



- 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 Steel Saver VCI Film

From: Cortec Laboratories, Inc.
4119 White Bear Parkway
St. Paul, MN 55110

cc: Boris Miksic
Cliff Cracauer
Ming Shen
Mike Gabor
Ivana Radic Borsic
Pavlo Solntsev

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Results reported by:

Brian Benduha
Brian Benduha
Lab Technician II

Results approved by:

R M Shannon
Rick Shannon
Technical Services Manager



Background: A dirty Steel Saver VCI film bag was submitted for testing. These bags are used at a foundry to get parts to a machine shop corrosion free. The goal is to private label these bags, distributed by our customer, for use at the foundry.

Sample Received: One giant blueish green Steel Saver VCI film bag, 3mils, in dirty condition.

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

Materials: VIA test kit (testing jars with lid apparatus, steel plugs, 400grit sandpaper)
Steel panels, SAE 1008/1010 (Q-Panel, S-35 DG, 3"x5"x0.032")
Copper panels
Glycerol (lot #W20E023)
Methanol, ACS grade (lot #18F066507)
DI water
Kimwipes

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

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

The razor blade testing and FTIR analysis 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
Steel Saver VCI Film	Fail	Fail	Fail	Fail
Control	Fail	-	-	Fail

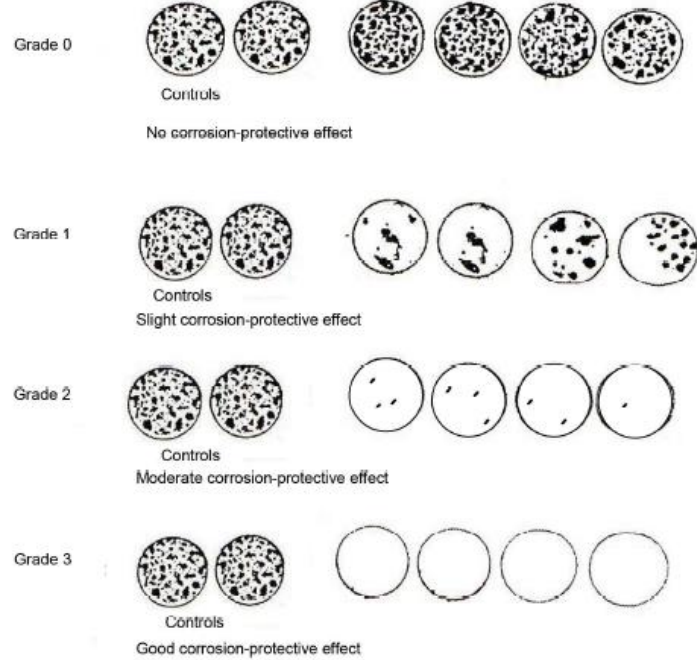
Razor Blade Test- Copper Panels

Sample	Panel #1	Panel #2	Panel #3	End Result
Steel Saver VCI Film	Fail	Fail	Fail	Fail
Control	Fail	-	-	Fail

NACE VIA Test

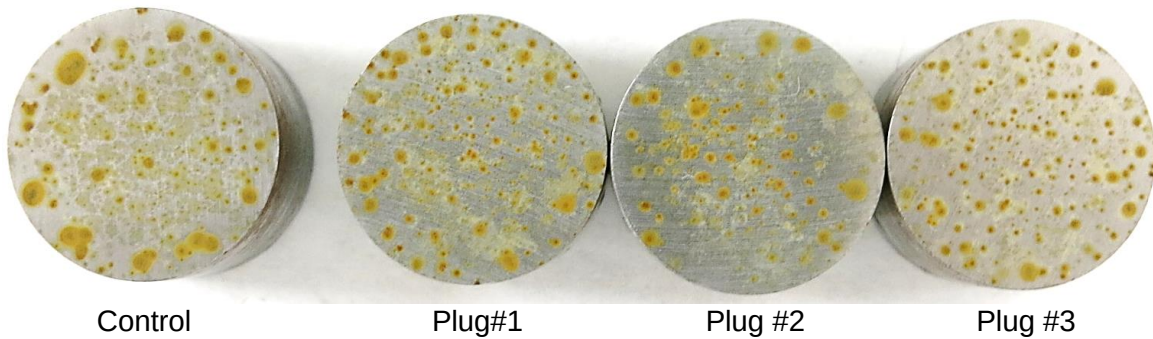
Sample	Plug #1	Plug #2	Plug #3	End Result
Steel Saver VCI Film	Grade 0	Grade 0	Grade 0	No corrosion protective effect
Control	Grade 0	-	-	-

