

Evaluation of Packaging Film Labeled as VCI 2000 Anti Stat Film Produced by Grofit

Background: Green colored film was submitted, labeled as VCI 2000 anti stat produced by Grofit to Cortec Corporation for a corrosion inhibitor performance and anti-stat evaluation.

Purpose: Evaluate the corrosion inhibitor and anti-stat performance of film labeled as VCI 2000 anti-stat.

Method: Razor Blade Test

VIA Test

SO₂ Test

Materials: Razor Blade Test Kit

VIA Test Kit

SO₂ Test Kit

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

Results:

Razor Blade Test

Material	Panel #1	Panel #2	Panel #3
VCI 2000 anti stat film produced by Grofit	Pass	Pass	Pass
Cortec VpCI-125 Film*	Pass	Pass	Pass
Control	Fail	Fail	Fail

*Typical results for Cortec VpCI-125 film.

VIA Test

Material	Panel #1	Panel #2	Panel #3
VCI 2000 anti stat film produced by Grofit	Grade 1	Grade 1	Grade 2
Cortec VpCI-125 Film*	Grade 3	Grade 3	Grade 3
Control	Fail	Fail	Fail

*Typical results for Cortec VpCI-125 film.

SO₂ Test

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Material	Panel #1	Panel #2	Panel #3
VCI 2000 anti stat film produced by Grofit	Grade 3	Grade 2	Grade 3
Cortec VpCI-125 Film*	Grade 4	Grade 4	Grade 4
Control	Fail	Fail	Fail

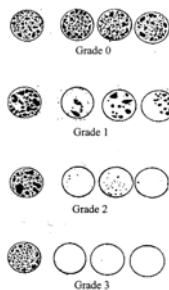
*Typical results for Cortec VpCI-125 film.

Federal Standard Test Method 4046.1 (-50 to —5000 volts, +50 to +5000 volts)

	Elimination time of electrostatic discharge (sec)
VCI 2000 anti stat film produced by Grofit	0.40
Cortec VpCI-125 film	0.12

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



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

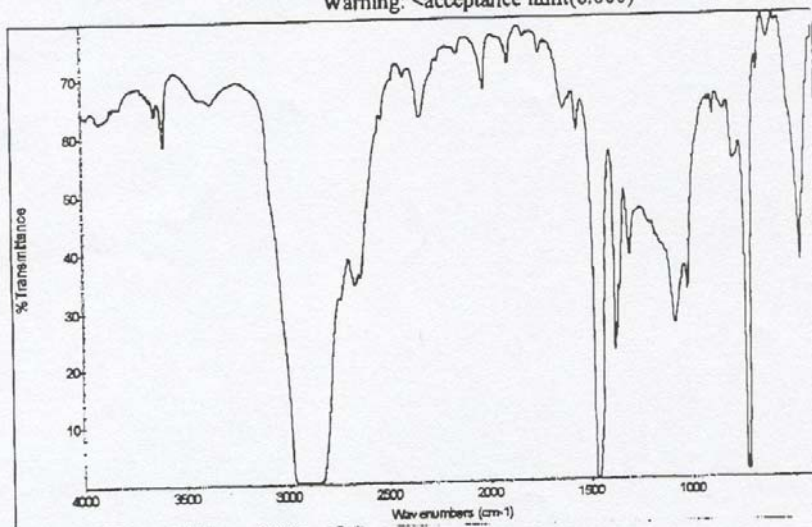
Conclusion: VCI 2000 anti stat film produced by Grofit does not provide vapor phase corrosion inhibitor protection and eliminates electrostatic discharge at a rate 3 times slower than Cortec VpCI-125 film.

Project #: 02-195-1125

Method title: QA_VCI-126G4_RM 825 PEAK
Method file name: C:\My Documents\Omnico\Quant\QA_126G4_825TOTAL.qnt
Revision: 6 Saved on: Tue Jul 10 13:39:24 2001
Spectrum title: VCI 125 GREEN ANTI STAT BOB BERG 8/23/02
Spectrum file name:
Spectrum date: Fri Aug 23 14:29:50 2002
Full spectrum fit: 92.5 Measurement region fit: 100.0

Warning: The full spectrum check indicates a significant difference from standards.

