpro	Grade 2	Grade 2	Grade 2	Pass
10 mils Metpro	Grade 3	Grade 2	Grade 3	Pass
4 mils VpCI-126	Grade 3	Grade 2	Grade 3	Pass
MetPro Foam	Grade 3	Grade 3	Grade 3	Pass
Control	Grade 0	-	-	-

Note: The VIA grading system is attached to the end of the report

Interpretations:

1. The test results determined that VpCI-126 4 mils and Metpro 10 mils film provided good contact and vapor-phase corrosion inhibition.
2. The MetPro foam provided good vapor-phase corrosion inhibition.
3. Based on FTIR results Metpro films with thicknesses of 2.75, 4, 6, and 7 mils are not based on VCI chemistry, they contain a substantial amount of desiccant which is acidic in nature. That is why these films cause corrosion on steel when in contact (see razor blade results). These results are not the best for packaging materials which are used in contact with metals.
4. FTIR results for Metpro films 7-8 mils and 10 mils showed that these films have different chemistry than the previously discussed films. They do not contain desiccant, instead they are based on the salts of carboxylic acid. They passed the razor blade test on steel. However the 7-8 mils films didn't pass the copper test, which means that this film can't be used in the presence of yellow metals.
5. Only 4 mils VpCI-126 film and Metpro 10 mils film passed all the tests, providing multimetal protection.

The rest of the tests are in progress.

VIA Test Grades (Grade 2 or 3 are passing)

- Grade 0: Blind test
No corrosion inhibiting effect
- Grade 1: Blind test
Minute corrosion inhibiting effect
- Grade 2: Blind test
Medium corrosion inhibiting effect
- Grade 3: Blind test
Good corrosion inhibiting effect













