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Comparing Aicello Film to VpCI-126

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Background: A sample of film made by the Aicello Corporation was submitted for testing to determine the presence of VCI and to compare the corrosion protection compared to VpCI-126 film. Our customer who uses this film, has always experienced corrosion issues.

Sample Received: Aicello Film, 4mils received on 7-19-19 in good condition.

Method: NACE Standard VIA Test, TM 0208-2018
 FTIR Analysis, CC-006
 Razor Blade Test, CC-004*
 Nitrite/Nitrate Test*
 *The tests marked are not covered under Cortec Laboratories, Inc. ISO 17025 Scope of Accreditation

Materials: VIA test kit (testing jars/apparatus, steel plugs, 400grit sandpaper)
 Steel panels, SAE 1008/1010 (Q-Panel, S-35 DG, 3"x5"x0.032")
 Copper panels
 VpCI-126 film, 4mil (batch #510220)
 Glycerol (lot #W20E023)
 Nitrite/Nitrate Test Strips (lot #HC719626)
 Methanol, ACS grade (lot #18F066507)

Procedure: For VIA testing, the procedure was followed according to NACE VIA Test, TM0208-2018 option 2 (option 2 uses machine-aided grinding and polishing for the steel plugs).

Note- the VIA tests were conducted using two strips of sample per jar (1" X 6" per strip)

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

Results: The following results were found:

Razor Blade Test- Steel Panels

Sample	Panel #1	Panel #2	Panel #3	End Result
Aicello Film	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
Aicello Film	Fail	Fail	Fail	Fail
VpCI-126 Film*	Pass	Pass	Pass	Pass
Control	Fail	-	-	Fail

NACE VIA Test

Sample	Plug #1	Plug #2	Plug #3
Aicello Film	Grade 3	Grade 3	Grade 1
VpCI-126 Film*	Grade 3	Grade 3	Grade 2
Control	Grade 0	-	-

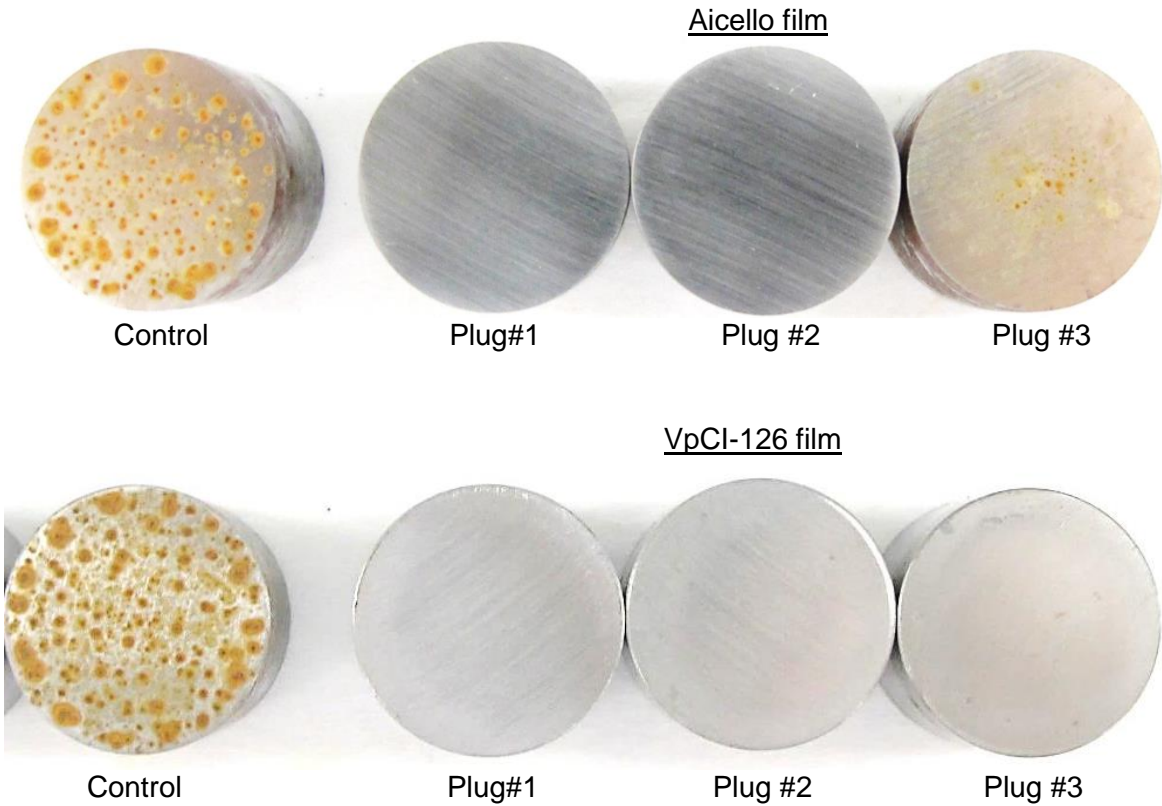
*Note- The razor blade and VIA results for VpCI-126 film were previously tested (from 16-083-1125)

Results: The following results were found:

