



TECHNICAL DATASHEET

PRODUCT NAME – RUST-X VCI PLASTIC FILM

PRODUCT CODE – VCI Plastic

PRODUCT DESCRIPTION

RUST-X VCI film is manufactured using a patented process and structure. The product passes the most rigorous test methods for evaluation of corrosion protection such as VIA Test for Vapor Inhibiting Ability as per TL 8135-0002 or German Razor Blade Test. The product is free from Nitrites, Secondary Amines as well as for heavy metals. The film is also TRGS 615 compliant.

This is ideally used for packaging of metal products or for equipment packaging for long term storage and transportation.

VCI stands for Volatile Corrosion Inhibitors. VCI Plastics make use of VCI Technology to protect metallic components packed in them. RUST-X VCI Plastics works on SMP technology for speedy moisture passivation.

The VCI molecules work by evaporation and condensation on the cooler metal parts and prevent corrosion wherever they settle. In effect a corrosion inhibiting layer comprising of macromolecules is deposited on the part.

This molecular film formed inhibits the forward reaction of corrosion by limiting/stopping the electron flow, altering pH as well as by forming a physical barrier to oxygen and water vapour.

Steel Components packed in RUST-X VCI can be protected for up to 10 years when combined with our other VCI Solutions.

The Rust-X VCI Plastic is free of nitrites or secondary amines.

FEATURES

- Multi metal Protection
- SMP Technology for Speedy Moisture Passivation
- Excellent Oxygen and Water Vapor Barrie
- Transparent for easy observation of Part
- Heat Sealable for an Inert Packaging system
- Can be printed or written upon for easy identification of parts

APPLICATIONS

- 3 D bags or 2 D bags or Zip Lock bags & can be used as per the desired dimensions and components can be packed and sealed in VCI bags using heat sealer.
- Storage in open, storage in warehouses for longer periods and other related schemes.

PACKAGING AND STORAGE

Available in Rolls, Sheets, Bags, Envelopes. Store in a cool dry place and always keep Paper sealed when not in use.



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TECHNICAL DATA

Physical Properties	Test Method	Value
Color	Visual	Blue, Yellow, Transparent
Specific Gravity		0.92-0.94
Tensile Strength	ASTM D 882	
MD		200 kg/cm ²
TD		150 kg/cm ²
Elongation	ASTM D 882	
MD		400%
TD		600%
Dart Drop Impact	ASTM D 882	1200 g
Heat Seal Temperature	ASTM D 1709	120 °C
Corrosion Test		Grade 3 (best)
Corrosion Test	German VIA 8135-002	Grade 3 (Best)
Protection Period	US MIL PRF 22019/ TL 8135-0002	Up to 10 years with recommended packaging system
Available Thickness		50, 70, 75, 100, 150, 200 and 300
Puncture Force		8 lb
Optimum Temperature		-125 °C (Glass transition temperature)

APPLICATION PICTURES





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DISPOSAL

Recommendation: Do not allow product to reach sewage system.

Disposal of product or waste must comply with official local regulations.

Packaging that cannot be recycled must be disposed in the same manner as the product.

HEAVY METALS DECLARATION

RUST-X Rust Preventive products do not contain Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent Chromium (Cr6), Polybrominated biphenyls (PBB), or Polybrominated diphenylether complying with the re-stricted substances listed in Article 4(1) of the RoHS Directive. RUST-X Rust Preventive Oils are also REACH Compliant for exports to the European Union.

SAFETY INFORMATION

- Keep Out Of Reach Of Children
- Keep Container Tightly Closed
- Not For Internal Consumption
- Consult Material Safety Data Sheet For More Information
- Safe for people
- This product does not pose a health hazard to users due to its classification as an article according to EU REACH, UN GHS, US OSHA HazCom and CA WHMIS regulations.
- Rust-X VCI chemistry is safe for sensitive electronics.
- Rust-X VCI chemistry imposes No galvanic effects, residues or changes in the properties of metals. The

protective molecules dissipate upon opening of package.

DECLARATION

This Data sheet and information it contains is considered to be accurate at the date of printing. No representation or warranty, expressed or implied is made as to the accuracy or completeness of the data and information contained in this publication. It is the User's obligation to evaluate and use products safely and within the scope advised in the data sheet and to comply with all applicable laws and regulations.

LIMITED WARRANTY

All statements, technical information and recommendations contained herein are based on validations and tests conducted by HI TECH INTERNATIONAL/RUST-X or its partners and are believed to be reliable, but the accuracy or completeness thereof is not guaranteed. We warrant our products will be free from defects when shipped to customer. Our obligation under this warranty shall be limited to replacement of product that proves to be defective. To obtain replacement product under this warranty, the customer must notify Rust-X, Hi Tech International or its partners or agent of the claimed defect within 3 months after shipment of product to customer. Customer shall pay all freight charges for replacement products. We shall have no liability for any injury, loss or damage arising out of the use of or the inability to use the products. And any financial



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claims shall be limited to the value of the film sold.

Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. No representation or recommendation not contained herein shall have any force or effect unless in a written document signed by an officer of the company. The foregoing warranty is exclusive and in lieu of all other warranties, express, implied or statutory, including without limitation any implied warranty of merchantability or of fitness for a particular purpose. In no case shall HI TECH INTERNATIONAL/RUST-X be liable for incidental or consequential damages.

