

ZERUST® Corrosion Solutions



Worldwide Corrosion Prevention



In today's competitive global marketplace, your metal products must travel thousands of miles through aggressive atmospheres, extreme humidity, high temperature swings, and extended storage before your customers ever see them. Despite the exposure to these harsh conditions, your customers still insist that their orders are ready when required, at the agreed upon price, and in the condition specified: clean, dry and corrosion free.

Why Zerust®?

ZERUST® packaging solutions will resolve your corrosion problems while increasing your company's profitability by reducing operating costs, increasing process yields, and enhancing your customers' satisfaction.

- Our ZERUST® team of recognized scientific experts on four continents ensures that our corrosion protection systems are both the strongest available and environmentally responsible.
- Our ZERUST® team of field engineers uses decades of accumulated applications experience to:
 1. Identify and resolve customer corrosion causing processes.
 2. Eliminate unnecessary customer packaging/materials handling processes.
 3. Design optimal customer corrosion inhibiting packaging solutions.
 4. Provide point-to-point customer service in over 40 countries.

Corrosion And Its Prevention

A Natural Aging Process For Metals

Corrosion is generally initiated when atmospheric moisture (humidity) settles on metals. This moisture will act as a conductor enabling the flow of electrons between high-energy areas (cathodes) and low-energy areas (anodes) on metal surfaces. This electrochemical process then results in the visible oxidation referred to as tarnish, corrosion or rust.

ZERUST® Corrosion Inhibitors

ZERUST® is a line of volatile corrosion inhibiting (VCI) packaging materials. The ZERUST® packaging materials contain proprietary chemical formulations that release an invisible, odorless, and non-toxic corrosion inhibiting vapor into the air. The ZERUST® vapor molecules will settle on exposed metal surfaces in an enclosure and interrupt the electrochemical corrosion process.

ZERUST® Technology Is Easy To Apply

Simply place metal parts into ZERUST® packaging and seal it. Within two or three hours the interior of the package will be saturated with ZERUST® vapor molecules and a powerful corrosion inhibiting molecular layer will form on all exposed metal surfaces.

Later, when the parts are removed from the packaging, the ZERUST® corrosion inhibiting molecular layer will immediately proceed to vaporize into the atmosphere. This leaves behind clean dry and corrosion free parts that are ready for immediate use and require no further cleaning or handling.

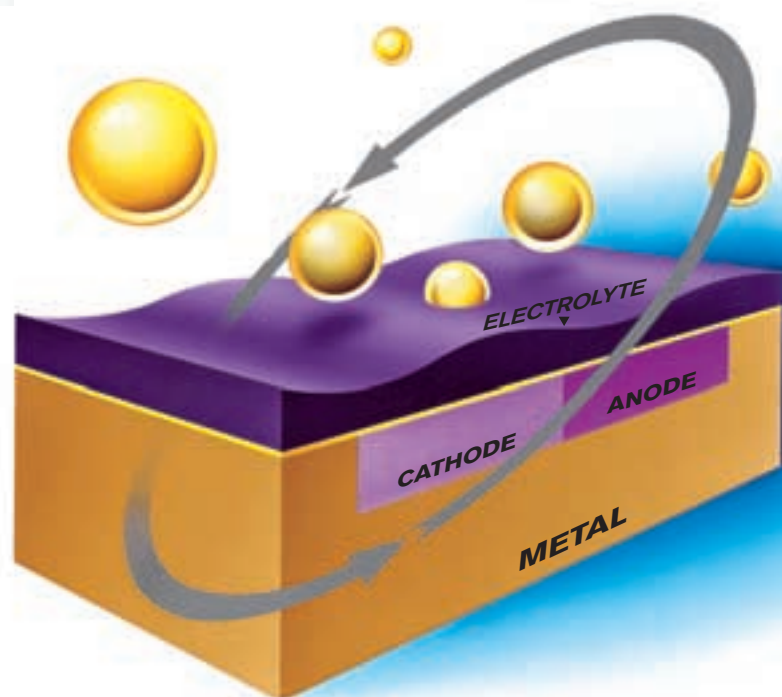


“In effect, the ZERUST® corrosion protection applies and removes itself.”