VIA Test Grades



Photos from the NACE VIA test:

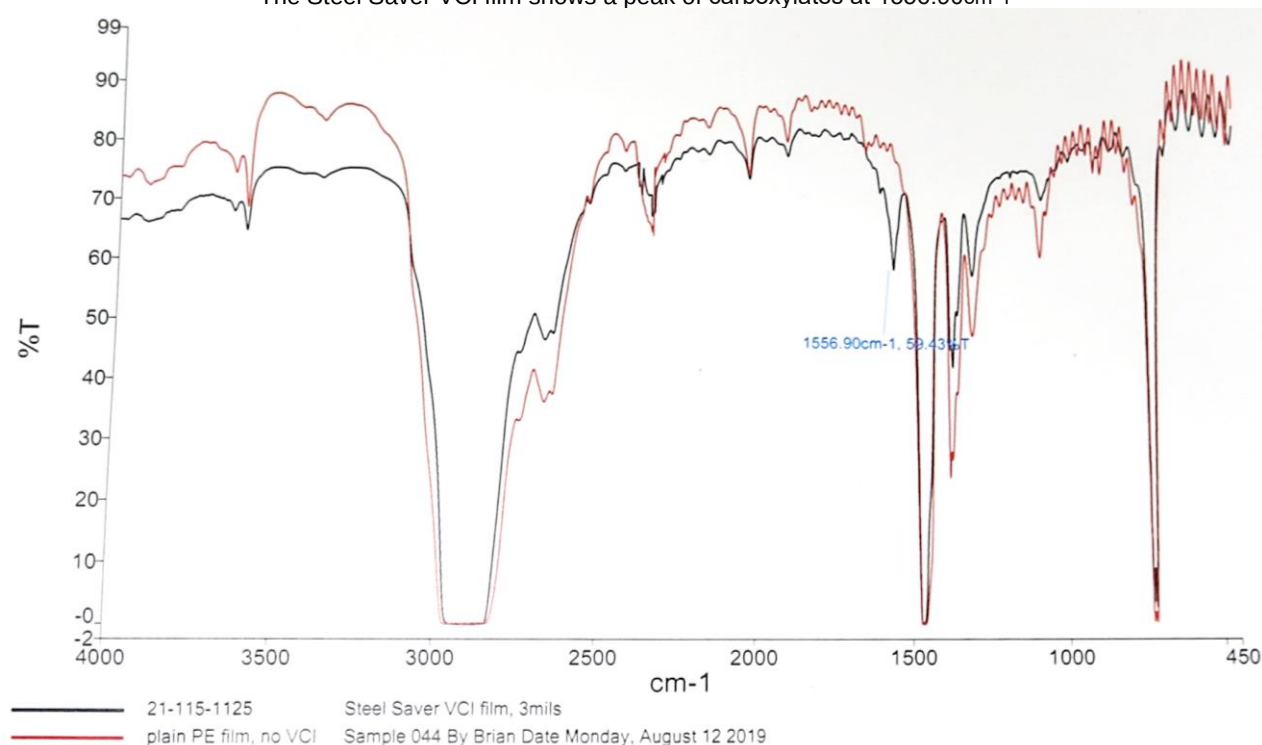
Steel Saver VCI Film



FTIR Analysis:

Steel Saver VCI film compared to plain polyethylene film

The Steel Saver VCI film shows a peak of carboxylates at 1556.90cm⁻¹



Interpretations:

The submitted Steel Saver VCI film was received by Cortec in extremely dirty condition. The film looks like it was sitting in a warehouse for several years, and even though the FTIR shows that this film contains carboxylate type corrosion inhibitors, the results of the corrosion testing was very poor. To determine actual corrosion protection capabilities, a fresh clean sample of film that has recently been manufactured should be re-submitted for testing.

Photo of film as received:

