



● 4119 White Bear Parkway, St. Paul, MN 55110 USA
● Phone: (651) 429-1100, Fax: (651) 429-1122
● Toll Free: (800) 4-CORTEC, E-mail: info@cortecvci.com
● cortecvci.com • corteclaboratories.com

Evaluation of Film from Versa-Pack

To: Matt Richey

For: Joe Louisell
Metals Preserve Group
20420 Stephens, Suite C
St. Claire, MI 48080

From: Cortec Laboratories, Inc.
4119 White Bear Parkway
St. Paul, MN 55110

cc: Boris Miksic
Cliff Cracauer
Robert Kean
Jay Zhang

Project #: 17-136-1125

Results reported by: *Brian Benduha*
Brian Benduha
Lab Technician

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



Background: Metals Preservation Group sent a sample of film from Versa-Pack for testing, to determine if it contains any active corrosion inhibitor. MPG has indicated that this film is used to pack crankshafts, and the end user has been experiencing corrosion issues.

Samples Received: 4mil film bag from Versa-Pack, received on 7/14/17 in good condition.

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

Materials: VIA test kit
 Razor blade test kit
 Paragon 1000 FTIR
 Glycerol (lot #Q10A018)
 Methanol, ACS grade (lot #032916C)
 Oven set for 40°C (oven #10)
 Nitrite/Nitrate Test Strips (lot #HC553793)
 Plain polyethylene film (control film)

Procedure: The testing was conducted according to standard procedures for each test.

Results:

Razor Blade Test- Carbon Steel Panels

Sample	Panel #1	Panel #2	Panel #3	End Result
Film from Versa-Pack	Fail	Fail	Fail	Fail
Control	Fail	-	-	Fail

VIA Test

Sample	Plug #1	Plug #2	Plug #3	End Result
Film from Versa-Pack	Grade 1	Grade 0	Grade 0	Fail
Control	Fail	-	-	Fail

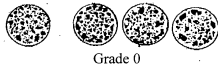
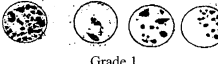
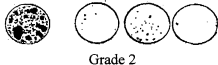
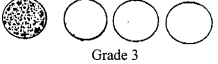
Nitrite/Nitrate Test Strips

Sample	Test Results
Film from Versa-Pack	negative

Photos from VIA Testing:

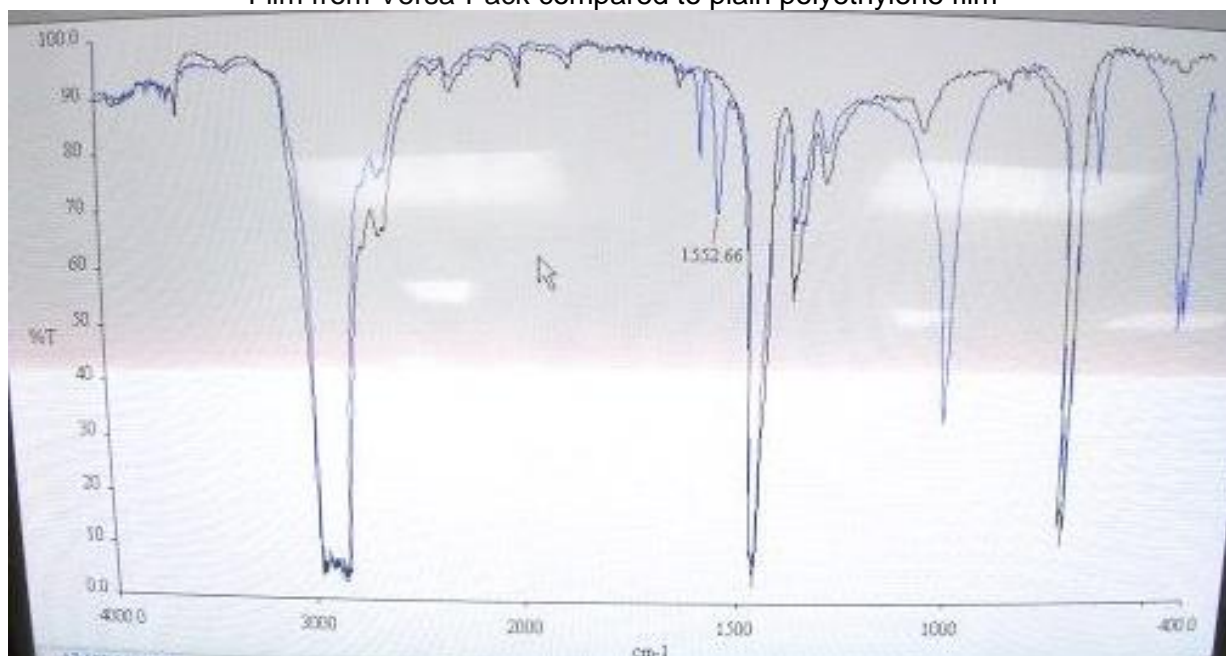


All three plugs must be grade 2 or better to pass the test

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

Film from Versa-Pack compared to plain polyethylene film



Interpretations:

The film sample from Versa-Pack does not provide corrosion protection in contact or vapor phase, per razor blade and VIA testing. The film does appear to contain corrosion inhibitor chemistry according to the FTIR analysis, but the amount is not sufficient, given the other test results found.