



ISO 9001, ISO14001 CERTIFIED

RUST CHEMICAL Co., Ltd.

Volatile Corrosion Inhibitor Products



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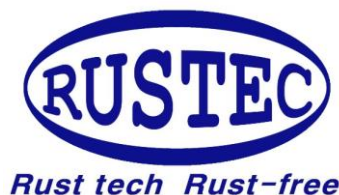
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01. Company Introduction



Company Name	RUST CHEMICAL Co., Ltd.	Website	www.ruchem.co.kr
Location	284, Seunggicheonro (16B-2L, Nam-Dong Industrial Complex, Nonhyeon-dong), Namdong-gu, Incheon, Korea		

- ◆ Co-prosperity with Customers (Achievement of our success through customers' success)
- ◆ Co-prosperity with Partners (Creation of opportunities through technology & business collaboration with partners)
- ◆ Co-prosperity with Employees (Confidence, respect, and trust among employees)

RUST CHEMICAL Co., Ltd. will move on with these three goals as its corporate principles.

The trademark of RUST CHEMICAL Co., Ltd. is "RUSTEC" which is a compound word that means "Technological Prevention for Rust."

It represents RUST CHEMICAL's strong will to continue technology R&D in order to prevent metals from rusting.

1.2 History

2019

- 2019.6 Participated in 2019 PROPAK ASIA Exhibition (Thailand)
- 2019.11 Participated in 2019 PLASTICS & RUBBER Exhibition (Indonesia)

2018

- 2018.1 Registered as a partner company of Hyundai Engineering & Construction Co., Ltd.

2017

- 2017.5 Relocated the head office (to Incheon)
- 2017.5 Participated in 2017 CHINAPLAS Exhibition (China)

2016

- 2016.5 Registered the patent of the volatile liquid corrosion inhibitor
- 2016.10 Participated in 2016 TOKYO PACK Exhibition (Japan)

2015

- 2015.7 Obtained the certificate of risk assessment

2014

- 2014.3 Developed the liquid corrosion inhibitor for both ferrous and non-ferrous metals
- 2014.4 Registered as a partner company of Samsung Heavy Industries
- 2014.12 Developed the eco-friendly VCI powder and VCI resin

2013

- 2013.6 Registered the patent of the VCI.

2012

- 2012.6 Registered the patent of the high-performance VCI powder
- 2012.12 Registered the patent of the VCI packing material

2011

- 2011.5 Developed the high-performance VCI liquid
- 2011.8 Developed the high-performance cleaner solution.

2010

- 2010.1 Relocated the head office (to Anyang)
- 2010.4 Recognized to found its own research institute

2009

- 2009.3 Registered as a venture business
- 2009.4 Registered as an SK MPO company
- 2009.12 Registered the patent of the VCI resin

2008

- 2008.1 Registered as a supplier of exporting KD parts to Ssangyong Motors
- 2008.3 Developed the highly-enriched VCI liquid and nitrite-free VCI resin
- 2008.5 Exported the VCI resin to India

2007

- 2007.3 Registered as a partner company of Samsung Engineering
- 2007.7 Supplied VCI powder to LG Philips
- 2007.8 Registered the trademark right of RUSTEC
- 2007.8 Supplied VCI products to Daewoo Shipbuilding Engineering

2006

- 2006.2 Registered as a partner company of Korea E-Platform Co., Ltd.
- 2006.2 Obtained ISO 9001 Certificate
- 2006.7 Obtained ISO 14001 Certificate
- 2006.11 Registered as a partner company of Samsung SDI

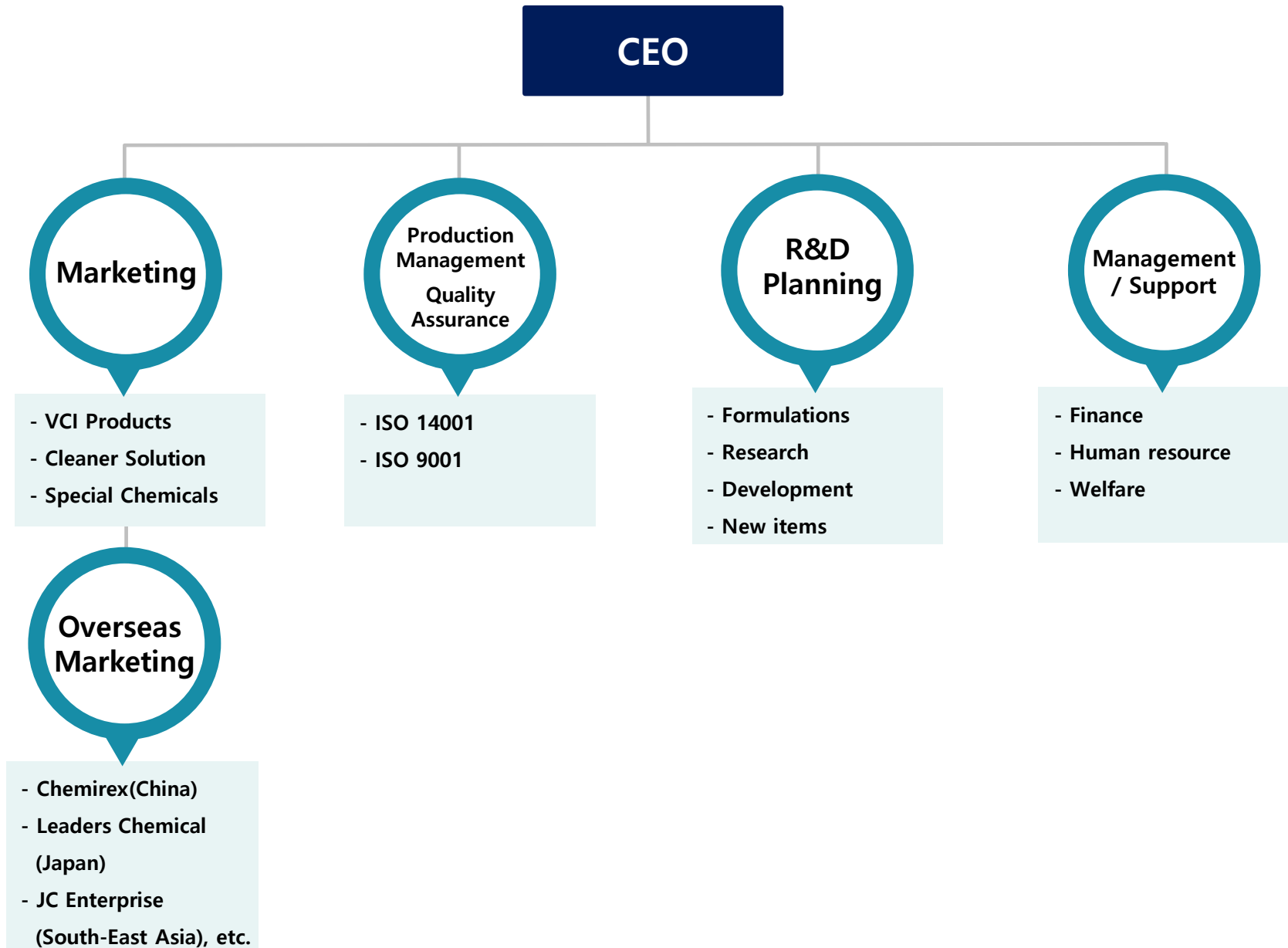
2005

- 2005.1 Supplied boiler part VCI powder to Doosan Heavy Industries & Construction Co., Ltd.
- 2005.2 Registered as a partner company of I Market Korea
- 2005.11 Registered as a trading business to Korea International Trade Association (NO.45246690)

