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Comparison of Caliburn Film and VpCI-126

To: Customer

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Project #: 15-270-1125.bis

Results reported by:

A handwritten signature in black ink, appearing to read "Anne Carlson".

Anne Carlson
Lab Technician

Approved by:

A handwritten signature in black ink, appearing to read "Eric Uutala".

Eric Uutala
Technical Service Manager



Background: A sample of Caliburn film was sent to Cortec Labs for evaluation. The film will be evaluated for contact and vapor phase corrosion protection abilities, compared to those of Cortec VpCI-126 film.

Sample Received: Blue Caliburn film, good quality, 2.5 mils (62.5 microns)

Method: Nitrite test*
Razor Blade Test, CC-004*
VIA test, CC-027
FTIR analysis, CC-006

*Cortec Laboratories, Inc. is not ISO/IEC 17025 accredited for the tests marked.

Materials: Razor Blade test kit
VIA test kit
Paragon 1000 FTIR
Nitrite strips (lot #HC435784)
VpCI-126 film (batch #410220)
Polyethylene film (control)

Procedure: All tests were performed according to their respective work instructions.

Note: All tests and results reported for VpCI-126 film are from project 15-221-1125 (published November 6, 2015)

Results:

Razor Blade (Copper)

Sample	Control	Panel 1	Panel 2	Panel 3	Overall
Caliburn Film	Fail	Fail	Fail	Fail	Fail
VpCI-126 Film	Fail	Pass	Pass	Pass	Pass

Razor Blade (Steel)

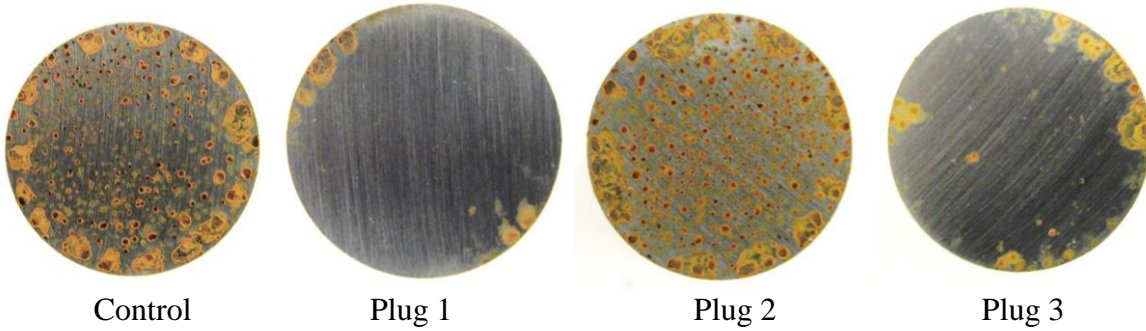
Sample	Control	Panel 1	Panel 2	Panel 3	Overall
Caliburn Film	Fail	Pass	Pass	Fail	Pass
VpCI-126 Film	Fail	Pass	Pass	Pass	Pass

VIA Test

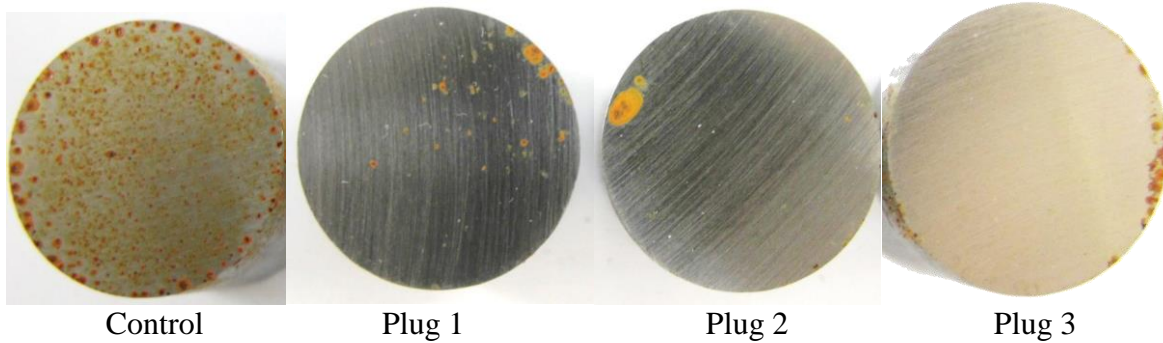
Sample	Control	Plug 1	Plug 2	Plug 3	Overall
Caliburn Film	0	2	0	1	Fail
VpCI-126 Film	0	2	2	2	Pass

