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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 Stretch Films** To: Tim Rayburn From: Cortec Corporation Laboratories 4119 White Bear Parkway St.Paul, MN 55110 cc: **Boris Miksic** Anna Vignetti Mike Morin **Cliff Cracauer Project** #:11-246-1125(bis) diz Austin

Test conducted by:

Liz Austin Sr. Lab Technician

Approved by:

M. Rharehoe

Margarita Kharshan Laboratory Director



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Background: Customer submitted 3 samples of stretch film and requested that the contactphase corrosion inhibition be tested. Film is manufactured by ITW.

Sample Received:

- 1. 9.5"x 5' blue protective film, unlabeled, submitted 11-11-11, good condition
- 2. 15"x 5' blue protective film, unlabeled, submitted 11-11-11, good condition
- 3. Light blue stretch film, unlabeled, submitted 11-11-11, good condition

Method:

- 1) Razor Blade Test CC-004
- 2) FTIR Test CC-006
- 3) Nitrite Test

Materials:

- 1) Razor Blade test kit
- 2) Perkin Elmer Paragon 1000 Spectrophotometer
- 3) Nitrite/Nitrate Test strips

Procedure: The tests were conducted according to standard procedures for each test. Razor blade testing was performed on film that was pre-stretched, and film that had not been stretched.

Results:

Sample	Panel 1	Panel 2	Panel 3
9.5"x 5' blue film-not stretched	Fail	Fail	Fail
9.5"x 5' blue film-stretched	Fail	Fail	Fail
15"x 5' blue film-not stretched	Fail	Fail	Fail
15"x 5' blue film- stretched	Fail	Fail	Fail
Light blue stretch film-not stretched	Fail	Fail	Fail
Light blue stretch film-stretched	Fail	Fail	Fail
Control	Fail	_	_

Razor Blade Test-Carbon Steel Panels

Razor Blade Test -Copper Panel	S
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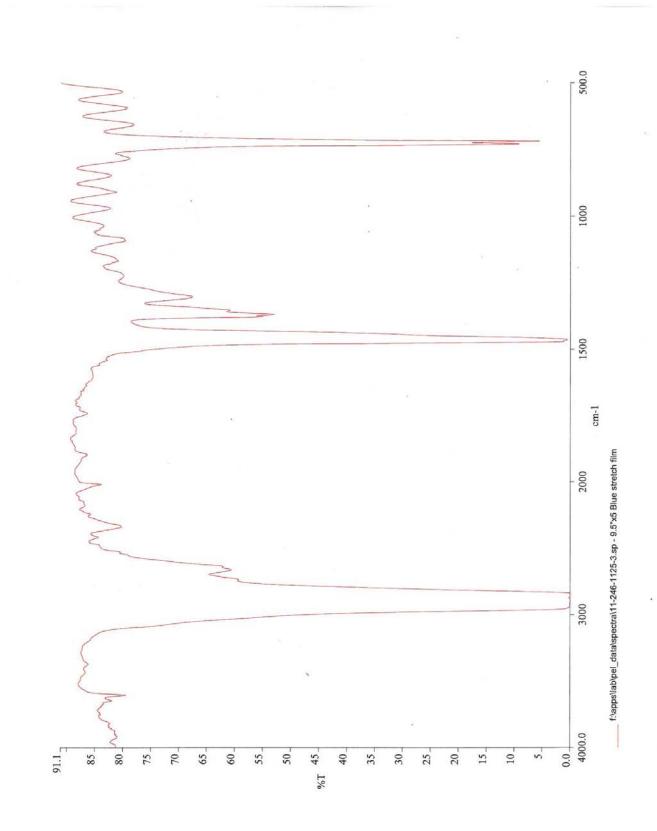
Razor blade rest -Copper railers					
Sample	Panel 1	Panel 2	Panel 3		
9.5"x 5' blue film-not stretched	Fail	Fail	Fail		
9.5"x 5' blue film-stretched	Fail	Pass	Pass		
15"x 5' blue film-not stretched	Fail	Fail	Pass		
15"x 5' blue film- stretched	Pass	Pass	Pass		
Light blue stretch film-not	Pass	Pass	Pass		
stretched					
Light blue stretch film-stretched	Pass	Pass	Pass		
Control	Fail	-	-		

Nitrite Test				
Sample	Result			
9.5"x 5' blue film	No nitrite			
15"x 5' blue film	No nitrite			
Light Blue stretch film	No nitrite			

