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Evaluation of Films from Germany

Purpose: To test the VCI and physical properties of the three submitted film samples sent in from Corpac Deutschland GmbH & Co. There are two blue Fuchs films that were most likely manufactured by Brangs & Heinrich, and one yellow Excor film.

Materials: Excor yellow film (80 μ)
 Fuchs blue film (120 μ)
 Fuchs blue film (140 μ)
 VpCI-126 film, batch # 16777
 Razor Blade Test Kit
 VIA Test Kit
 Perkin Elmer FT-IR 1000 Spectrometer
 EM Quant Nitrite/Nitrate Test strips (Lot # OC555062, Exp 9/08)

Method: Razor Blade Test
 VIA Test
 FT-IR Analysis
 Nitrite Test

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

Results: Razor Blade Test (carbon steel)

Material	Panel #1	Panel #2	Panel #3
Excor's yellow film (80 μ)	Fail	Fail	Fail
Fuch's Blue Film (120 μ)	Fail	Fail	Fail
Fuch's Blue Film (140 μ)	Fail	Fail	Fail
VpCI-126 film	Pass	Pass	Pass
Control	Fail	Fail	Fail

Razor Blade Test (copper)

Material	Panel #1	Panel #2	Panel #3
Excor's yellow film (80 μ)	Fail	Fail	Fail
Fuch's Blue Film (120 μ)	Fail	Fail	Fail
Fuch's Blue Film (140 μ)	Fail	Fail	Fail
VpCI-126 film	Pass	Pass	Pass
Control	Fail	Fail	Fail



VIA Test

Material	Panel #1	Panel #2	Panel #3
Excor's yellow film (80μ)	Grade 1	Grade 1	Grade 0
Fuch's Blue Film (120μ)	Grade 1	Grade 0	Grade 0
Fuch's Blue Film (140μ)	Grade 1	Grade 1	Grade 0
VpCI-126 film	Grade 3	Grade 3	Grade 3
Control	Fail	Fail	Fail

Nitrite Test: None of the 3 films contains any nitrite.

Physical Properties	Excor Film	Fuch's Film #1	Fuch's Film #2	VpCI-126 Film
Mil thickness	3.2	5	5.6	5
Breaking Factor Machine Direction (lbs/in)	17.48	16.42	15.25	16.78
Breaking Factor Cross Direction (lbs/in)	15.2	14.38	12.72	17.35
Machine Direction Tensile Strength at Break(psi)	6101.36	3061.02	3145.12	3380.1
Cross Direction Tensile Strength at Break(psi)	5037.51	2588.57	2839.67	3574.11
Machine Direction Elongation at Break (%)	347.3	299.9	305.5	453.4
Cross Direction Elongation at Break (%)	450	248.7	413.7	402.1
Machine Direction Tensile Strength at Peak(psi)	6101.36	53723.67	3133.06	3380.1
Cross Direction Tensile Strength at Peak(psi)	5037.51	2770.55	2840.02	3635.84
Machine Direction Tear Strength (Newtons)	11876.64	161.87	153.69	10987.2
Cross Direction Tear Strength (Newtons)	22288.32	395.67	313.92	23334.72
Puncture Strength (Joules)	1.88	1.37	1.29	1.43

Conclusion: All three of the films sent in by Gerhard did poorly on the corrosion testing. Neither one of them passed the razor blade or VIA test, and when compared to Cortec's VpCI-126 film there's an obvious difference between the corrosion inhibiting effect.

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VIA Test Grades (Grade 2 or 3 are passing)

- 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



Grade 0



Grade 1



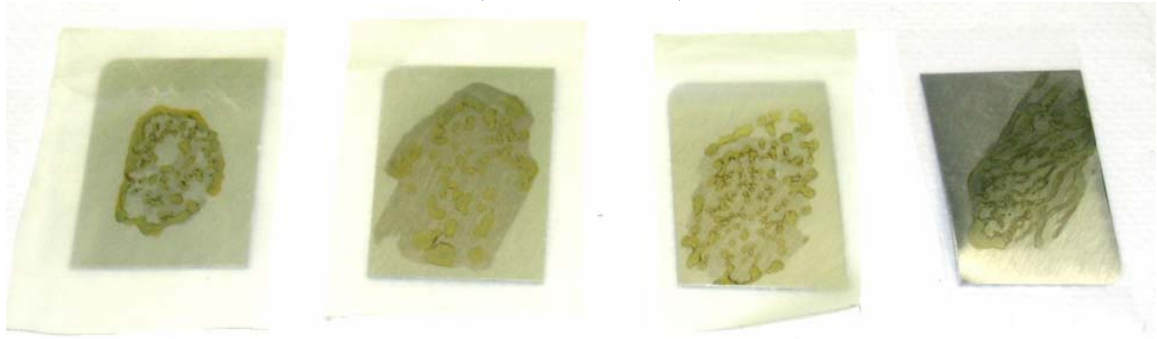
Grade 2



Grade 3

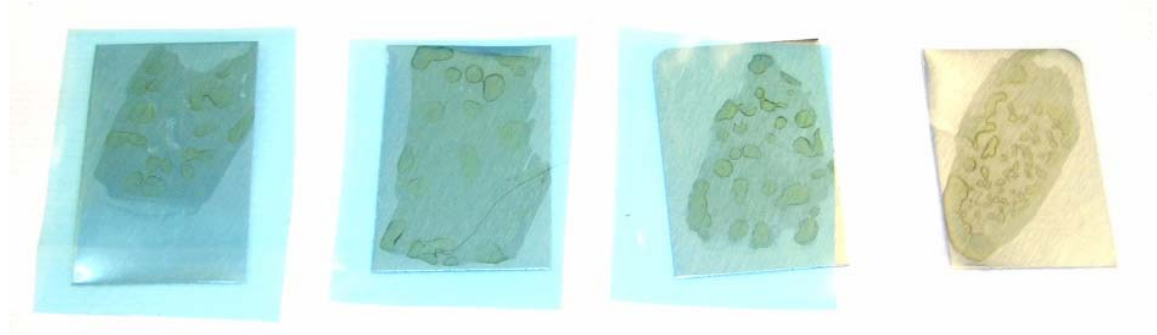
Razor Blade Test

(Carbon Steel)



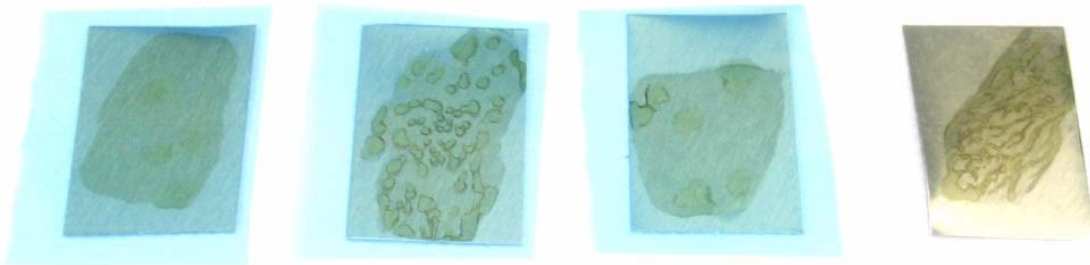
Excor's yellow film (80 μ)

(control)



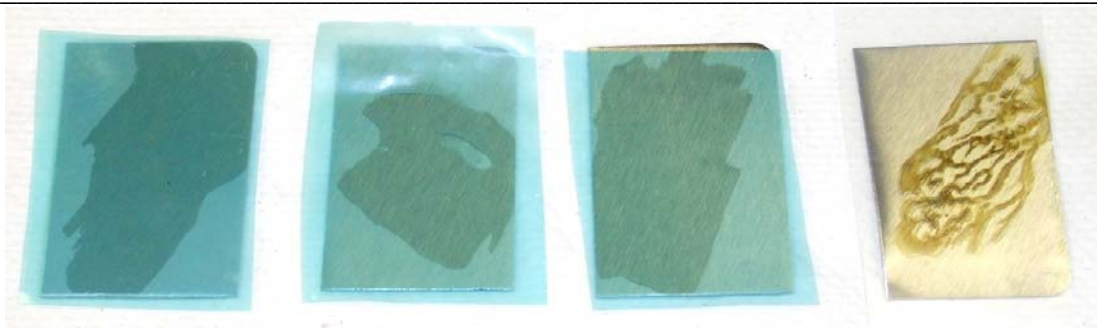
Fuchs blue film (120 μ)

