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## *Evaluation of Nylacast Film vs. VpCI-126 Film*

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**Project #:** 14-031-1125.updated

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**Approved by:** *Eric Uutala*  
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**Date:** April 17, 2014



**Background:** Brian Coles sent in green VCI bags from a company called Nylacast. The company exports 60,000 steel to nylon gears per week for electric steering systems. During the process they use a water based corrosion inhibitor then the parts are individually packed in these green VCI bags. From there the bags are packed in boxes lined with VCI, but the parts still get corrosion on exports to China.

**Purpose:** To test the green bags for VCI content, and compare to VpCI-126 film.

**Samples Received:** Two green film bags, 3mils thick, from Nylacast

**Method:** VIA Test, CC-027  
 Razor Blade Test, CC-004\*  
 FTIR analysis, CC-006  
 \*Cortec Laboratory is not accredited for the test marked

**Materials:** VIA test kit  
 Razor blade test kit,  
 Paragon 1000 FTIR  
 VpCI-126 Film, 4mils (roll #3407520800259)  
 Plain polyethylene film (control)

**Procedure:** The tests were conducted according to standard procedures for each test.

**Results:**

**Razor Blade Test- Carbon Steel Panels**

Film Sample	Panel #1	Panel #2	Panel #3	Pass / Fail
Nylacast Film	Pass	Fail	Fail	Fail
VpCI-126 Film	Pass	Pass	Pass	Pass
Control	Fail	-	-	-

**Razor Blade Test- Copper Panels**

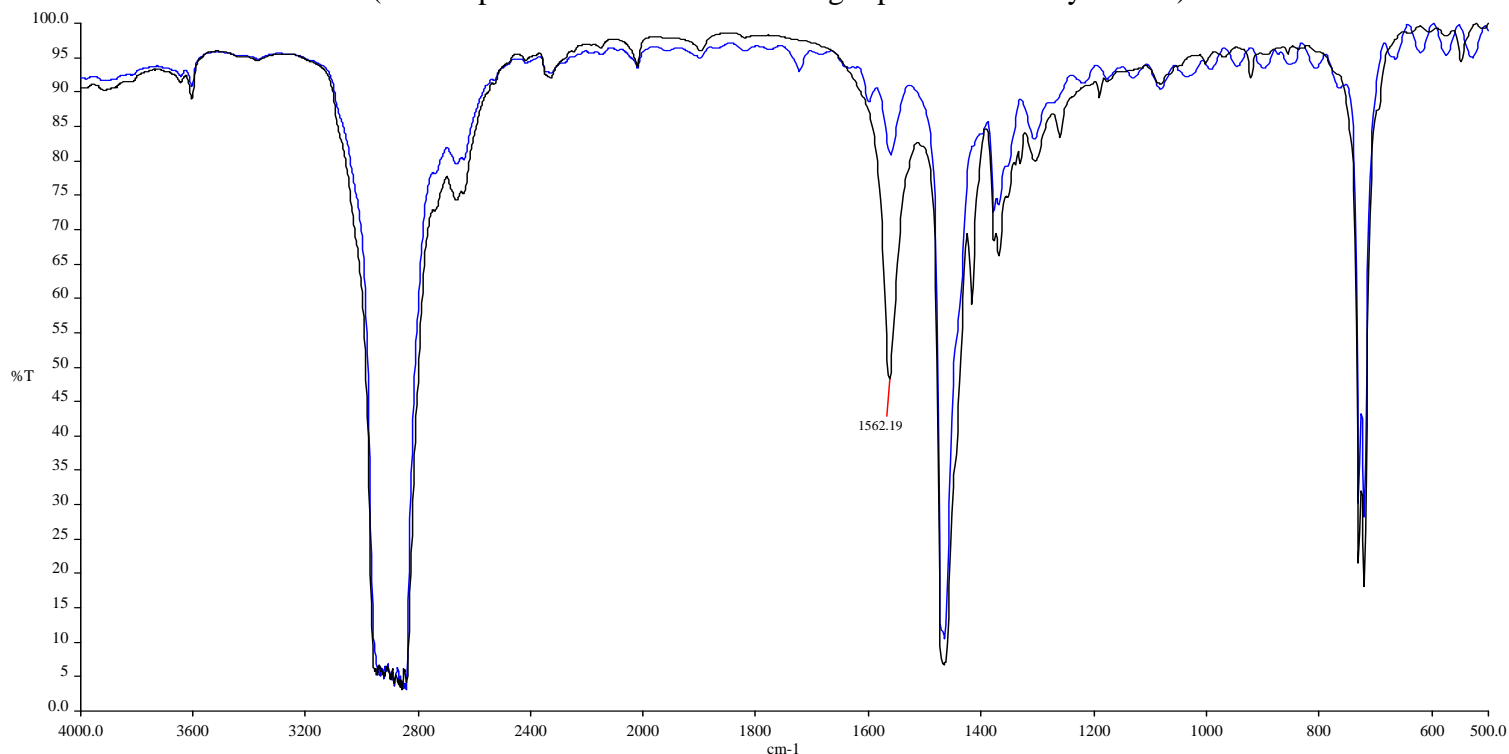
Film Sample	Panel #1	Panel #2	Panel #3	Pass / Fail
Nylacast Film	Fail	Fail	Fail	Fail
VpCI-126 Film	Pass	Pass	Pass	Pass
Control	Fail	-	-	-

**VIA Test**

Film Sample	Plug #1	Plug #2	Plug #3	End Result
Nylacast Film	Grade 1	Grade 0	Grade 0	Fail
VpCI-126 Film	Grade 3	Grade 3	Grade 2	Pass
Control	Grade 0	-	-	-

## FTIR Analysis

Nylacast film compared to VpCI-126 film  
(note- VpCI-126 film shows a stronger peak of carboxylic acid)



### **Interpretations:**

1. The submitted film didn't provide sufficient protection in contact or vapor phase. (see results of Razor Blade Test for contact and VIA Test for vapor phase protection)
2. FTIR analysis shows that Nylacast film contains a very small amount of the salt of carboxylic acid (probably sodium salt), which is not sufficient for providing even contact protection to metals and probably doesn't contain any vapor phase corrosion inhibitors.

Photo:

### VIA Test results for Nylacast film



VIA Test Grades (Grade 2 or 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