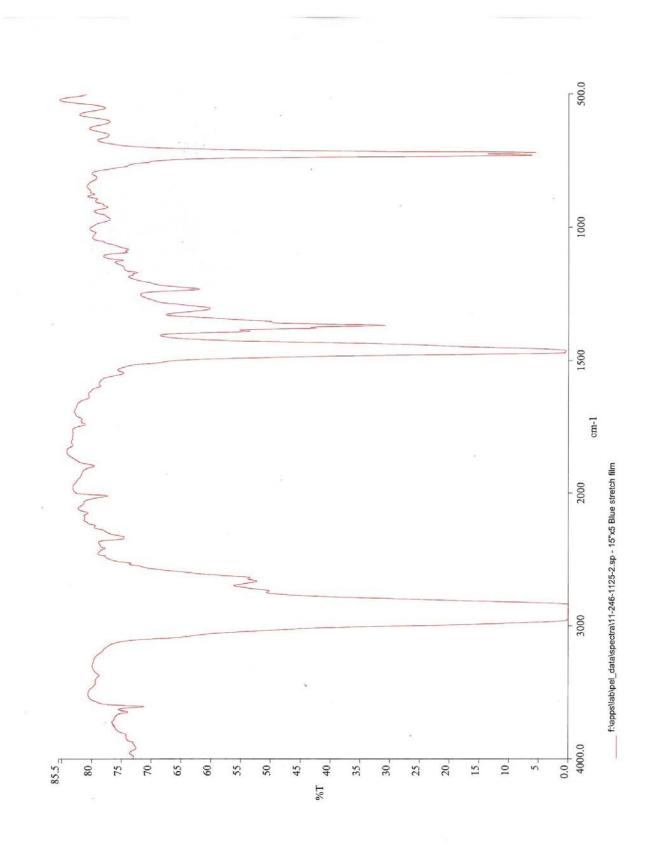
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Interpretations:

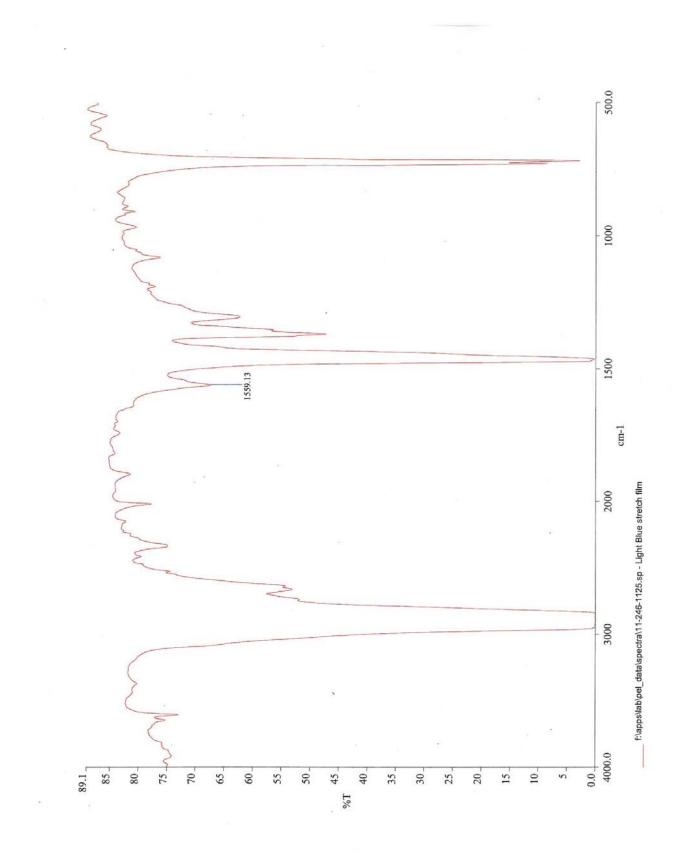
- 1. Based on the razor blade test results, all of the submitted films failed to provide contact-phase corrosion protection for carbon steel. When the films were stretched before testing, all of the films provided protection for copper. The light blue film was the only film that provided contact-phase corrosion protection for copper when not stretched before testing.
- 2. The FTIR spectra for the films determined that the light blue film contained characteristics of a carboxylate, which is most likely sodium benzoate. Nitrite test results determined that the film does not contain nitrite.



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