GLOBAL SUPPORT

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**Test Report
No. 2601/17**

**Testing of corrosion protection effect of one VCI-film
in accordance with TL 8135-0043**

Client: RUST-X
DLF Corporate Greens, 1019, Tower-1, Sec-74A, Gurgaon
122004-Haryana
INDIA

Date of order: 24 May 2017

Customer reference: -

Test samples: Samples of VCI film,
product name: "RUST-X VCI FILM"

Received on: 14 July 2017

Date of testing: 17 – 18 July 2017

Test reference: TL 8135-0043

Official in Charge: B. Eng. S. Karg

Text pages: 2

Figures: 2

Appendices: 2

Date of issue: 19 July 2017

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Deutsche
Akkreditierungsstelle
D-PL-19253-01-00



1 Content of the order

The BFSV Hamburg Institute of Packaging GmbH was authorized to test a VCI film in accordance with TL 8135-0043 „ Anticorrosive film”, Edition 3, September 2002, Appendix A „Testing of corrosion protection effect of VCI-packaging accessories”.

Requirement: It is necessary to meet at least the corrosion protection effect of grade 2 (middle corrosion protection effect).

2 Test samples

Appr. 2 m² of VCI-film were delivered to BFSV Institute of Packaging. The product name is: “RUST-X VCI FILM”

3 Testing

The VCI film was tested according to TL 8135-0043, Appendix A. A description of the testing is listed in appendix 1.

4 Summarizing result

Table 1: Summarizing test result

VCI film	Corrosion protection effect	Grade	Requirement for TL 8135-0043
“RUST-X VCI FILM”	Good	3	fulfilled

The detailed results including a comparison of the corrosion symptoms with the requirements of TL 8135-0043 (Appendix A) are listed in appendix 2.

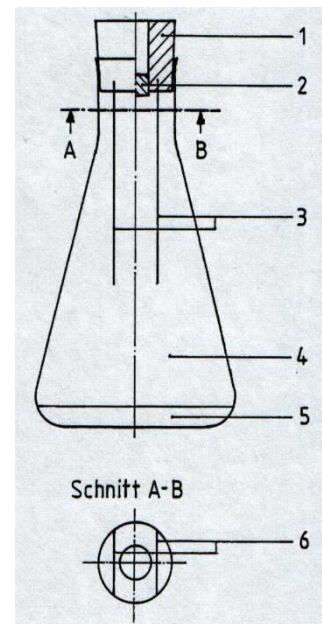
Official in Charge



B. Eng. S. Karg

Equipment and materials:

1. Rubber bung: upper diameter 53 mm, lower diameter 45 mm, hole 15 mm.
2. Test object: Unalloyed, killed structured steel according to DIN EN 10025 (Material-No. 1.0038); length 12 mm, diameter 16 mm.
3. VCI-sample 25 mm x 150 mm (2 stripes).
4. Erlenmeyer flask, 1 Liter wide mouth according to DIN 12385
 - 3 glass jar with VCI-film
 - 1 glass jar without VCI-film (control)
5. Glycerine-water solution, $\rho = 1,076 \text{ g/cm}^3$ and $23 \text{ }^\circ\text{C}$
6. Two slits on the rubber bung (5 mm) for film-samples



Brief description:

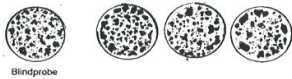
- Plugs shall be abraded with water to a uniform finish surface (320 grit)
- Cleaning with distilled water and ethanol
- Fixing of two stripes of VCI-film (one on each slit on the rubber bung)
- After a period of 20 h, which serves as the build-up phase for the VCI active substances, a mixture of water and glycerine is poured in.
- After another period of 2 h the glass containers are heated from room temperature to $40 \text{ }^\circ\text{C}$ in a fan oven for another 2 hours
Moisture condenses on the surface of the test objects, resulting in corrosion on the control sample without VCI.
The test objects in the containers with VCI should display little or no corrosion.
- After finishing the test, the plugs must be dried in the heating cabinet

Evaluation:

The corrosion symptoms are documented and the protective effect is assessed by comparison with the control sample.

Requirements of TL 8135-0043 (Appendix A) for the corrosion protection effect:

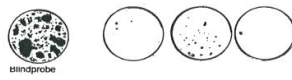
Evaluation of the test objects



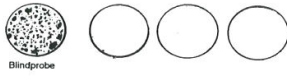
Keine korrosionsschützende Wirkung



Geringe korrosionsschützende Wirkung



Mittlere korrosionsschützende Wirkung



Gute korrosionsschützende Wirkung

Corrosion protection effect


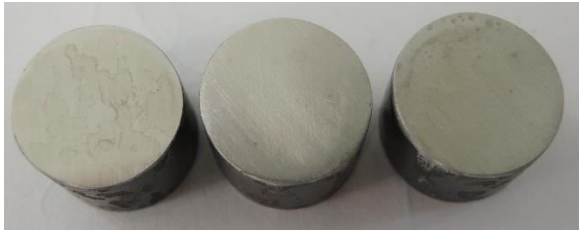
None (Grade 0)

Slight (Grade 1)

Middle (Grade 2)

Good (Grade 3)

Table 2: Detailed test results

Rust-X VCI film "RUST-X VCI FILM"	Test objects	
	Control sample (without VCI)	Protected samples with VCI film
Evaluation		
Corrosion protection effect		3 3 3 Grade 3 Good corrosion protection effect

