



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
Internet <http://www.cortecvci.com>

Evaluation of VpCI-414

To: John Wiermaa

For: Cortec Employee

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

cc: Boris Miksic
Anna Vignetti
Cliff Cracauer
Megan Murphy

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Results reported by:

Brian Benduha

Brian Benduha
Lab Technician

Approved by:

M. Kharshan

Margarita Kharshan
Laboratory Director

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- Purpose:** To test VpCI-414 using the Immersion and Flash Corrosion Test with magnesium chloride.
- Method:** Flash Corrosion Test
Immersion Test
- Materials:** FlashCorr VpCI (batch #06632)
Metal panels (Cast Aluminum and Carbon Steel SAE 1010)
Magnesium Chloride, lab grade
Methanol, lab grade
one-quart sized jars
- Procedure:** A. The following procedure was followed for the Flash Corrosion Test:
- 1) Panels were cleaned with methanol, dried, dipped into a 1.4% magnesium chloride solution, then dipped into a 5% and 10% solution of VpCI-414, or DI water for the control.
 - 2) Hang the steel panels to dry, and inspect for corrosion after 24 hours.
 - 3) Hang the cast aluminum panels in one-quart size jar, seal with lid, and inspect for corrosion after 24 hours.
 - 4) Compare the panels rinsed with DI water, and VpCI-414. Failure is determined by observing any signs of corrosion.
- B. The following procedure was followed for the Immersion Test:
- 1) Panels were cleaned with methanol, dried, then immersed into a 1.4% magnesium chloride solution containing 10% VpCI-414.
 - 2) After 42 hours, the panels were taken out of solution, air dried, then photographed.
 - 3) Failure of this test is determined by observing any signs of corrosion.

Results: The following results were found for the Flash Corrosion Test (A) after 24 hours:

Sample	Cast Aluminum	Carbon Steel
Control	Corrosion	Corrosion
5% VpCI-414	Slight Corrosion	No corrosion was observed after 24 hours
10% VpCI-414	Few spots	No corrosion was observed after 24 hours

The following results were found for the Immersion Test (B):

Sample	Cast Aluminum	Carbon Steel
Control	Fail	Fail
10% VpCI-414	No corrosion was observed after 42 hours	No corrosion was observed after 42 hours

Interpretations: According to the flash corrosion test, VpCI-414 at 5% and 10% concentration was found to be very effective for preventing corrosion on carbon steel panels and significantly improves corrosion protection on cast aluminum. The immersion test showed that VpCI-414 provides corrosion protection on both carbon steel and cast aluminum panels at 10% concentration. See the photos below for further detail of the results.

Photos from the Immersion Test:

Cast Aluminum Panels

after 42 hours

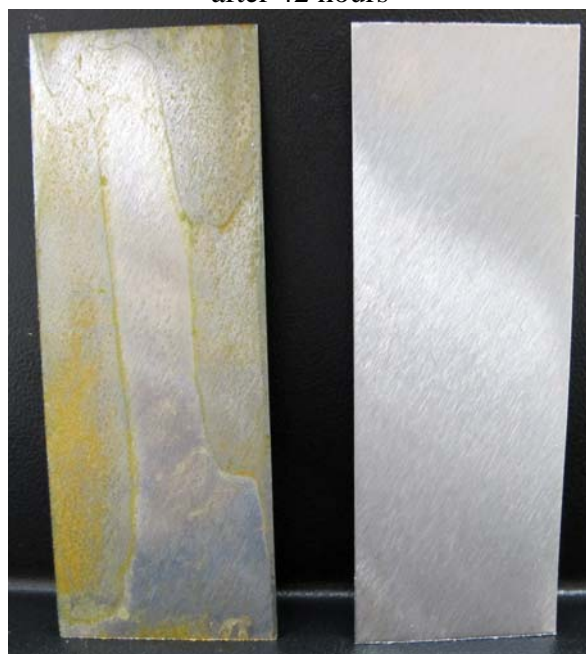


Control

with 10% VpCI-414

Carbon Steel Panels

after 42 hours



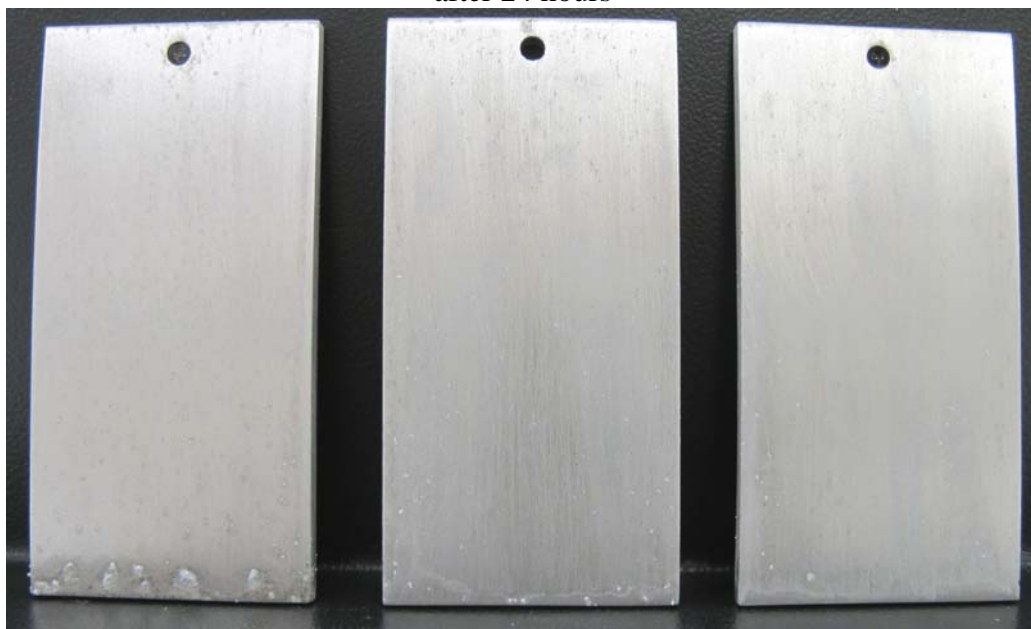
Control

with 10% VpCI-414

Photos from the Flash Corrosion Test:

Cast Aluminum Panels

after 24 hours



Rinsed with DI water

Rinsed with 5% VpCI-414

Rinsed with 10% VpCI-414

Carbon Steel Panels

after 24 hours



Rinsed with DI water

Rinsed with 5% VpCI-414

Rinsed with 10% VpCI-414