



- 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

## Concord Film Testing Compared to VpCI-126

**To:** Mike Gabor

**For:** Joe Louisell  
Metals Preservation Group  
20420 Stephens  
St. Claire Shores, MI 48080

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

**cc:** Boris Miksic  
Cliff Cracauer  
Robert Kean  
Jay Zhang

**Project #:** 18-106-1125

**Results reported by:**

Brian Benduha  
Lab Technician

**Approved by:**

John Wulterkens  
Technical Service Engineer



**Background:** Two samples of VCI film were collected from the Caterpillar plant in Monterrey Mexico. The manufacturer of these films is Concord, which is located in Texas. Concord uses Daubert masterbatch for their VCI films. These films will be evaluated for their corrosion protection compared to VpCI-126 film.

**Sample Received:** The following samples were received on 5-4-18 in good condition:  
 1. Blue Concord Film, 4mil  
 2. Blue Concord Film, 2mil

**Method:** FTIR Analysis, CC-006  
 NACE Standard VIA Test, TM0208-2008, item No. 21253\*  
 Razor Blade Test, CC-004\*  
 Nitrite/Nitrate Test\*  
 \*The test(s) marked are not covered under Cortec Laboratories, Inc. ISO 17025 Scope of Accreditation

**Materials:** VIA test kit (testing jars/apparatus, steel plugs, 400grit sandpaper)  
 Carbon Steel panels, SAE 1010 (for razor blade testing)  
 Copper panels (for razor blade testing)  
 VpCI-126 film, 4mil (batch #510220)  
 Glycerol (lot #Q10A018)  
 240 grit sandpaper  
 Methanol, ACS grade (lot #071417B)  
 Calibrated thermometer (lot #M55842)  
 Kimwipes  
 DI water

**Procedure:** For VIA testing, the procedure was followed according to NACE VIA Test, TM0208-2008 option 2 (option 2 uses machine-aided grinding and polishing for the steel plugs).

The FTIR and razor blade test was followed according to standard procedure.

**Results:** The following results were found for the razor blade test:

**Razor Blade Test- Carbon Steel Panels**

Sample	Panel #1	Panel #2	Panel #3	End Result
Blue Concord Film, 4mil	Pass	Pass	Pass	Pass
Blue Concord Film, 2mil	Pass	Pass	Pass	Pass
VpCI-126 film	Pass	Pass	Pass	Pass
Control	Fail	-	-	Fail

**Razor Blade Test- Copper Panels**

Sample	Panel #1	Panel #2	Panel #3	End Result
Blue Concord Film, 4mil	Fail	Fail	Fail	Fail
Blue Concord Film, 2mil	Fail	Fail	Fail	Fail
VpCI-126 film	Pass	Pass	Pass	Pass
Control	Fail	-	-	Fail

**Results:**

The following results were found:

**Nitrite/Nitrate Test Strips**

Sample	Results
Blue Concord Film, 4mil	Does not contain any nitrite or nitrates
Blue Concord Film, 2mil	Does not contain any nitrite or nitrates

**NACE VIA Test**

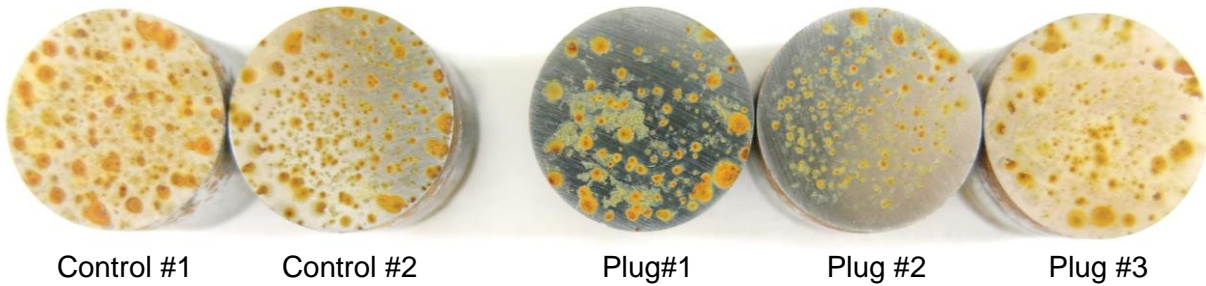
Sample	Plug #1	Plug #2	Plug #3	End Result*
Blue Concord Film, 4mil	Grade 0	Grade 0	Grade 0	Fail
Blue Concord Film, 2mil	Grade 0	Grade 0	Grade 0	Fail
VpCI-126 film	Grade 3	Grade 3	Grade 2	Pass
Control	Grade 0	Grade 0	-	Fail

\*Note- plugs were graded by visual examination.