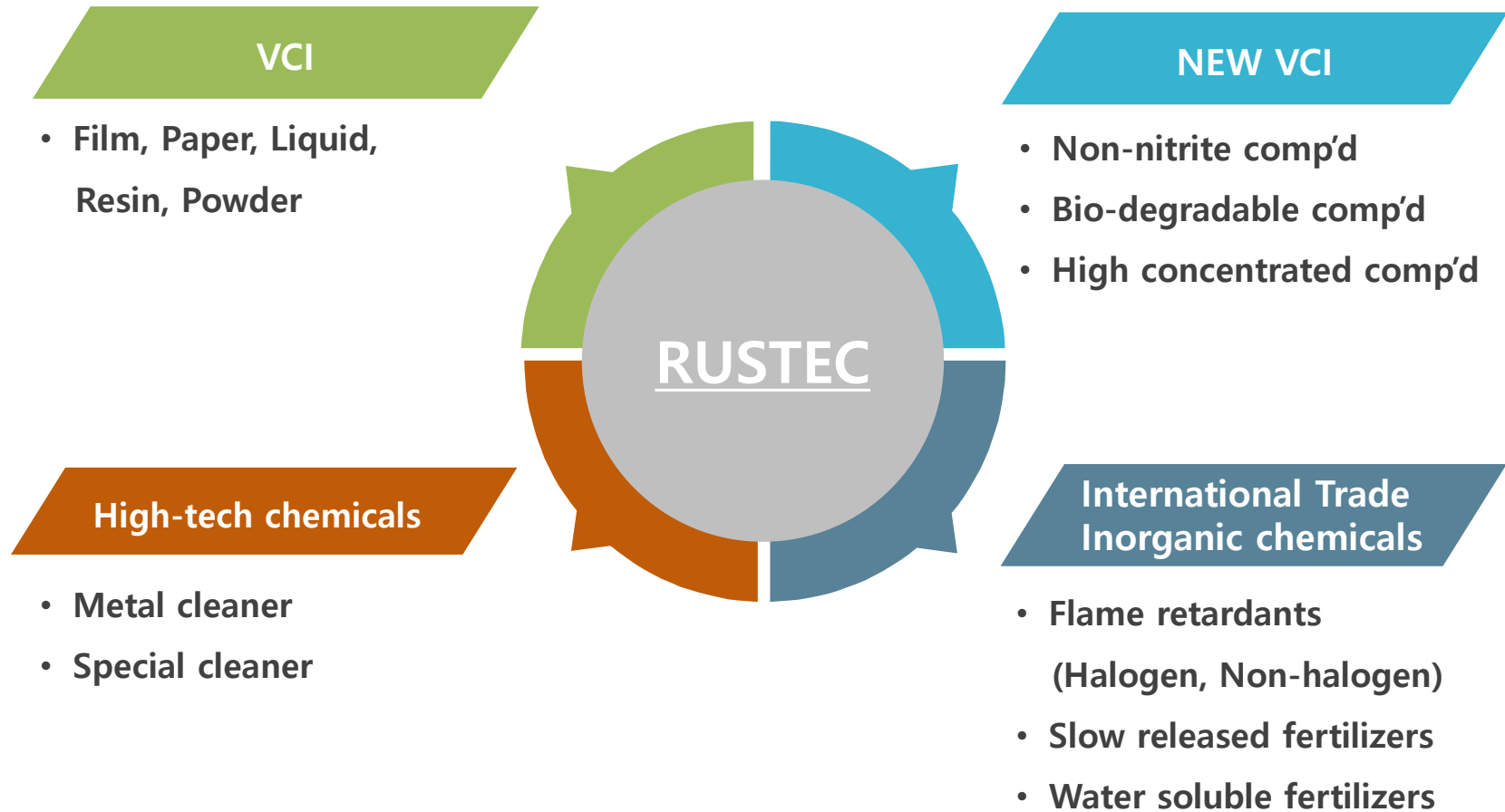
2003

- 2003.4 Re-developed and initiated the production of the Volatile Corrosion Inhibitor (VCI)
- 2003.5 Founded the corporation of RUST CHEMICAL Co., Ltd. (located in Anyang)
- 2003.6 Registered as a partner company of Hyundai Powertech, an affiliate of Hyundai Motors

1.3 Organization



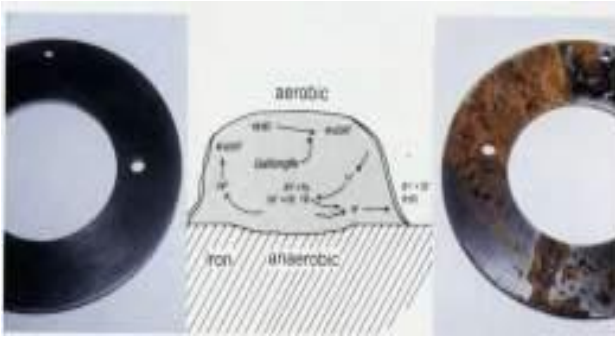
1.4 Major Business Areas





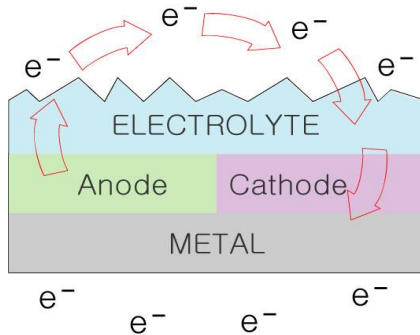
02. Volatile Corrosion Inhibitor Principle

2.1 What is Rust?



It is a process that a metal returns to the state of an ore that is a stable oxidized compound in nature.

As the process of a complicated ore being refined into a metal requires much energy, rusting develops fast. Rust is an electrochemical process. As an extremely small quantity of electrolytes (oxygen, water, pollutant, etc.) exist on a metallic surface with no protective film, electrons are induced to move from a high-level area (anode) to a low-level area (cathode), resulting in rust.



When a rust cause is stuck on a metallic surface, it rusts immediately.

