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Evaluation of Daubert Film Manufactured for Caterpillar

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Project #: 16-015-1125

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Background: A blue film made by Daubert has been submitted to determine contact and vapor phase corrosion protection. This film will be used by Catepillar in Corinth, Mississippi.

Sample Received: Blue Daubert film (unlabeled, 3.5mil gusseted bag approximately 5x5ft); received on 1-21-16 in good condition

Method: VIA Test, CC-027
FTIR analysis, CC-006
Razor Blade Test, CC-004*
Nitrite/Nitrate Test*
*Cortec Laboratories, Inc. is not ISO/IEC 17025 accredited for the test(s) marked.

Materials: VIA test kit
Razor Blade test kit
Paragon 1000 FTIR
Nitrite/Nitrate Test Strips (lot #HC435784)
Glycerol (lot #Q10A018)
Methanol, ACS grade (lot #090415C)
Plain polyethylene film (control film)
Oven set for 40°C (oven #4)

Procedure: The tests were conducted according to standard procedures for each test.

Results:

Razor Blade Test- Carbon Steel Panels

Sample	Panel #1	Panel #2	Panel #3	End Result
Daubert film	Pass	Pass	Pass	Pass
Control	Fail	-	-	Fail

Razor Blade Test- Copper Panels

Sample	Panel #1	Panel #2	Panel #3	End Result
Daubert film	Pass	Pass	Pass	Pass
Control	Fail	-	-	Fail

VIA Test

Sample	Plug #1	Plug #2	Plug #3	End Result
Daubert film	Grade 2	Grade 1	Grade 1	Fail
Control	Grade 0	-	-	Fail

Nitrite/Nitrate Test Strip Results

The Daubert film contains nitrite and nitrate on both sides of the film

Photos from VIA Testing:

Daubert film




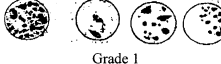
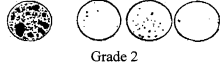
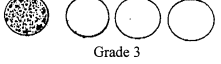
Control

Plug #1

Plug #2

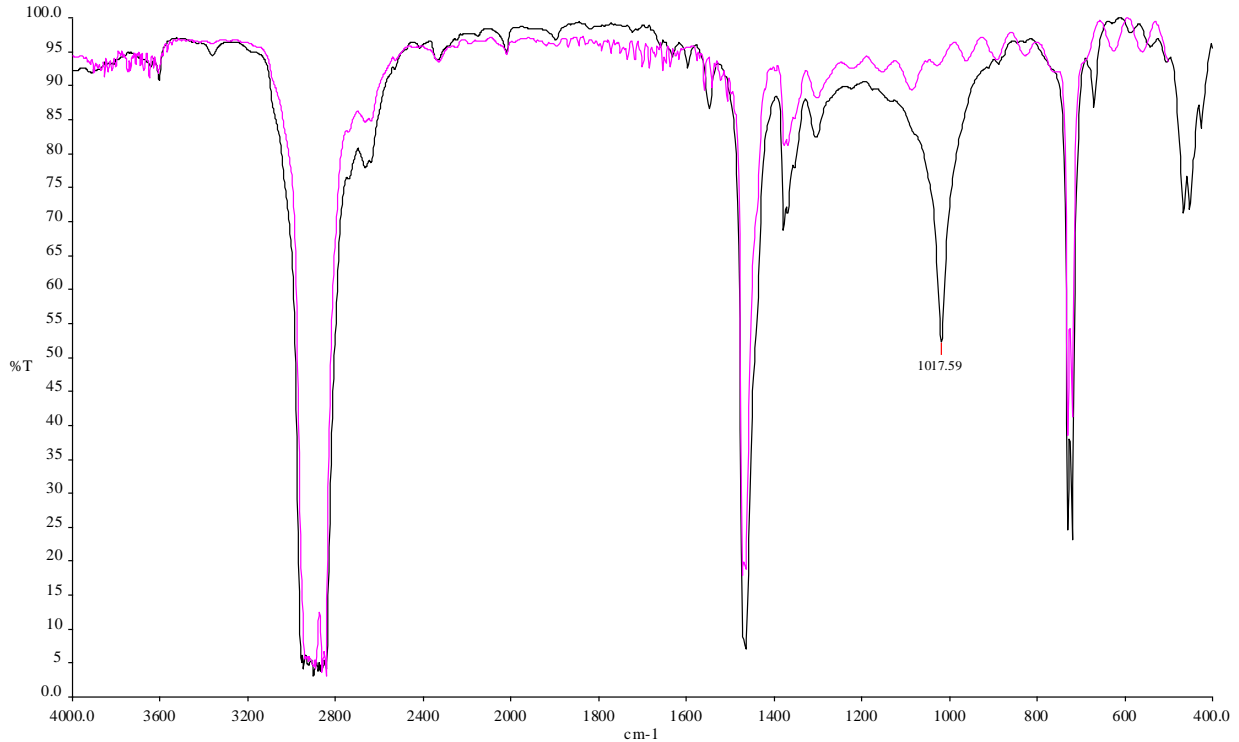
Plug #3

VIA Test Grades (Grade 2 or 3 are passing)
 All three plugs must be grade 2 or better to pass the test

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	

FTIR Analysis

Daubert film compared to plain PE film



Interpretations:

The submitted Daubert film does not provide sufficient vapor phase corrosion protection to pass the VIA test. These results show inconsistency of VCI content across the construction of the film. For contact corrosion protection, the Daubert film provides protection on both carbon steel and copper.

VpCI- 126 is regularly tested to ensure passing performance for the VIA and razor blade tests.