

An Evaluation of NTI VCI Films

(As tested by Cortec Laboratories)

Cortec performs regular testing on competitive VCI films. These tests are performed to not only track the quality of competitive films, but also to ensure that Cortec's own packaging products maintain the highest standards of quality. This document is a brief compilation of recent testing data performed on NTI VCI films.

VIA

VIA, or vapor inhibiting ability, test is used to determine if a corrosion inhibitor will protect when not in direct contact with a metal surface. An inhibitor in the test chamber is allowed time to provide protection before the test space is humidified. Products with substantial VCI properties will inhibit the formation of corrosion on the exposed surface of the metal plug. Passing this test requires a minimal amount of corrosion to appear on the surface of the metal plug (Grade 2 or 3, pictured right).



Grade 0



Grade 1



Grade 2



Grade 3

Razor Blade

Razor blade testing is used to determine if a corrosion inhibitor will protect a metal surface when it is in direct contact with that surface. A drop of corrosive solution is placed on a metal panel and then covered with the corrosion inhibiting film or paper. After a specified time the panel is inspected for signs of corrosion. Passing this test requires that no signs of corrosion be visible on the panel after the specified test time (as listed on the work instructions).

Summary of Results for NTI Film Products:

Test	Percentage of Passing Results
VIA	56%
Carbon Steel Razor Blade	94%
Copper Razor Blade	19%



Detailed Test Results:

Table 1: VIA results from various tests with NTI film products

Test Number	NTI Product	Gauge [mils]	VIA Grading	VIA Test Results
12-033-1125	Multimetal Film	--	0, 0, 0	Fail
13-074-1125	HS Yellow Film	--	0, 1, 1	Fail
14-011-1125	Zerust Yellow Film	3.5	3, 2, 1	Pass
14-043-1825	Zerust Clear Film	2	0, 1, 1	Fail
14-103-1125	Zerust Yellow Bag	--	2, 2, 2	Pass
15-086-1125	Zerust Film	--	3, 2, 2	Pass
15-087-1125	Zerust Blue Film	3.5	3, 3, 2	Pass
15-137-1125	Excor Film (B 3434 120804)	4	2, 1, 1	Fail
15-137-1125	Excor Film (B 0515 120805)	4	2, 2, 1	Fail
15-149-1125	Excor Gardac Valeno	4	2, 2, 1	Fail
15-169-1125	Zerust Yellow Film	2	2, 2, 2	Pass
15-169-1125	Zerust Yellow Film	4	2, 1, 2	Pass
15-177-1125	Zerust Yellow Film	4	1, 0, 1	Fail
15-277-1125	Zerust Yellow Film	3.5	2, 2, 2	Pass
16-003-1125	Excor Film	2	2, 2, 2	Pass
16-004-1125	Zerust Yellow Film	4	3, 3, 2	Pass

Table 2: Carbon steel razor blade results from various tests with NTI film products

Test Number	NTI Product	Gauge [mils]	Carbon Steel Razor Blade Grading	Carbon Steel Razor Blade Results
12-033-1125	Multimetal Film	--	Pass, Pass, Fail	Pass
13-074-1125	HS Yellow Film	--	Pass, Pass, Pass	Pass
14-011-1125	Zerust Yellow Film	3.5	Pass, Pass, Pass	Pass
14-043-1825	Zerust Clear Film	2	Pass, Pass, Pass	Pass
14-103-1125	Zerust Yellow Bag	--	Pass, Pass, Pass	Pass
15-086-1125	Zerust Film	--	Pass, Pass, Pass	Pass
15-087-1125	Zerust Blue Film	3.5	Pass, Pass, Fail	Pass
15-137-1125	Excor Film (B 3434 120804)	4	Pass, Pass, Pass	Pass
15-137-1125	Excor Film (B 0515 120805)	4	Fail, Fail, Pass	Fail
15-149-1125	Excor Gardac Valeno	4	Pass, Pass, Fail	Pass
15-169-1125	Zerust Yellow Film	2	Pass, Pass, Pass	Pass
15-169-1125	Zerust Yellow Film	4	Pass, Pass, Pass	Pass
15-177-1125	Zerust Yellow Film	4	Pass, Pass, Pass	Pass
15-277-1125	Zerust Yellow Film	3.5	Pass, Pass, Pass	Pass
16-003-1125	Excor Film	2	Pass, Pass, Pass	Pass
16-004-1125	Zerust Yellow Film	4	Pass, Pass, Pass	Pass

Table 3: Copper razor blade results from various tests with NTI film products

Test Number	NTI Product	Gauge [mils]	Copper Razor Blade Grading	Copper Razor Blade Results
12-033-1125	Multimetal Film	--	Fail, Fail, Fail	Fail
13-074-1125	HS Yellow Film	--	Pass, Pass, Pass	Pass
14-043-1825	Zerust Clear Film	2	Pass, Pass, Pass	Pass
14-103-1125	Zerust Yellow Bag	--	Fail, Fail, Fail	Fail
15-086-1125	Zerust Film	--	Fail, Fail, Fail	Fail
15-087-1125	Zerust Blue Film	3.5	Fail, Fail, Fail	Fail
15-137-1125	Excor Film (B 3434 120804)	4	Fail, Fail, Fail	Fail
15-137-1125	Excor Film (B 0515 120805)	4	Fail, Fail, Fail	Fail
15-149-1125	Excor Gardac Valeno	4	Fail, Fail, Fail	Fail
15-169-1125	Zerust Yellow Film	2	Fail, Fail, Fail	Fail
15-169-1125	Zerust Yellow Film	4	Fail, Fail, Fail	Fail
15-177-1125	Zerust Yellow Film	4	Pass, Pass, Pass	Pass
15-277-1125	Zerust Yellow Film	3.5	Fail, Fail, Fail	Fail
16-003-1125	Excor Film	2	Fail, Fail, Fail	Fail
16-004-1125	Zerust Yellow Film	4	Fail, Fail, Fail	Fail

Testing on NTI VCI films shows a large amount of inconsistency between each different trait in VIA and Copper Razor Blade testing. The lack of repeatable results in these tests shows that NTI films do not supply dependable protection.