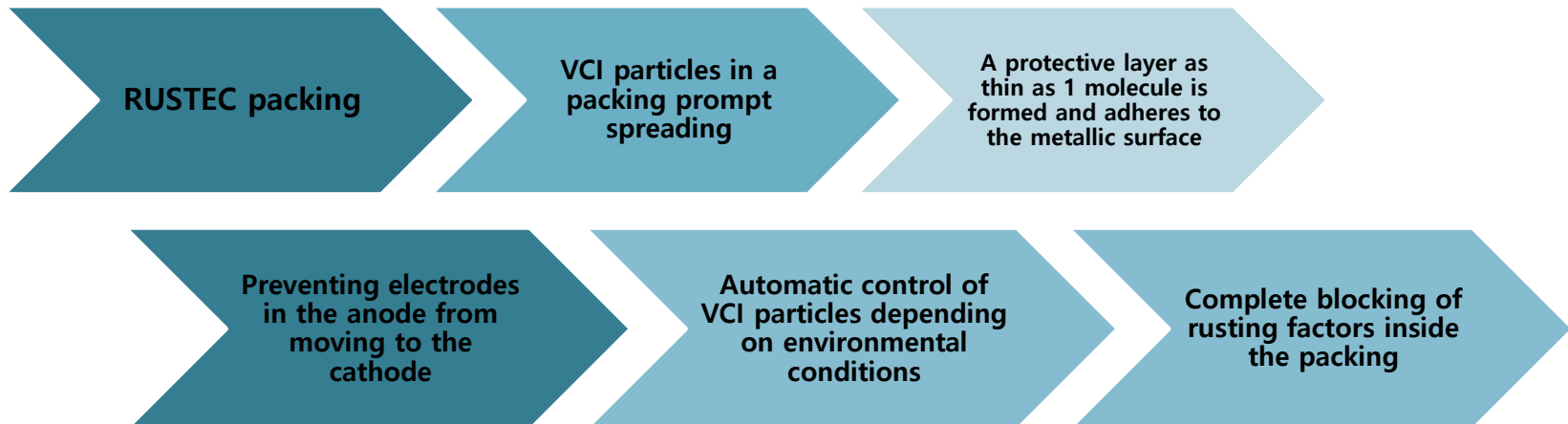
This is because water penetrates into the crystallized part of a metallic oxidized film and causes the metal to melt. As a result, the oxygen dissolved in water oxidizes the metal, causing rust.

(e.g. Fe_2O_3 / red oxide, Fe_3O_4 / black oxide)

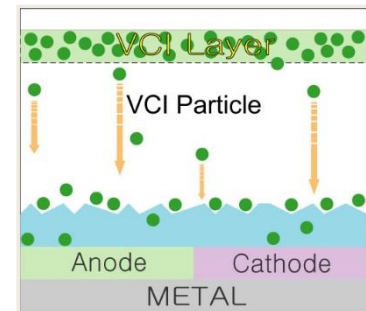
Machined Surface

2.2 Principle of RUSTEC VCI Film

The Volatile Corrosion Inhibitor, which prevents a metal from rusting, is widely known as the "VCI." The VCI is a compound of materials easily sublimated or evaporated at room temperature. Once evaporated, particles form a monolayer on the metallic surface and hinders the mechanism of the initial stage of corrosion as electrodes of the metal are prevented from flowing from the anode to the cathode. VCI particles form a protective layer as thin as 1 molecule, which adheres to the metallic surface. Metallic ions that are formed this way no longer react on water or oxygen.



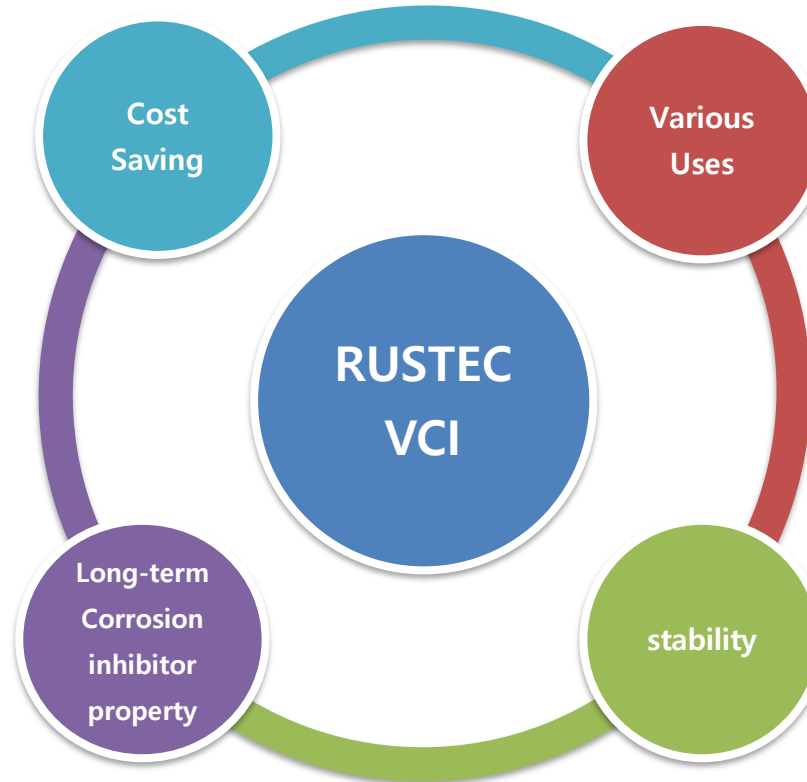
- > Depending on environmental changes such as temperature, the amount of VCI particles **(upon environmental changes inside the packing)** is controlled automatically.
- > The optimal condition is maintained at all times.
The density of VCI vapor that is most appropriate for the inside of the packing is maintained automatically.



2.3 Advantages of RUSTEC VCI Products

VCI products are advantageous in that their unit prices are lower than those of ordinary corrosion inhibitor products. They also can save labor fees since the use is simple. As they can be applied to the process immediately after removal, the working hours are shortened and the costs for investment into packages and corrosion inhibition are saved.

1 year or longer
(The period can be extended depending on the level of sealing)



RUSTEC VCI products are applicable to various areas such as Film, Paper, Powder, Liquid, etc. These can be utilized in a wide range of industrial sectors including ship, automobile, electronics, electrics, and munitions.

Most of the corrosion inhibitor materials of RUSTEC VCI products consist of organic compounds and are not accumulated in a human body. Since they are dissolved naturally in the air, VCI products involve no problem of toxicity or harms in normal use conditions.



03. Volatile Corrosion Inhibitor Film

3.1 Overview of RUSTEC VCI Films

| Overview

VCI Films for which VCI Resin and polyethylene resin undergo the extrusion process.

These rust-resistant films are used for export packing, transportation, and storage of ferrous and non-ferrous metals.

| Features and Advantages

- VCI films are highly resistive to humidity and feature the high-level workability owing to the various sizes and excellent processability. (bag, sheet, box type)
- Corrosion inhibition is possible even in fine corners as vapor penetrates into a metal of an irregular shape that makes it difficult to apply anti-rust oil.
- Since evaporation proceeds slowly inside the film, the corrosion inhibitor effect lasts long. It is possible to identify the content even without opening the container since the film is transparent.
- Since there is no need to apply anti-rust oil, working environments can be maintained clean. With no need for grease removal or follow-up works, the process is shortened and cost-saving.
- The work is easy and cost-saving compared to vacuum packing while the effects are similar.
- These products have passed the SGS RoHS TEST (EU Restriction of Hazardous Substances Directive).