Index	Component	Concentration	Unit	Warnings
1	VCI	-8.755	% LOADING	Warning: <analysis limit(0.000) Warning: <acceptance limit(8.000)



Method title: VCI-126 G4 method _ look at 428
Method file name: C:\My Documents\Omnico\Quant\QA_126G4_428_TOTAL.qnt
Revision: 4 Saved on: Tue Jun 05 19:49:43 2001
Spectrum title: VCI 125 GREEN ANTI STAT BOB BERG 8/23/02
Spectrum file name:
Spectrum date: Fri Aug 23 14:29:50 2002
Full spectrum fit: 20.5 Measurement region fit: 100.0

Warning: The full spectrum check indicates a significant difference from standards.

Index	Component	Concentration	Unit	Warnings
1	VCI	-0.037	% Load	Warning: <analysis limit(0.000) Warning: <acceptance limit(8.000)

**SODIUM NITRITE, 5.1, UN1500, PGIII, OXIDIZER/TOXIC
98 %-120 MESH**

Lot No: **NANI-03-171**

RQ: 100(45.4)

Net Wt. **50 LBS.**

CAS#: 7632-00-0
FW: 69.00

RTECS#: RA 1225000
MERK INDEX: 9,8407

Emergency Contact: **CHEMTREC: 1-800-424-9300**
CHEMTREC INTERNATIONAL: (703) 527-3887

HEALTH HAZARDS & FIRST AID:

MATERIAL IS DANGEROUS IF INHALED! IMMEDIATELY FLUSH EYES OR SKIN WITH COPIOUS AMOUNT OF WATER, FOR AT LEAST 15 MINUTES IN CASE OF CONTACT EXPOSURE. MATERIAL IS IRRITATING TO THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT. EXPOSURE SYMPTOMS MAY INCLUDE - BURNING SENSATION, COUGHING, WHEEZING, SHORTNESS OF BREATH, HEADACHES, LARYNGITIS, NAUSEA AND VOMITING, DIURESIS, ANEMIA, METHEMOGLOBINEMIA, NEPHRITIS, GASTROENTERITIS AND VASODILATION. IF MATERIAL HAS BEEN INHALED, REMOVE SUBJECT TO FRESH AIR. IF SUBJECT IS NOT BREATHING GIVE ARTIFICIAL RESPIRATION - PREFERABLY MOUTH-TO-MOUTH. IF BREATHING IS DIFFICULT OXYGEN SHOULD BE SUPPLIED. CONTAMINATED CLOTHING SHOULD BE REMOVED AND THOROUGHLY CLEANED BEFORE REUSE. CALL A PHYSICIAN! WASH THOROUGHLY AFTER HANDLING.

INCOMPATIBILITIES: ACIDS, ACID ANHYDRIDES, FUELS, (REDUCING AGENTS). EXPLOSIVE MIXTURES MAY RESULT FROM IMPROPER HANDLING!

PRODUCTS OF DECOMPOSITION: OXIDES OF SODIUM AND NITROGEN.

HANDLING & STORAGE: APPROPRIATE OSHA/MSHA APPROVED RESPIRATOR, CHEMICALLY RESISTANT GLOVES, CHEMICAL GOGGLES AND OTHER APPROPRIATE PROTECTIVE CLOTHING (RUBBER APRON OR OVERWEAR) SHOULD BE WORN. MECHANICAL EXHAUST IS REQUIRED. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. DO NOT BREATHE DUST. AVOID PROLONGED AND REPEATED EXPOSURE. HYGROSCOPIC. KEEP CONTAINERS SEALED. STORE IN COOL DRY PLACE. OBSERVE PROPER PERSONAL HYGIENE. SAFETY SHOWER SHOULD BE AVAILABLE. THE PREFERRED FIRE EXTINGUISHING MEDIA IS WATER, DRY CHEMICAL POWDER, CARBON DIOXIDE OR POLYMER FOAM. MATERIAL IS NONCOMBUSTIBLE. PROTECT ADJACENT AREA!

***** INDUSTRIAL OR MANUFACTURING USE ONLY *****

