

Comparing corrosive inhibition of Zerust film and Safepack foam with VpCI-126 Blue and VpCI-130

Background: First Flight/ Mico Foam wanted to compare the corrosive inhibition of the submitted Zerust films and Safepack foam with VpCI-126 Blue and VpCI-130.

Purpose: Evaluate the corrosive inhibition of the submitted films and foams and compare it to VpCI-126 Blue and VpCI-130.

Method: FT-IR
Razor Blade
SO₂ Test
VIA

Materials: FT-IR Test Kit
Razor Blade Test Kit
VIA Test Kit
SO₂ Test Kit
VpCI-126 Blue, lot # 600230
Yellow Zerust film
Clear Zerust film
Safepack foam
VpCI-130 foam

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

Results:

Razor Blade Test on Carbon Steel

Material	Panel 1	Panel 2	Panel 3
Submitted 6 mil Yellow Zerust Film	Pass	Pass	Pass
Submitted 4 mil Clear Zerust Film	Pass	Pass	Pass
VpCI-126 Blue Film	Pass	Pass	Pass
Safepack Foam	Pass	Pass	Pass
VpCI-130 Foam	Pass	Pass	Pass
Control Foam	Fail	Fail	Fail
6 mil Control Film	Fail	Fail	Fail
4 mil Control Film	Fail	Fail	Fail



VIA Test for foam (modified)

Material	Panel 1	Panel 2	Panel 3
Submitted Safepack Foam	Pass	Pass	Pass
VpCI-130 Foam	Pass	Pass	Pass
Control Foam	Fail	Fail	Fail

VIA Test

Material	Plug #1	Plug #2	Plug #3
Submitted 6 mil Yellow Zerust Film	Grade 0	Grade 0	Grade 1
Submitted 4 mil Clear Zerust Film	Grade 2	Grade 1	Grade 2
VpCI-126	Grade 3	Grade 3	Grade 3
Control	Grade 0	Grade 0	Grade 0

SO₂ Test

Material	Panel #1	Panel #2	Panel #3
Submitted 6 mil Yellow Zerust Film	Grade 3	Grade 2	Grade 0
Submitted 4 mil Clear Zerust Film	Grade 3	Grade 3	Grade 3
VpCI-126 5 mil	Grade 4	Grade 4	Grade 4
6 mil Control Film	Grade 0	Grade 0	Grade 0
4 mil Control Film	Grade 0	Grade 0	Grade 0

FT-IR results are attached.

Both films are nitrite-based.

- Conclusion:**
1. Submitted yellow film doesn't provide any vapor phase protection and doesn't have acceptable barrier properties.
 2. Clear Zerust film provides better than yellow film protection in vapor phase, but not with the same grade as VpCI-126 film. It doesn't have the same barrier properties as VpCI-126.
 3. The Safepack foam provides sufficient protection.

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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

SO₂ Grades (Grade 3 and 4 are passing):

- Grade 0- Extensive corrosion covering 25% or more of panel surface
- Grade 1- Moderate corrosion covering 10-25% of panel surface
- Grade 2- Slight corrosion covering 5-10% of panel surface
- Grade 3- Very slight corrosion covering 0-5% of panel surface
- Grade 4- No visible corrosion on panel surface