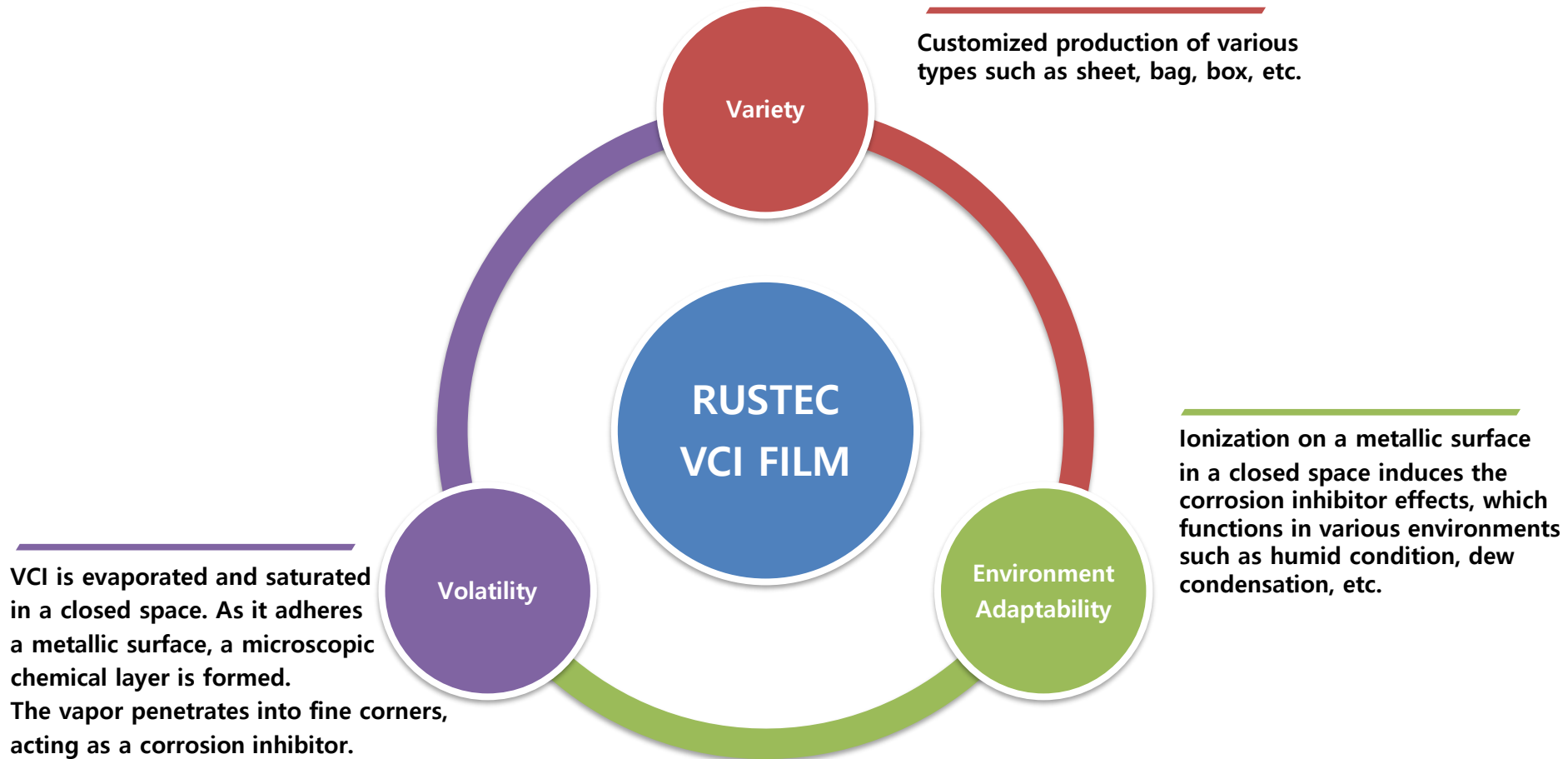
3.2 Applicable Areas of RUSTEC VCI Films

| Applicable Areas

- Automobile area : chassis parts, engine, axle, clutch, and various steel parts
- Ship and aircraft area : engine parts, electric parts, power generator, motor, pipe, etc.
- Heavy machinery area : heavy equipment parts, power generator and turbine, transporting machinery, grinder, printer, pump, tank, etc.
- Precision machinery area : camera, clock parts, various gauges, jig, robot parts, medical machinery, etc.
- Electric/electronic area : various batteries, memory card, motor, switchgear panel, communication equipment, printer substrate, etc.
- Material area : cold rolling steel plate, coil, wire rope, various wires, pipe, etc.
- Munition area : cannon, shotgun barrel, cannonball, caterpillar, jet engine, bayonet, grenade, magazine, mine, etc.



3.3 Features of RUSTEC VCI Films



3.4 Types and Product Specifications of RUSTEC VCI Films

| Film Types

- RUSTEC FM-100 : General-use FILM – ferrous and non-ferrous metal protection
- RUSTEC FMS-200 : General-use FILM – ferrous metals, silver, copper protection

★ Anti-static electricity treatment - applicable to electric/electronic appliances.

| Film Product



ROLL TYPE	Width (mm)	Length (m)	Thickness (mm)
TUBE ROLL	80-2800	50-500	0.05-0.20
SHEET ROLL	80-5600	100-1000	0.05-0.20

※ Dotted processing option available: 1000mm - 8000mm (customization)



TYPE	Width (mm)	Length (m)	Thickness (mm)
SHEET	80-5600		0.05-0.20
BAG	80-2800		0.05-0.20
BOX	Customized production		0.05-0.15

3.5 Uses and Working Process of RUSTEC VCI Films



VCI Film extrusion



VCI Film bag/sheet processing

| How to Use

- Contents in the package should be in a clean state with no foreign substance, fingerprint, or rust.
- Put contents to be packed in the film and seal them. (thermal sealing, taping, cable tie, etc.)
- If the film packing size exceeds 8m³ (standard size) or the surface area of the contents to be packed is three times as large as the VCI Film area, corrosion inhibitor supplements should be added.
- Corrosion inhibitor supplements include VCI powder, etc. Consultation may be necessary depending on the packing conditions.

| Storage

- Avoid direct sunlight and humidity.
Seal the package before storage.

| Corrosion inhibitor period

- 1 year or longer
(The period may be extended depending on the packing condition)

3.6 Applicable Metals for RUSTEC VCI Films

METAL	RUSTEC FM-100	RUSTEC FMS-200
Silver	Not applicable	Applicable
Aluminum	Applicable	Not applicable
Steel	Applicable	Applicable
Cast iron	Applicable	Applicable
Brass	Applicable	Applicable
Bronze	Applicable	Applicable
Copper	Applicable	Applicable
Cadmium alloy	Not applicable	Not applicable
Stainless steel	Applicable	Applicable
Chrome alloy	Applicable	Not applicable
Nickel alloy	Applicable	Not applicable
Magnesium alloy	Not applicable	Not applicable
Tin, tined iron	Applicable	TEST required
Zinc alloy	TEST required	TEST required



04. Volatile Corrosion Inhibitor Resin

4.1 Overview of RUSTEC VCI Resin

| Overview

VCI Resin is an M/B (Master Batch) type of raw material to produce Volatile Corrosion Inhibitor Films. VCI Films are produced by combining LDPE or LLDPE resin with VCI Resin at a certain ratio and extruding them.

| Product Type

- RUSTEC MB-102 : VCI M/B for ferrous and non-ferrous metals
- RUSTEC MB-401 : VCI M/B for ferrous metals, silver and copper
- RUSTEC MB-201 : VCI M/B for ferrous and non-ferrous metals (for WRAP)



4.2 How to Apply RUSTEC VCI Resin

| How to Apply

The process of producing VCI Films is to combine LDPE or LLDPE resin with VCI Resin at a certain ratio and extrude them, which is similar to the process of common vinyl extrusion.

