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***Evaluating Films Used by Customer,
and Comparing to VpCI-126***

To: Customer

From: Cortec Laboratories, Inc.
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cc: Boris Miksic
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Project #: 15-176-1125.bis

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Brian Benduha
Lab Technician

Approved by: *Eric Uutala*
Eric Uutala
Technical Service Manager



Background: Three samples of film have been submitted for corrosion testing compared to VpCI-126 film of the same thickness. Customer uses these films to give corrosion protection to finished connecting rods that they supply to an engine plant.

Customer has stated that the films are manufactured by RMM & Associates, though a specific product name and/or code was not known.

Sample Received: The following film samples were received on 8/10/15 in good condition:

1. Yellow film, 2mils
2. Green film, 2mils
3. Blue film, 2mils

Method: VIA Test, CC-027
Razor Blade Test, CC-004*

**Cortec Laboratories, Inc is not ISO/IEC 17025 accredited for the test(s)*

marked.

Materials: VIA test kit
Razor blade test kit
VpCI-126 gusseted bag, 2mils (batch #31689)
Methanol (lot #041715D)
Glycerol (lot #Q10A018)
Oven set for 40°C (oven #4)
Plain polyethylene film, 2mils (control film)

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
Yellow film	Fail	Fail	Fail	Fail
Green Film	Fail	Fail	Fail	Fail
Blue Film	Fail	Fail	Fail	Fail
VpCI-126 film	Pass	Pass	Pass	Pass
Control	Fail	-	-	Fail

Razor Blade Test- Copper Panels

Sample	Panel #1	Panel #2	Panel #3	End Result
Yellow film	Fail	Fail	Fail	Fail
Green Film	Fail	Fail	Fail	Fail
Blue Film	Fail	Fail	Fail	Fail
VpCI-126 film	Pass	Pass	Pass	Pass
Control	Fail	-	-	Fail

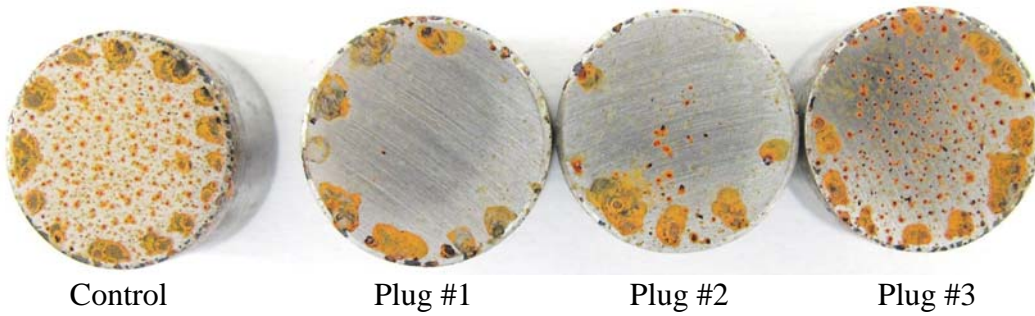
Results:

VIA Test

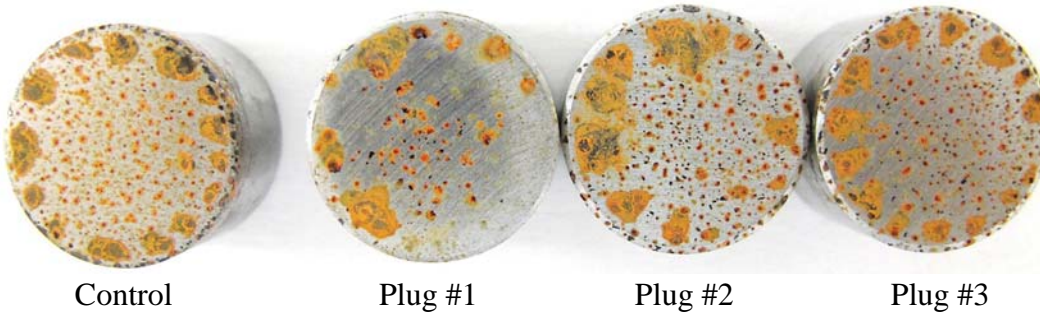
Sample	Plug #1	Plug #2	Plug #3	End Result
Yellow film	Grade 2	Grade 1	Grade 1	Fail
Green Film	Grade 1	Grade 1	Grade 0	Fail
Blue Film	Grade 1	Grade 0	Grade 0	Fail
VpCI-126 film	Grade 3	Grade 3	Grade 2	Pass
Control	Grade 0	-	-	Fail

Photos from VIA Testing:

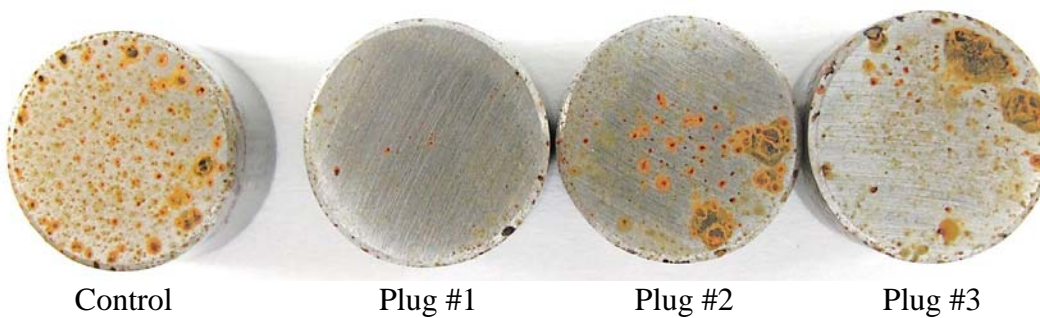
Green Film



Blue Film

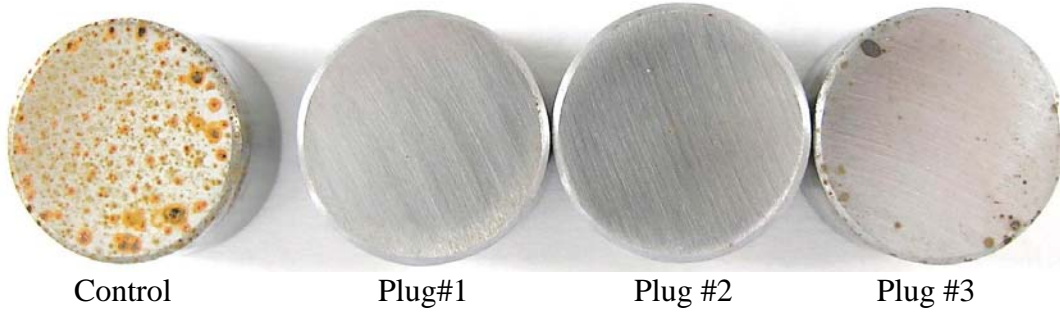


Yellow Film



Photos from VIA Testing: (continued)

Cortec's VpCI-126 film



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

		<p>Grade 0</p>
Grade 0:	Blind test No corrosion inhibiting effect	<p>Grade 1</p>
Grade 1:	Blind test Minute corrosion inhibiting effect	
Grade 2:	Blind test Medium corrosion inhibiting effect	<p>Grade 2</p>
Grade 3:	Blind test Good corrosion inhibiting effect	<p>Grade 3</p>

Interpretations: The three submitted films do not provide sufficient contact or vapor phase corrosion protection, based on results of VIA and razor blade testing.

Cortec VpCI-126 film of the same thickness provides excellent contact and vapor phase corrosion protection.