Photos from VIA tests:

Caliburn Film







VpCI-126 Film

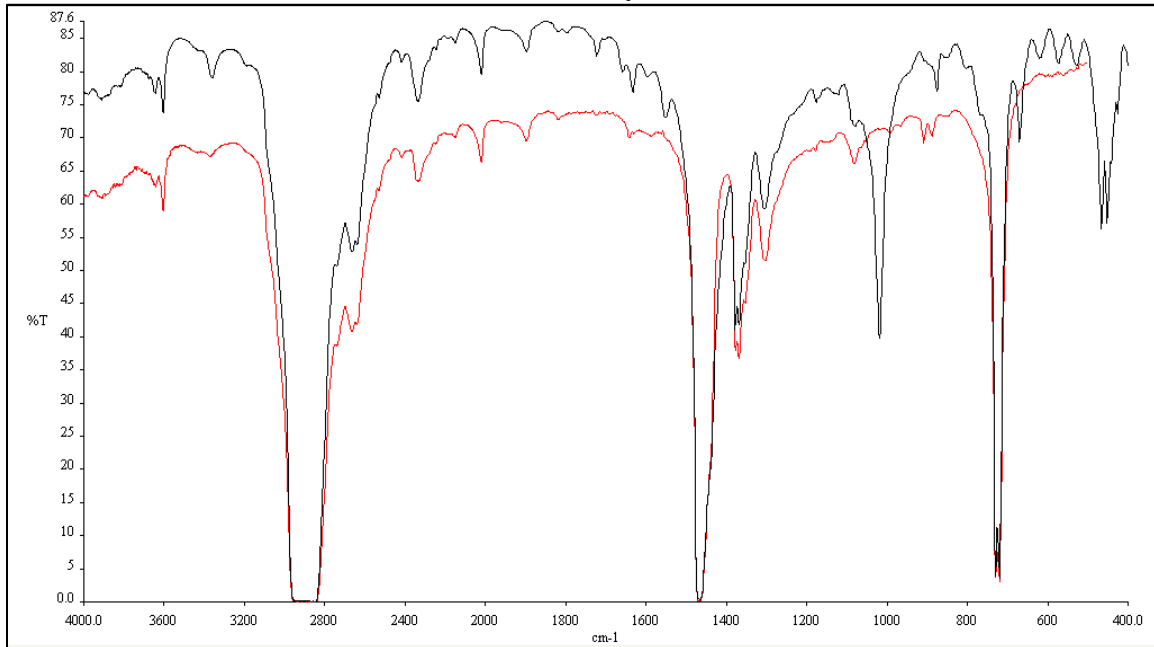


VIA Test Grading

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



Above: Caliburn film (Black, higher %T) compared to control PE (Red, lower %T)

Interpretations: The Caliburn film does provide adequate contact phase corrosion protection for steel, according to the Razor Blade test results. It does not, however, provide sufficient contact phase corrosion protection for copper, nor does it provide vapor phase corrosion protection, according to the VIA test results.

Conversely, VpCI-126 has been consistently shown to provide contact phase corrosion protection for both copper and steel, as well as effective vapor phase corrosion protection.

According to FTIR analysis, the Caliburn film does not contain a significant amount of corrosion inhibitor. It does contain nitrite (confirmed by the nitrite test), and it likely contains desiccant and other additives.