*Combination ratio :

- (1) 1 to 3% addition depending on the resin grade
- (2) LLDPE : LDPE = 3:1 (recommended)

*Extrusion temp. - Extrusion die temp. : 180-195°C

- Melting screw section : 150-160°C

* If it exceeds 200°C in extrusion,
VCI elements may change in quality.
Temperature control is vital.



| Instructions

- 1) As VCI Resin is sensitive to moisture, be sure to keep it from moisture while storing it after use.
- 2) Bubbles are sometimes formed inside a film in the production process for the following reasons : ① moisture is absorbed in PE resin. ② It exceeds 200°C in film production. In this case, attention must be paid since the performance and properties of the film might be degraded.
- 3) Avoid using recycled PE resin.
- 4) While various colors may be applied to the resin, avoid colors of high acidity. Pigments or PE resin that is not neutralized may degrade the performance of VCI.
- 5) When VCI Resin, PE resin, and COLOR resin are combined, the size of resin may be different depending on each resin's type. Be sure that they are distributed evenly.

| Packing and Storage

- Unit of Packing : 25kg (aluminum bag, fiber drum)
- Avoid direct sunlight and humidity. Seal the package before storage.

| Corrosion inhibitor period

- 1 year or longer (effective period of produced VCI Films)





05. Volatile Corrosion Inhibitor Powder

5.1 Overview of RUSTEC VCI Powder

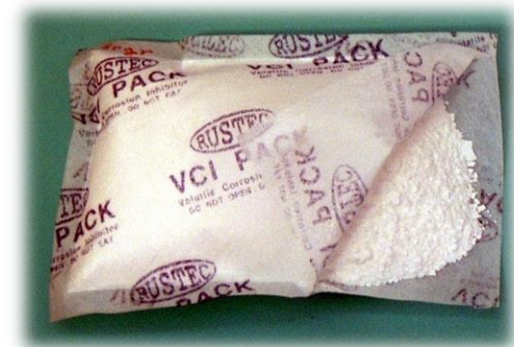
| Overview

VCI Powder prevents metals from corrosion and protects metals deep in a metallic container, a hole, or an internal crevice. VCI vapors in a sealed space may form a monolayer that is invisible on the metallic surface. These vapors can prevent rusting by blocking metallic ions from reacting on water and oxygen. In addition, as vapors do not lose the properties in water, they can be utilized as a dry or wet method.



| Features and Advantages

- RUSTEC VCI Powder does not affect primary properties of metals and can function as an anti-rust agent even in fine areas in a corner where human hands cannot reach.
- Since its effects last long, there is no need for refilling. Even if the vapor balance is collapsed due to a temporary opening, its anti-rust effect continues owing to its self-compensating property.
- Although it is not necessary to remove the powder to use a product, the powder is easily removable with air or water.
- It does not need advance preparation on the metallic surface.
- Chemicals in it are used as food additives. Silicon salt, phosphate, or heavy metals are not contained.
- It can be used in a water-soluble form.
- These products have passed the SGS RoHS TEST (EU Restriction of Hazardous Substances Directive).



5.3 Use of RUSTEC VCI Powder

| How to Use

- When applied in powder form, it should be used in an evenly distributed arrangement using a low-pressure sprayer, etc. and if VCI powder is not appropriate to use, products in the form of a pouch can be applied in an evenly distributed arrangement.
After being applied, it should be sealed tightly as soon as possible.
- Within 30 centimeters easy for vapor to be reachable, VCI powder or items wrapped with non- woven cloth should be dispersed. It is the most effective way to arrange VCI powder evenly in a space to prevent metals from rusting. Arrangement in an even distribution in a space leads VCI compounds to reach the metal surfaces fast and distribute evenly in the space, which can reinforce anti-rust effects. If it is hard to arrange VCI powder evenly in a space, it can be the next-best plan to place it from the top in the space because the gravity of vapor is heavier than air. In case it is inevitable to arrange it on the floor, it is also effective to place it on the floor in an even manner.
- In a water pressure test, dilute it at the rate of 1 to 3% of the water weight.
- The quantity consumed may be different depending on the corrosion inhibitor period, packing method, packing material, temperature, humidity, excessively large surface of the target metal (powder or small grains saturated in the package), or sealing condition. Normally, 50 to 250g would be appropriate per 1m³ (CBM).

However, the quantity consumed may increase depending on using condition.

| Product Types

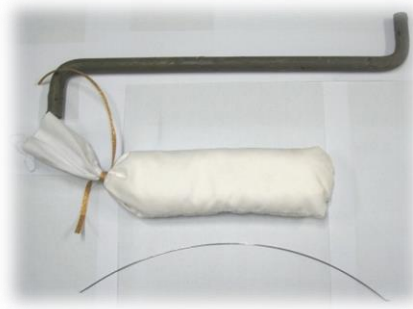
- RUSTEC PDM-100 : Common-use powder – ferrous metal (carbon steel), non-ferrous metals (aluminum, copper, copper alloy, etc.)
- RUSTEC PDF : Powder for iron – ferrous metal (carbon steel)

| Applicable Areas

- Plant production, shipment for export, storage, and transportation
- Internal surfaces of a piping structure, radiator, boiler, engine, tank, motor, etc.
- For hydro testing (water pressure test) of a pipe, heat exchanger, cooling recirculator, boiler, or tank
- Closed recirculating cooling systems
- Box packing of tools and various parts; piping, container export, storage, etc.
- Inside a ship rudder, void, etc.

| Product specifications

- Packing unit : 10kg, 25kg (aluminum bag, fiber drum)
2.5g, 5g, 10g, 30g, 50g, 100g, 500g pack type (pouch)



| Storage

- Avoid direct sunlight and humidity. Seal the package before storage.

| Corrosion inhibitor period

- 1 year or longer (The period can be extended depending on the level of sealing.
As to inside rudders, semi-permanent protection is possible.)



06. Volatile Corrosion Inhibitor Liquid

6.1 Introduction to LF D-101

| Overview

RUSTEC VCI Liquid LF D-101 is a liquid type of highly-functional Volatile Corrosion Inhibitor that can reach areas where a general liquid type anti-rust agent can hardly reach.

This high-performance VCI Liquid starts to have a successful corrosion inhibitor effect when exceeding the level of 0.1% concentration. In experiments, cold rolled steel plates did not become rusty at all when remaining dipped in tap water (99.9%) for 1 month. It is applicable to various areas since it secures additional lubrication and cleaning functions in addition to the basic corrosion inhibitor function.

This product can be used for areas where anti-rust oil or grease cannot be used.

This product for ferrous metals also can be used as a short-term alternative anti-rust agent, as a corrosion inhibitor in a sealed area or for hydro tests, and as an additive for water-soluble metal processing oil.