(control)



Fuchs blue film (140 μ)

(control)



Cortec's VpCI-126 film

(control)

VIA Tests



Excor's yellow film (80 μ)



(control)



Fuchs blue film (140 μ)



(control)



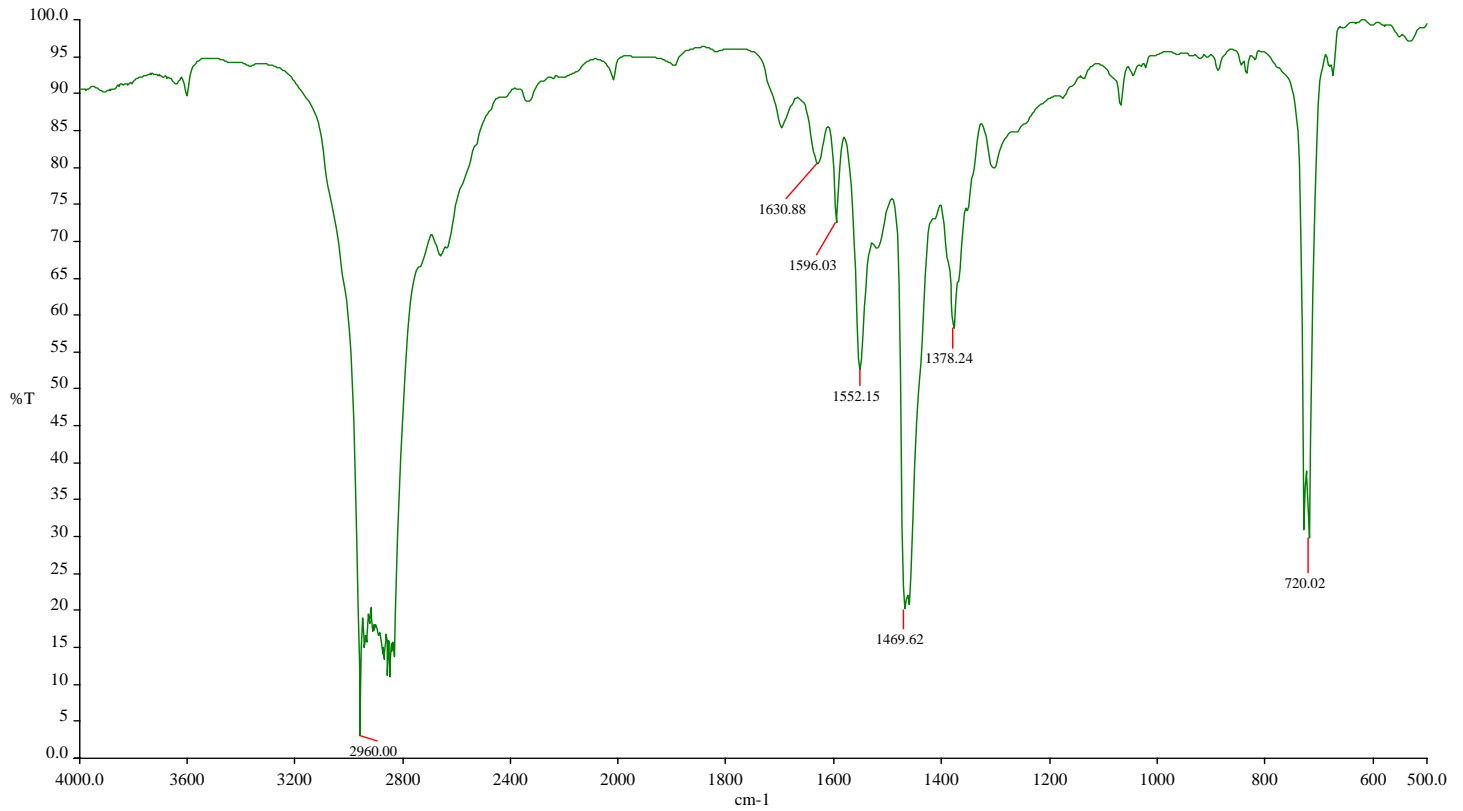
Fuchs blue film (120 μ)