Principles:

The molecular ZERUST® layers that form on metal surfaces suppress corrosion in three ways:

1. They passivate the electron flow between the anodic and cathodic areas on the surfaces.
2. They form a physical, hydrophobic layer that prevents water and moisture directly contacting the metal and acting as an electrolyte.
3. They regulate the PH value of the electrolyte.



Zerust® Product Types and Tips

ZERUST® packaging materials incorporate a range of proprietary corrosion-inhibiting formulations in order to compensate for the different chemical compositions of various metals and metal alloys.

Ferrous

Iron, steel and cast iron metals are protected using the trademark yellow ZERUST® Ferrous packaging.

Non Ferrous

(Class - C) Aluminum, copper, brass, bronze and fully galvanized steel are protected using blue ZERUST® Non Ferrous (C) packaging.

(Class - S) Silver, manganese, magnesium and their alloys can be protected using blue ZERUST® Non Ferrous (S) packaging.

Multi-Metal

Products that contain combinations of the Ferrous and Non Ferrous metals listed above can be protected using green ZERUST® Multi-Metal packaging.

Silver

Silver can be protected from tarnishing with clear ZERUST® Silver packaging.

ZERUST® packaging materials have a shelf life of two years, and a subsequent in-service life of up to 5 years. It is highly recommended that customers consult with ZERUST® application engineers, in order to ensure the implementation of the appropriate formulation and the best packaging design.

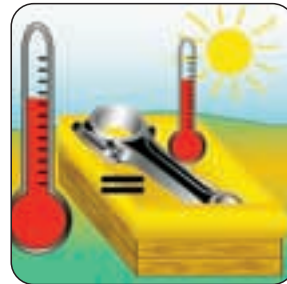
INSTRUCTIONS FOR USE



Pack only clean and dry parts!



Wear gloves to avoid leaving acidic, corrosion-causing fingerprints.



When packing, the ambient temperature and part temperature should be the same to prevent condensation from forming inside the pack.



Seal packs by heat sealing or applying waterproof tape.



Insert additional ZERUST® packaging materials in the center of tightly packed parts to ensure protection throughout.



Avoid the contact of metal parts with wood, paper or cardboard as these materials contain corrosion-causing acids.

Worldwide Zerust® Technical Support

Our internationally recognized scientists and field engineers work closely with customers in order to design comprehensive corrosion solutions.

ZERUST® representatives worldwide then work together in order to ensure the efficacy of these solutions, by providing our customers with point-to-point, on-site technical support.



• Climate Chamber Tests

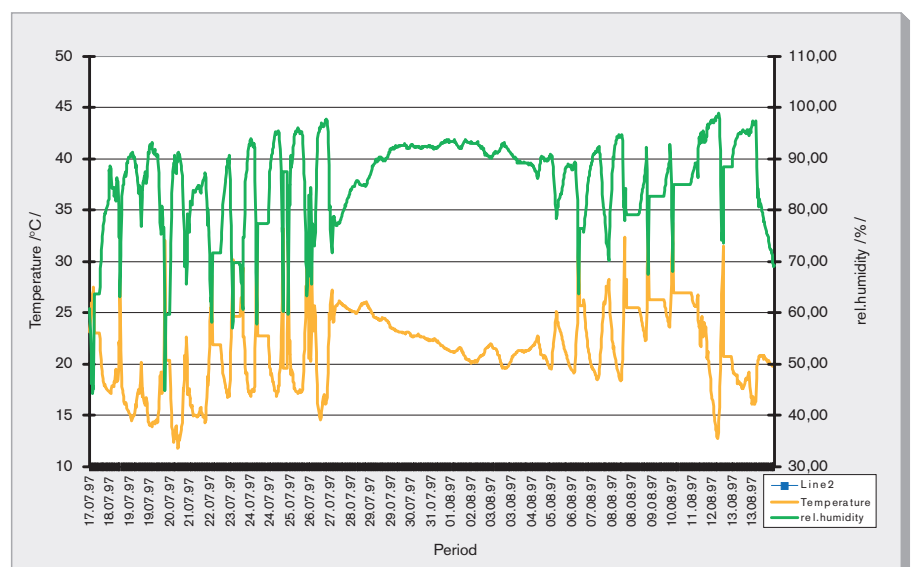
The efficacy of various proposed corrosion solutions can be evaluated under the extreme DIN EN IEC 60068-2-30 climatic conditions in a regional ZERUST® technical support center.