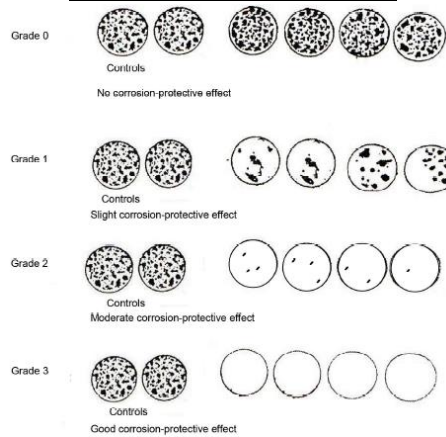
Nitrite/Nitrate Test Strips

Sample	Results
Aicello Film	Tested positive for nitrite/nitrate

Photo from the NACE VIA test:

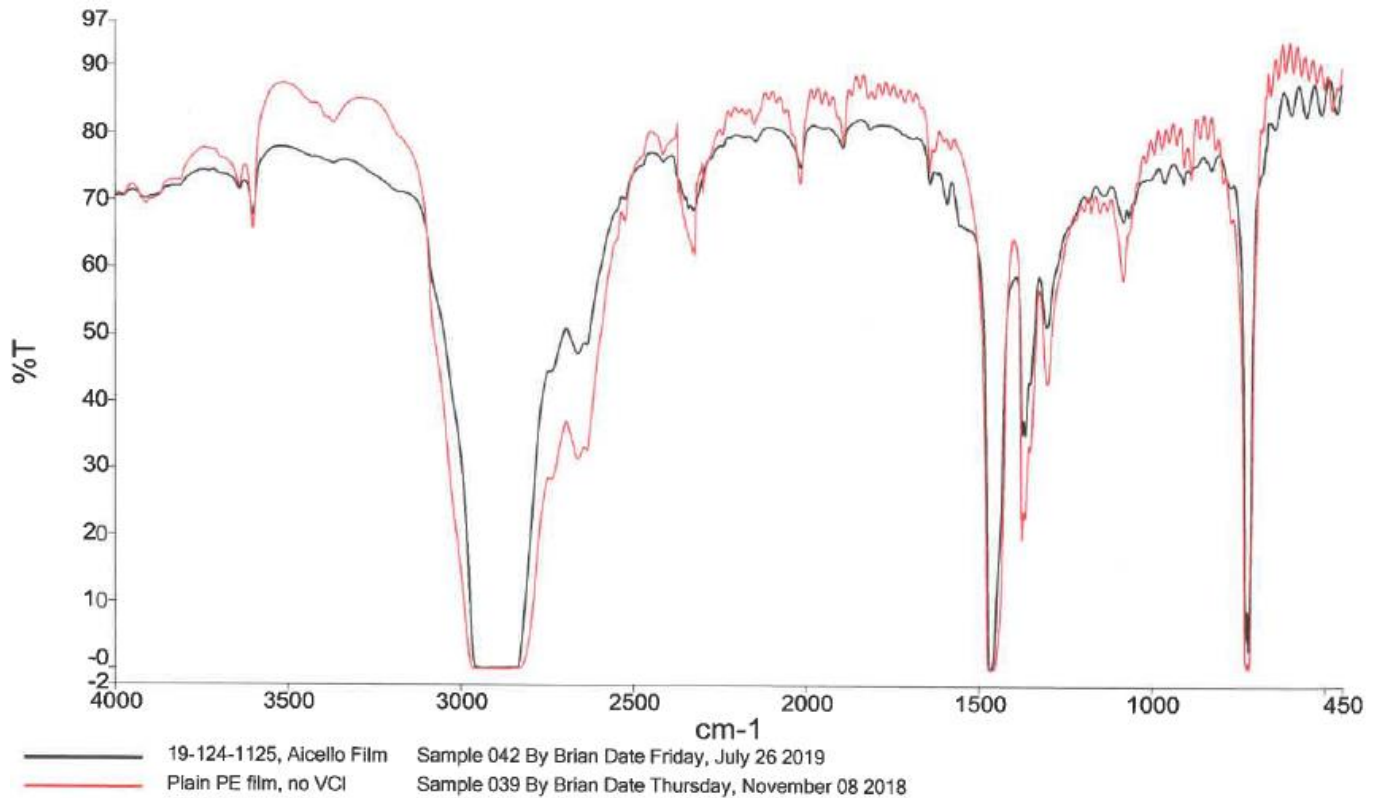


VIA Test Grades



FTIR Analysis:

Aicello Film Compared to Plain Polyethylene Film



Interpretations:

The Aicello film contains nitrite/nitrate, but based on the FTIR analysis, does not appear to contain any other VCI chemistry. Nitrite/nitrate is good for protecting steel from corrosion, but not for copper. This was apparent from the razor blade results, which shows that the Aicello film provides contact corrosion protection for steel, but not for copper. VpCI-126 film, however, provides multi-metal corrosion protection, and passes the razor blade test for both steel and copper. In addition, the results of the VIA test shows that VpCI-126 film is more consistent and provides better overall vapor phase corrosion protection than the Aicello film.