(control)

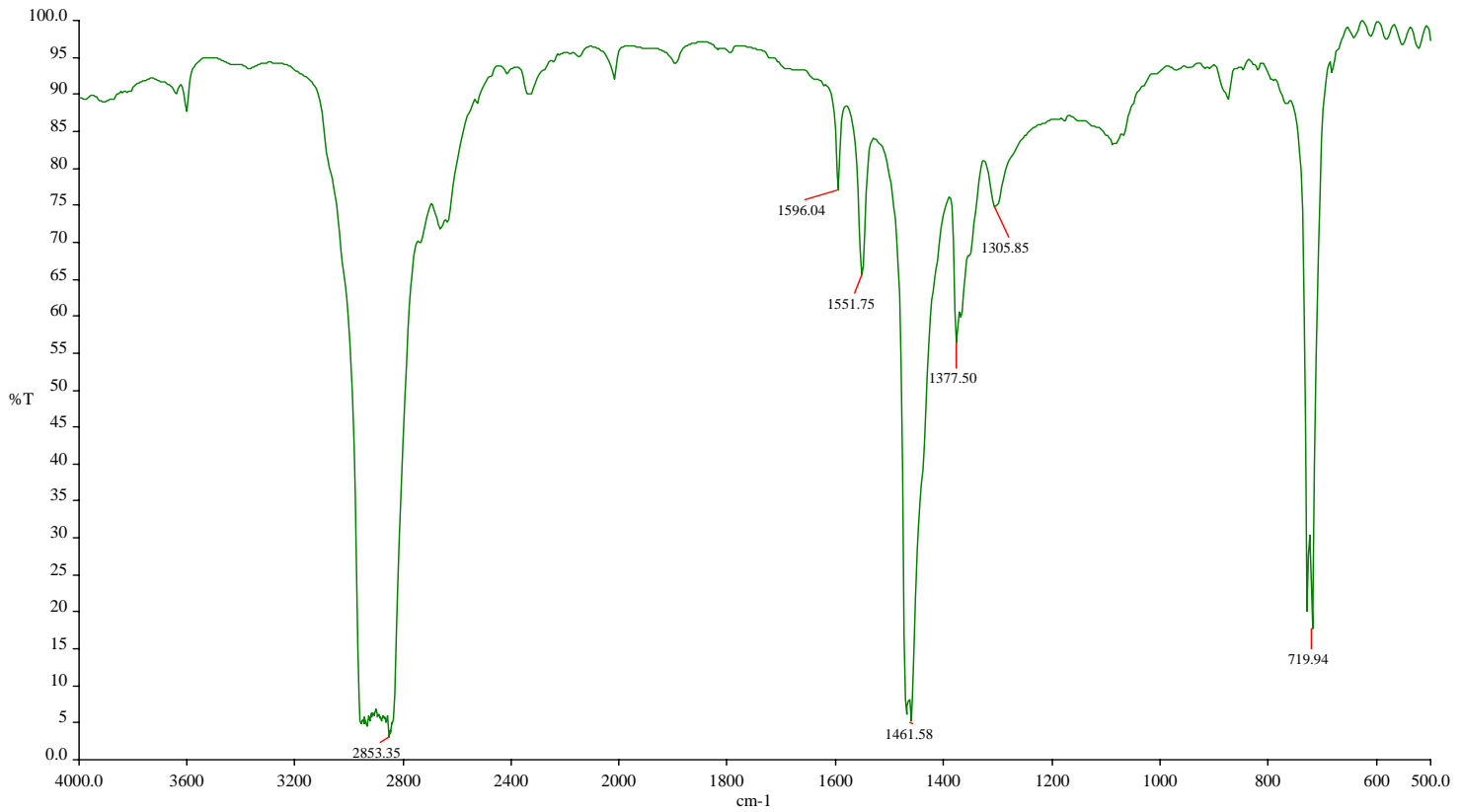
FTIR Analysis

Fuch's Blue Film (140 μ)



FTIR Analysis

Fuch's Blue Film (120 μ)



FTIR Analysis

Excor's yellow film (80 μ)