6.1 Introduction to LF D-101

| Features

- Since it is highly-enriched solution, a small quantity of this product may be used for dipping.
- It can be used for water pressure testing of tanks, pipes, boilers, etc.
- As it is water-soluble, post-treatment is simple.
- It can be used as a corrosion inhibitor additive for water-soluble metallic processing oil.
- It contains no harmful substance such as phosphate, silicon, DICHAN, etc.

| Applications

- Corrosion inhibitors for closed cycling type cooling systems
- Internal/external corrosion inhibitors for tanks, gauges, boilers, plants, pipes, etc.
- For metallic construction materials
- For water pressure testing of circulatory radiators, heat exchangers, tanks, vessels, boilers, etc.
- Additive of water-soluble metallic processing oil or water-soluble refining oil in a limited range



6.1 Introduction to LF D-101

| How to Apply

- For water pressure testing or dipping, the proper range of concentration is 0.2 to 1.0% (recommended concentration). It may be diluted with tap water or industrial water. However, it may be used at a lower or higher concentration than the recommended concentration based on on-site testing results.
- In the case of internal corrosion inhibition, the volatile material remains even after diluted liquid discharge unlike ordinary liquid corrosion inhibitors.
The higher concentration, the more effective.
- pH should be kept at least 10.0 at the site. If pH is low, increase the quantity of LF D-101.

| Packing standard

- 20kg Pail, 200kg PE drum
- Put it in a container and keep in a cool and dry place.
Be sure that it is not exposed to direct sunlight.



| Overview

RUSTEC VCI Liquid LM S-100 is a liquid type of highly-functional Volatile Corrosion Inhibitor that can reach areas where a general liquid type anti-rust agent can hardly reach. This can be used as an additive of corrosion inhibitors when anti-rust oil or grease cannot be used or for temporary corrosion inhibition effects or in a closed space.

| Features

- For spray on ferrous and non-ferrous metals or for dipping
- As an additive when VCI Films are used
- As it is water-soluble, post-treatment is simple.
- As a corrosion inhibitor for tanks and pipes
- It contains no harmful substance such as heavy metals



| Applications

- Inter-process or final corrosion inhibition
- Internal/external corrosion inhibitors for tanks, gauges, boilers, plants, pipes, etc.
- For metallic construction materials
- Leak testing for tanks, etc.
- Applicable to corrosion inhibitor boxes or sheets as it is sprayed on boxes or sheets.

6.2 Introduction to LM S-100

| How to Apply

- Use about 200ml of the undiluted solution per 1m².
- For leak testing, you may dilute it with water.

When used in a closed space, the corrosion inhibitor is more effective.

- Be sure that there is no lost corrosion inhibitor due to rain or snow.

| Packing standard

- 20kg Pail, 200kg PE drum
- Put it in a container and keep in a cool and dry place.
Be sure that it is not exposed to direct sunlight.



6.3 Introduction to LM D-200

| Overview

RUSTEC VCI Liquid LM D-200 is a liquid type Volatile Corrosion Inhibitor applicable to carton boxes and kraft paper.

It is used to produce corrosion inhibitor carton boxes and VCI Paper.

| Features

- Applicable to ferrous and non-ferrous metals.
- Water soluble; high workability
- Highly absorptive; it is possible to mass-produce VCI Paper.
- It contains no harmful substance such as heavy metals

| Applications

- Applicable to carton boxes and kraft paper for corrosion inhibitor carton box and VCI Paper production.

| How to Apply

- Use it as undiluted solution.
- When applying it to carton boxes and kraft paper, use about 15 to 20g per 1m².
- The corrosion inhibition performance is effective even when it is sprayed in a paper type packing material.

| Packing standard

- 20kg Pail, 200kg PE drum
- Put it in a container and keep in a cool and dry place. Be sure that it is not exposed to direct sunlight.



07. Volatile Corrosion Inhibitor Paper

7.1 Overview of RUSTEC VCI Paper

| Overview

RUSTEC VCI Paper is produced by immersing specially designed Volatile Corrosion Inhibitor Liquid in pulp materials (Kraft Paper).

This is a rust-resistant packing material used for storage and transportation of ferrous and non-ferrous metals.

(Volatile Corrosion Inhibitor Paper produced in accordance with MIL-SPEC (MIL-P-3420))

| Features and Advantages

- Corrosion inhibition is possible even in fine corners as vapor penetrates into a metal of an irregular shape that makes it difficult to apply anti-rust oil.
- Since evaporation proceeds slowly inside the paper, the corrosion inhibitor effect lasts long. There is no risk of air pollution.
- Since it is applicable with no need for anti-rust oil, working environments can be maintained clean. Since no grease removal or follow-up work is necessary, the process is shortened and cost efficient.
- It is non-toxic. (containing no phosphate, silicon, chrome acid, or heavy metals)
- It is possible to form a shape that is suitable for various packing conditions.
(PE coating type, woven laminating paper type, etc.)
- No effect on conductivity or resistance of electronic parts; it is possible to protect the metallic surface with any filmy or oily (lubricant, etc.) layer for storage, transportation, marine transportation.
- These products have passed the SGS RoHS TEST (EU Restriction of Hazardous Substances Directive).

7.2 Applicable Areas of RUSTEC VCI Paper

| How to Apply

- Automobile area: chassis parts, engine, axle, clutch, and various steel parts
- Heavy machinery area: heavy equipment parts, power generator and turbine, transporting machinery, grinder, printer, etc.
- Precision machinery area: clock parts, various gauges, jig, robot parts, medical machinery, etc.
- Electric/electronic area: motor, communication equipment, printer substrate, etc.
- Material area: cold rolling steel plate, coil, wire rope, various timber, pipe, etc.
- Munition area: cannon, shotgun barrel, cannonball, caterpillar, jet engine, bayonet, grenade, magazine, mine, etc.
- Others: M/C tool, hand tool, bearing, gear, electronic tool, drill, bolt & nut, etc.
- Slipsheet in a box for export packing



7.3 Types and Sizes of RUSTEC VCI Paper

| Type

- RUSTEC-PM Paper for common use – ferrous metal (carbon steel), non-ferrous metals (aluminum, copper, copper alloy, etc.)
- RUSTEC-PMC PE coating paper
- RUSTEC-PW Woven laminating paper (Woven+Paper+Corrosion inhibitor processing)
- RUSTEC-PWC PE Woven laminating paper (PE+Woven+Paper+Corrosion inhibitor processing)



| Product

Class.	Type	Form	Width (mm)	Length (m)	Remark
Standard Specifications	RUSTEC-PM (ordinary corrosion inhibitor paper)	AK/P 52g, 80g/m ²	1000 - 1200	100 - 200	Customized production for sheet processing & printing
	RUSTEC-PMC (VCI Paper with PE coating)	AK/P 52g, 80g/m ² + PE 20μm	1000 - 2000	100 - 200	
	RUSTEC-PW RUSTEC-PWC	AK/P 80g, 98g/m ² WOVEN(D8x8) + PE 20μm	1000 - 2000	As ordered	



7.4 Uses and Storage of RUSTEC VCI Paper

| How to Use

- Prior to packing, the packing contents should involve no corrosion or foreign substances.
- Stick the contents to the VCI paper as closely as possible. Be sure that there is no other substance between the contents and the paper.
- Be sure that the packing is closed. If it is opened. repacking is required.
- Be sure to wear gloves while working on it. Be sure that no fingerprint or sweat is on the product.
- Wrap up with the VCI-treated surface.
- 1m² of RUSTEC Volatile Corrosion Inhibitor Paper can protect contents whose surface area is about 3m².

| Storage

- Keep it in a sealed container. After use, the remaining product should be kept in the original packing state or in a sealed state.
- Keep it under 30°C if possible. Store it in a cool and dry place with no direct sunlight.

| Corrosion inhibitor period

- When it is sealed completely, 1 year or longer
(The period may be extended depending on the packing condition)



08. Volatile Corrosion Inhibitor Desiccant – VD PACK

| Overview

VCI Desiccant made of natural minerals and new volatile materials. A new concept of VCI that features the excellent moisture absorption and corrosion inhibition performance.

