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Evaluation of Blue Film from Apak

From: Cortec Corporation Laboratories
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Project #: 10-124-1125(bis)

Test conducted by:

A handwritten signature in purple ink, appearing to read "Ming Shen".

Ming Shen

Approved by:

A handwritten signature in black ink, appearing to read "M. Kharshan".

Margarita Kharshan
Laboratory Director

Date: June 15, 2010



Background: A clear blue film bag reportedly from Apak, measured 3 mil film thickness, was submitted for testing of anticorrosion properties versus that of Cortec VpCI-126 film.

Sample Received: a clear blue film bag

Sample(s) labeled: N/A

Methods:

- Nitrite Test
- FTIR
- Razor Blade Test
- VIA Test

Materials:

- 1) Submitted film
- 2) Carbon Steel Panels
- 3) Copper Panels
- 4) Methanol-lab grade
- 5) Razor Blade test kit
- 6) VIA test kit
- 7) Perkin Elmer FTIR 1000 Spectrometer
- 8) EM Quant Nitrate/Nitrite Test Strips

Procedure: The above tests were performed according to standard procedures for each.

Results:

Nitrite Test

Sample	Nitrite
Submitted Film	Positive

FTIR

Spectrum of the submitted film showed the presence of corrosion inhibitors but an insufficient amount. See attached.

Razor Blade Test Performed on Carbon Steel Panels

Sample	Panel 1	Panel 2	Panel 3
Submitted Film	Fail	Fail	Fail
Control	Fail	-	-

VIA Test




Sample	Plug #1	Plug #2	Plug #3
	Grade	Grade	Grade
Submitted Film	0	0	0
Control	Grade 0	-	-

Note: VIA Grading system is attached below

Interpretations:

The submitted film is nitrite based. It contains an insufficient amount of corrosion inhibitor. It failed Razor Blade Test on carbon steel and VIA test, meaning it doesn't provide protection for carbon steel in either contact phase or vapor phase.

On the contrary, Cortec VpCI-126 film will pass all the above tests. It provides multimetal protection in both contact phase and vapor phase. It's clearly a better choice.

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	