• Trial Shipments

ZERUST® applications engineers will assist with the on-site preparation and packaging of test shipments. Upon request, a data recorder can be incorporated into test shipments in order to track actual climatic conditions throughout the trial. At its destination, the shipment can be inspected and evaluated by a global ZERUST® representative.

• Support Services

The ZERUST® people have accumulated decades of expertise in corrosion prevention, and offer comprehensive design, application and after sales support in order to ensure that our customers' corrosion protection requirements are met.



Zerust® Vapor Capsules

Protection for electrical equipment, control systems, machinery and computers.

ZERUST® packaging provides corrosion protection by creating an enclosure saturated with corrosion inhibiting molecules. For those components that are already inside enclosures, an alternative ZERUST® solution exists in the form of Vapor Capsules.

ZERUST® Vapor Capsules contain the same corrosion inhibiting formulations used in ZERUST® packaging.

The proprietary ZERUST® formulations, in combination with the ruggedly designed case, make ZERUST® Vapor Capsules a remarkably practical solution to many corrosion problems.



Installation

To install a ZERUST® Vapor Capsule, simply peel away the cover from the unit's adhesive backing, and affix the capsule to almost any interior surface.



How they work

ZERUST® Vapor Capsules contain proprietary chemical systems, which emit an invisible, odorless, non-toxic vapor that diffuses throughout an enclosure. On placing one or more capsules inside of an enclosure, the ZERUST® molecules will saturate the interior atmosphere and create a molecular corrosion inhibiting layer on all exposed surfaces.



For more information, please ask for our ZERUST® Vapor Capsule brochure.

Zerust® VCI Packaging for Clean, Dry and Corrosion Free Products

- Packaging and corrosion protection becomes one operation
- No oils or greases to apply or remove
- Safe for health and the environment
- No disposal problems – can be recycled, incinerated or land-filled as ordinary waste
- Combination Protection Systems such as corrosion protection with high-level anti-static properties can easily be developed for any customer's specific needs.

Crankshafts individually packed in ZERUST® Ferrous bags preventing corrosion and contamination.



Gears packed in a ZERUST® Ferrous crate liner that covers the interior dividers in order to prevent contact with corrosion-causing wood.



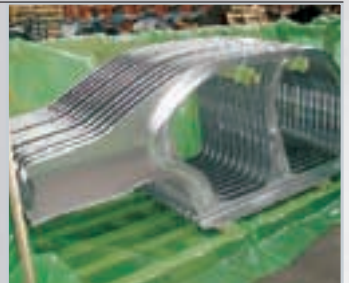
Small parts securely held by ZERUST® shrink film to ZERUST® treated cardboard.



Connecting rods packed in a rigid ZERUST® returnable dunnage system.



Stamped steel components being protected for sea freight with ZERUST® Multimetal film.



Steel bars being automatically wrapped in ZERUST® Ferrous stretch film.



Heavy cast iron parts transported in a metal container lined with a ZERUST® gusset bag



An electrical control cabinet protected inside by ZERUST® Vapor Capsules and protected outside with combination ZERUST® Multimetal/Anti-Static film.



Automotive CKD (Complete Knock Down) components being protected with ZERUST® Multimetal film for intercontinental transit.



Product Guide

Zerust® Film

Zerust® Film is available in a wide range of sheeting, tubing and center-fold sheeting.



Zerust® Bags

ZERUST® Bags can enclose a part or line a box in seconds



Zerust® Stretch Film

ZERUST® Stretch Film offers a secure method of enclosing products while providing corrosion protection.



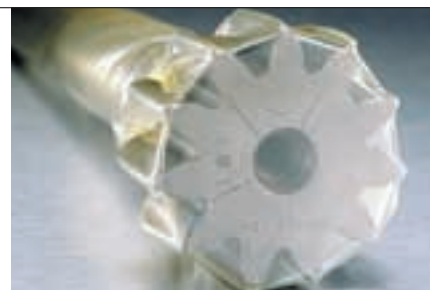
Zerust® Skin Film

ZERUST® Skin Film can secure parts to sheets of ZERUST® treated cardboard.



Zerust® Shrink Film

ZERUST® Shrink Film provides corrosion protection and increases pack integrity.