It is applicable to various packing processes where desiccant functions and corrosion inhibitor functions are required for ferrous and non-ferrous metal packing.

| Features and Advantages

- An eco-friendly product made of natural minerals and biodegradable substances.
- Cost efficient since it has both desiccant and corrosion inhibition performance.
- It is applicable to both ferrous and non-ferrous metals, causing no effect on the packing area, plastic, rubber, etc.
- When disposed after use, silica gel involves a risk of soil acidification since the pH is about 4 to 5. In contrast, the VD PACK involves no such risk since its pH is close to neutral.
- These products have passed the SGS RoHS TEST
(EU Restriction of Hazardous Substances Directive).

8.2 Properties of RUSTEC VCI Desiccant (VD PACK)

| Properties

Form : Solid of a grain type

Odor : Odorless

pH : Appx. 6.5-8.0

Specific gravity : 0.85-0.97

Particle size : 1-4mm (90%+)

Biodegradability : Natural minerals that are mostly biodegradable

Stability to heat : <400°C



| Applications

In processes where moisture absorption and corrosion inhibition functions are required for transportation, storage, and export packing of various ferrous and non-ferrous metals.

| How to Use

Under normal environments, 500 to 700g/CBM; The level may be different depending on the packing condition or environments.

| Unit of Packing

Felt type : 5g, 10g, 30g, 50g, 100g – 25kg per box, fiber drum, and other customized packing options.

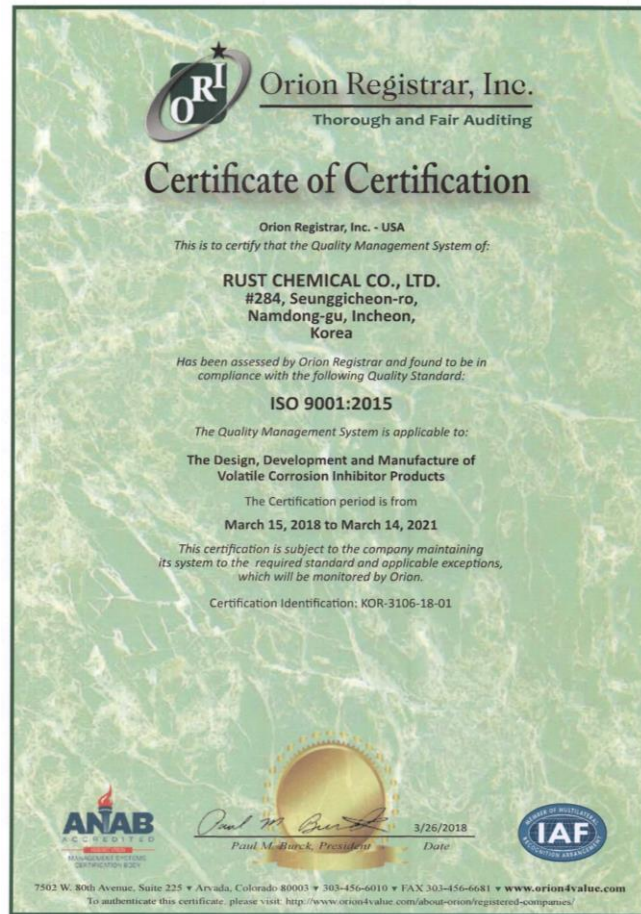
| Instructions

Be sure that it is not exposed to direct sunlight. Put it in a sealed container and keep it indoors under 30°C.

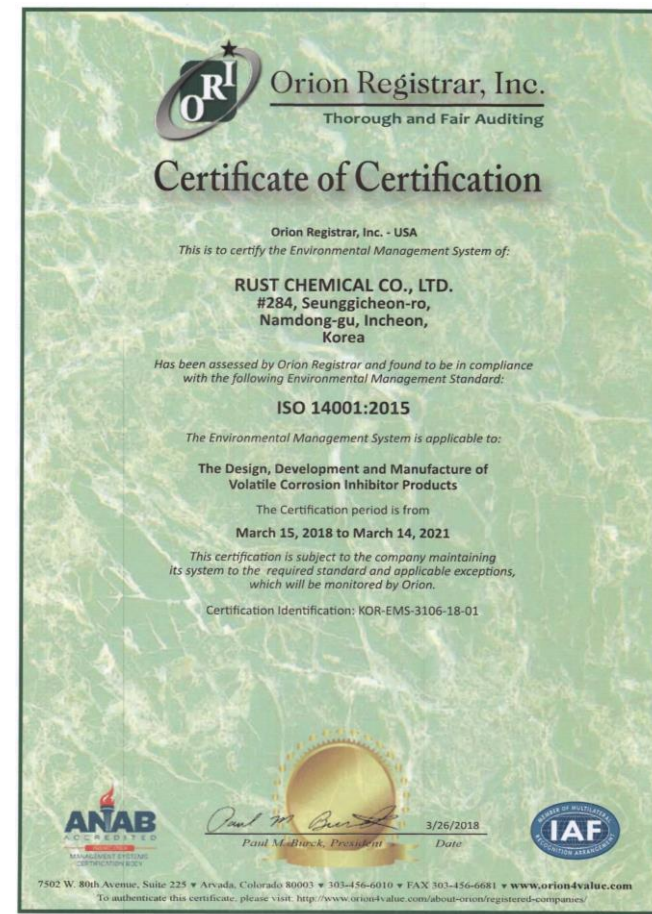
The remaining product after use shall be sealed for storage.



09. Certificates & Patents



ISO 9001 : 2015



ISO 14001 : 2015



특 허 증 CERTIFICATE OF PATENT

특 허 제 10-0934197 호 출원번호 제 2009-0032148 호
(PATENT NUMBER) (APPLICATION NUMBER)
출원일 2009년 04월 14일
(FILING DATE:YY/MM/DD)
등록일 2009년 12월 18일
(REGISTRATION DATE:YY/MM/DD)

발명의명칭 (TITLE OF THE INVENTION)
생분해성 방청 수지용 방청제, 이를 포함하는 생분해성 방청
수지 조성물과 방청 필름, 및 방청 필름의 제조방법

특허권자 (PATENTEE)
주식회사 러스트케미칼 (134111-0*****)
경기 군포시 금정동 1-23 대림폴리미빌딩 204호

발명자 (INVENTOR)
등록사항란에 기재

위의 발명은 「특허법」에 의하여 특허등록원부에 등록
되었음을 증명합니다.

(THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE KOREAN
INTELLECTUAL PROPERTY OFFICE.)

2009년 12월 18일



VCI RESIN



특 허 증 CERTIFICATE OF PATENT

특 허 제 10-1160848 호 출원번호 제 2010-0032271 호
(PATENT NUMBER) (APPLICATION NUMBER)
출원일 2010년 04월 08일
(FILING DATE:YY/MM/DD)
등록일 2012년 06월 22일
(REGISTRATION DATE:YY/MM/DD)

발명의명칭 (TITLE OF THE INVENTION)
고성능 기화성 방청 파우더 및 이의 제조방법

특허권자 (PATENTEE)
주식회사 러스트케미칼 (134111-0*****)
경기도 군포시 엘에스르166번길 16-1, 대림폴리미빌딩 204호 (금
정동)

발명자 (INVENTOR)
등록사항란에 기재

위의 발명은 「특허법」에 의하여 특허등록원부에 등록
되었음을 증명합니다.

(THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE KOREAN
INTELLECTUAL PROPERTY OFFICE.)

2012년 06월 22일



연차등록료 납부일은 설정등록일 이후 4년차부터 매년 06월 22일까지이며 등록원부로 권리관계를 확인바랍니다.