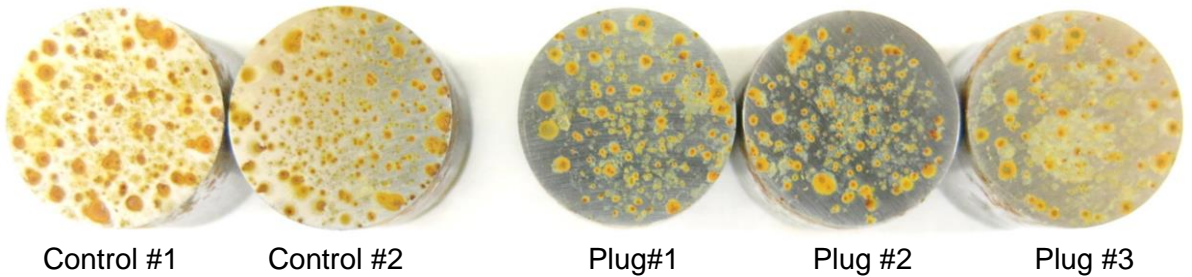
VpCI-126 was previously tested (results are from 16-083-1125)

**Photos from the NACE VIA test:**

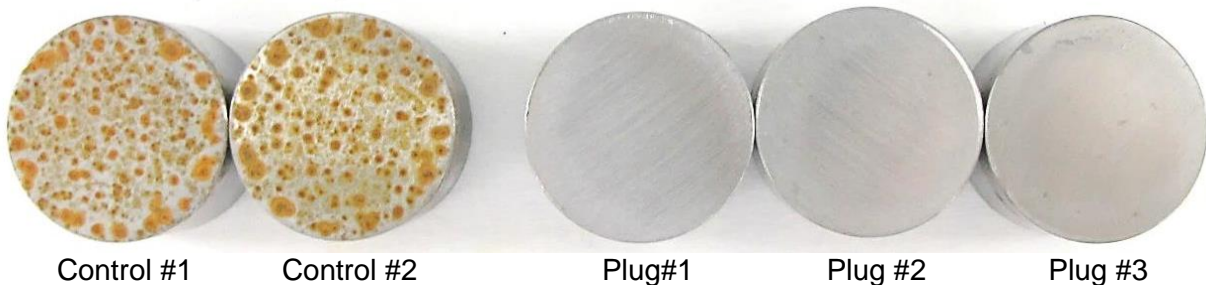
Blue Concord film, 4mils







Blue Concord film, 2mils



VpCI-126 film, 4mils

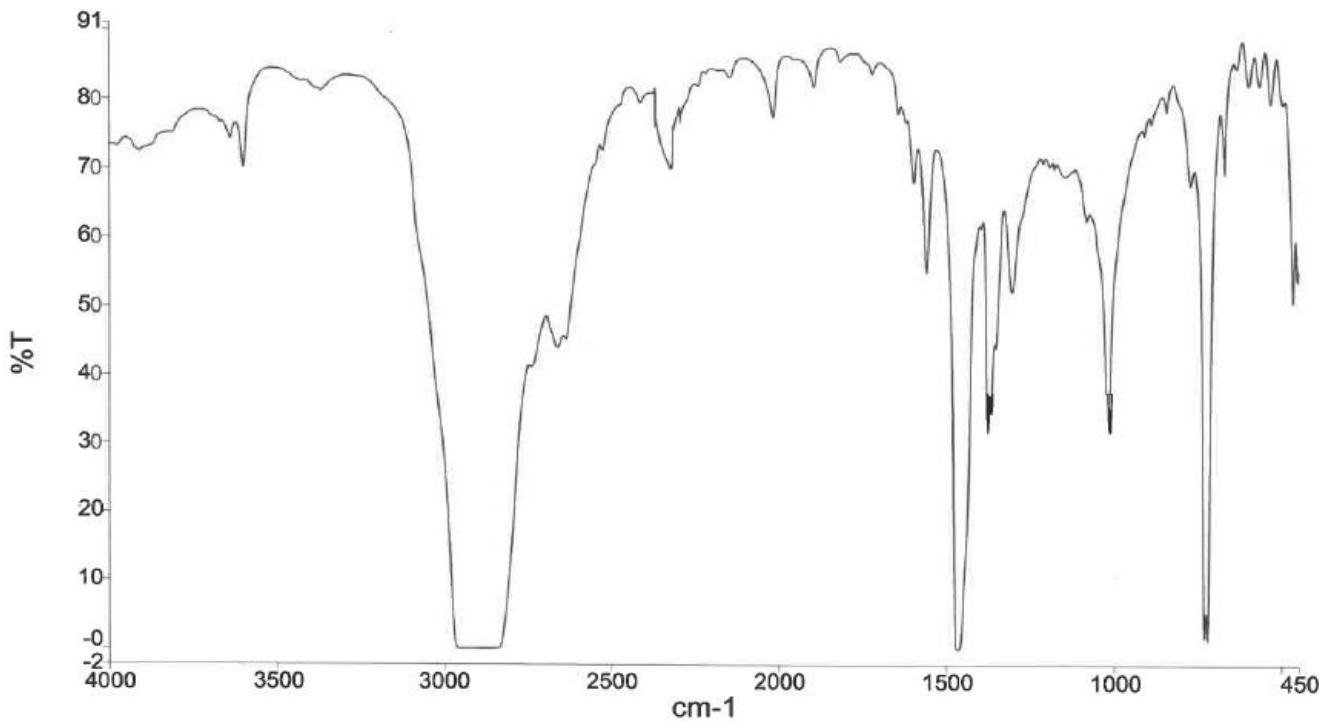


VIA Test Grades (Grade 2 and 3 are passing)  
 All three plugs must be grade 2 or better to pass the test

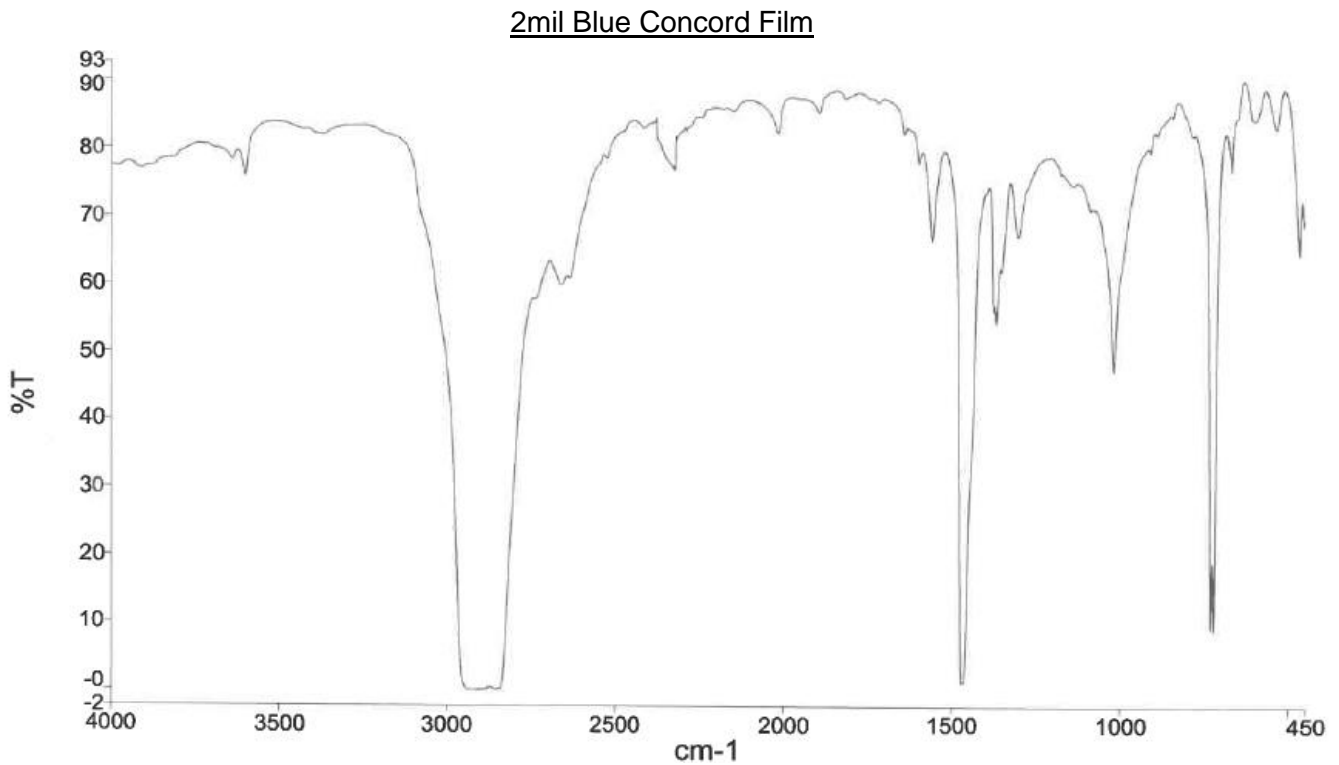
		
		Grade 0
Grade 0:	Blind test No corrosion inhibiting effect	
Grade 1:	Blind test Minute corrosion inhibiting effect	Grade 1
Grade 2:	Blind test Medium corrosion inhibiting effect	
Grade 3:	Blind test Good corrosion inhibiting effect	Grade 2
		
		Grade 3

**FTIR Analysis:**

4mil Blue Concord Film



**FTIR Analysis:**



**Interpretations:**

Both of the submitted Concord films performed roughly the same. They do not provide sufficient vapor phase corrosion protection to pass the VIA test, and only provide contact protection for steel, but not for copper. In comparison, VpCI-126 film provides excellent vapor phase corrosion protection and passes the razor blade test for both steel and copper.