Zerust® Abrigo Paper

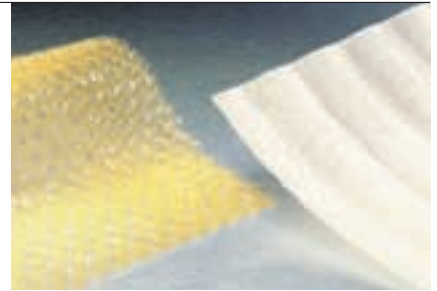
ZERUST® Abrigo Paper is a high quality technical corrosion inhibiting paper without the traditional disadvantages of ordinary VCI paper.



Product Guide

Zerust® Bubble Wrap

ZERUST® Bubble wrap provides corrosion protection as well as physical protection.



Zerust® Unico Foam

ZERUST® Unico Foam offers corrosion protection as well as physical protection.



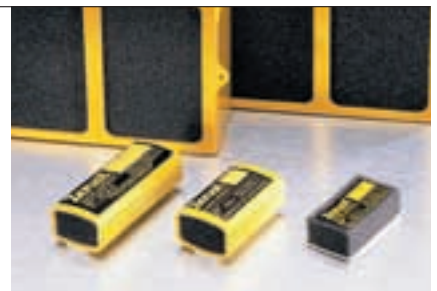
Zerust® Cardboard

ZERUST® Cardboard, like all ZERUST® products, can be custom manufactured to meet client specifications.



Zerust® Capsules

ZERUST® Vapor Capsules provide corrosion protection inside of enclosures like electrical control boxes.



Zerust® Profile Boards

ZERUST® Profile Boards are ideal replacements for ordinary corrugated boards when developing a reusable corrosion control packaging system.



Zerust® Dunnage

ZERUST® Dunnage can be custom formed to replace conventional client dunnage.



Global Innovation and Support

The ZERUST® federation of companies offer a truly global level of support.

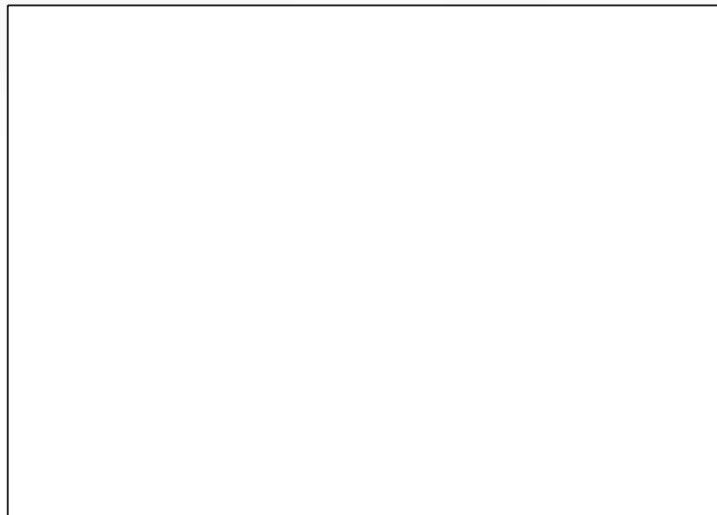
Our operations include the following countries:

- Argentina ■ Australia ■ Austria ■ Belgium ■ Brazil ■ Canada ■ Chile ■ China ■ Czech Republic
- Denmark ■ Eire ■ Finland ■ France ■ Germany ■ Holland ■ India ■ Italy ■ Indonesia ■ Japan
- Jordan ■ Lebanon ■ Malaysia ■ Mexico ■ Monaco ■ New Zealand ■ Norway ■ Philippines
- Poland ■ Russia ■ Singapore ■ Slovak Republic ■ South Korea ■ Spain ■ Syria
- Sweden ■ Taiwan ■ Thailand ■ Turkey ■ U.S.A. ■ United Kingdom

See our website for a comprehensive list at WWW.ZERUST.COM

THE ADVANTAGES OF THE GLOBAL NETWORK FOR OUR CUSTOMERS ARE CONSIDERABLE

- Worldwide manufacturing and supply to a global quality standard in order to match our multinational customers' requirements.
- Worldwide on-site technical support by experienced field engineers at both the origin and destination of the shipping route to ensure that our customers achieve corrosion control.
- Regional Research & Development Centers in Asia, the Americas, Eastern Europe and Western Europe provide the leading advances in corrosion control technology.



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