VCI POWDER



특 허 증 CERTIFICATE OF PATENT

특 허 제 10-1214390 호 출원번호 제 2011-0003117 호
(PATENT NUMBER) (APPLICATION NUMBER)
출원일 2011년 01월 12일
(FILING DATE:YY/MM/DD)
등록일 2012년 12월 14일
(REGISTRATION DATE:YY/MM/DD)

발명의명칭 (TITLE OF THE INVENTION)
수분 투과 방지 기능이 강화된 기화성 방청 포장재

특허권자 (PATENTEE)
주식회사 러스트케미칼 (134111-0*****)
경기도 군포시 엘에스로166번길 16-1, 대림폴리머빌딩 204호 (금정동)

발명자 (INVENTOR)
등록사항란에 기재

위의 발명은 「특허법」에 의하여 특허등록원부에 등록되었음을 증명합니다.

(THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE KOREAN INTELLECTUAL PROPERTY OFFICE.)

2012년 12월 14일



연차등록료 납부일은 출원일 이후 4년차부터 매년 12월 14일까지이며 등록원부로 권리관계를 확인바랍니다.

VCI PACKING



특 허 증 CERTIFICATE OF PATENT

특 허 제 10-1276753 호 출원번호 제 2012-0131653 호
(PATENT NUMBER) (APPLICATION NUMBER)
출원일 2012년 11월 20일
(FILING DATE:YY/MM/DD)
등록일 2013년 06월 13일
(REGISTRATION DATE:YY/MM/DD)

발명의명칭 (TITLE OF THE INVENTION)
고성능 수분 흡습 기능을 지닌 기화성 방청제 및 그 제조방법

특허권자 (PATENTEE)
주식회사 러스트케미칼 (134111-0*****)
경기도 안양시 동안구 별말로118번길 12 (관양동)

발명자 (INVENTOR)
등록사항란에 기재

위의 발명은 「특허법」에 따라 특허등록원부에 등록되었음을 증명합니다.

(THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE KOREAN INTELLECTUAL PROPERTY OFFICE.)

2013년 06월 13일



연차등록료 납부일은 출원일 이후 4년차부터 매년 12월 13일까지이며 등록원부로 권리관계를 확인바랍니다.

VCI DESICCANT

9.2 RUSTEC Patents



VCI LIQUID

9.3 RUSTEC Official Test Reports

TEST REPORT

1. No : CT15-008502

2. Client :

- Name : RUST CHEMICAL CO., LTD.
- Address : 12, Beolmal-ro 118 beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, Korea
- Date of Receipt : 2015.01.15
- TESTING PERIOD : 2015.01.15 ~ 2015.02.02

3. Use of Report :

4. Test Sample : RUSTEC VCI POWDER(POM-100)

5. Method :

(1) KS T 1085:1995

Reissuance (R1)

Date : 2015.02.02

6. Test Results

1) RUSTEC VCI POWDER(POM-100)

Test Item(s)	Unit	Test method	Test Results	Testing Environment
Volatile corrosion inhibitor ability (Simple method)	-	(1)	No rust	-

— End of Report —

Affirmation	Tested By Name : Mi Ra Jeong	Technical Manager Name : Sang Bok Bae
-------------	---------------------------------	------------------------------------------

Our report apply only to the standards or procedures identified and to the sample(s) tested unless otherwise specified. The test results are not indicative of representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products.

2015.02.02

Korea Conformity Laboratories President Song Jae Bin

Address : 153-803 199, Gasan digital 1-ro, Geuncheon-gu, Seoul, Korea 82-2-2102-2500

Result Inquiry : Polymer Materials Team 82-2-2102-2669

VCI POWDER

TEST REPORT

1. No : CT13-B2852

2. Client :

- Name : RUST CHEMICAL CO., LTD.
- Address : 12, Beolmal-ro 118 beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, Korea
- Date of Receipt : Aug 16, 2013
- Date of Issued : Sep 6, 2013

3. Use of Report : Use for customer submission

4. Test Sample : RUSTEC VCI FILM(RUSTEC FM-130)

5. Method :

(1) KS T 1086:2005

Reissuance (R1)

Date : Sep. 06, 2013

6. Test Results

1) RUSTEC VCI FILM(RUSTEC FM-130)

Test Item(s)	Unit	Test method used	Test Result(s)
Vapour inhibitor ability (Type L)	-	(1)	No rust
Vapour inhibitor ability after exposure (Class 2)	-	(1)	No rust
Corrosion preventive ability in contact (2 cycles)	-	(1)	No rust
Compatibility with nonferrous metal(Copper)	-	(1)	No corrosion
Compatibility with nonferrous metal (Aluminum)	-	(1)	No corrosion

— End of Report —

Affirmation	Tested By Name : Mi Ra Jeong	Technical Manager Name : Sang Bok Bae
-------------	---------------------------------	------------------------------------------

Our report apply only to the standards or procedures identified and to the sample(s) tested unless otherwise specified. The test results are not indicative of representative of the qualities of the lot from which the sample was taken or of apparently identical or similar products.

Korea Conformity Laboratories President Song Jae Bin

Address : 153-803 459-28, Gasan-Dong, Geuncheon-Gu, Seoul, Korea 82-2-2102-2500

Result Inquiry : Polymer Materials Team 82-2-2102-2669

VCI FILM

9.3 RUSTEC Official Test Reports



Test Report No. F880101/LF-GT8AYAA13-47747

Issued Date: 2013. 10. 21 Page 1 of 4

To: RUST CHEMICAL
12, 118beon-gil, Beolmal-ro
Dongan-gu
Anyang-si
Gyeonggi-do
Korea

The following merchandise was submitted and identified by the client as:

SGS File No. : AYAA13-47747
Product Name : RUSTEC VCI RESIN(MB-102)
Item No./Part No. : N/A
Received Date : 2013. 10. 16
Test Period : 2013. 10. 17 to 2013. 10. 21
Test Results : For further details, please refer to following page(s)
Test Performed : SGS Korea tested the sample(s) selected by applicant with following results.

Timothy Jeon
Jinhee Kim
Cindy Park
Jerry Jung/ Testing Person

SGS Korea Co., Ltd.

Jeff Jang
Jeff Jang / Chemical Lab Mgr

VCI RESIN

TEST REPORT

1. No : CT16-034563_M1
2. Client
○ Name : RUST CHEMICAL CO., LTD.
○ Address : 12, Beolmal-ro 118 beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, Korea
3. Date of Test : 2016.03.18 - 2016.04.01
4. Use of Report :
5. Test Sample : RUSTEC VO PACK (VCI DESICCANT)
6. Test Method
(1) KS T 1085:2015

Reissuance (R1)
Date : 2016.04.01
Modification (M1)
Date : 2016.04.05

7. Test Results
1) RUSTEC VO PACK (VCI DESICCANT)

Test Item(s)	Unit	Test method	Test Results	Remark
Residual corrosion inhibitor ability (Check 1, Simple method)	—	(1)	No rust	—

Affirmation Tested By Name : Hye Rim Kim Technical Manager Name : In Ho So
2016.04.01
Korea Conformity Laboratories President Kyung Sik Kim
Address : 085-03 199, Gasan digital 1-ro, Gwancheon-gu, Seoul, Korea 02-2-2102-2500
Result Inquiry : Polymer Materials Team 02-2-2102-2604

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VCI DESICCANT



Rust tech Rust-free

THANK YOU