Zerust® Corrosion Solutions
Packaging Film & Bag Technology
In today's competitive global marketplace, your metal products must travel thousands of miles through aggressive atmospheres, extreme daily changes of humidity, and 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 specified condition: clean, dry and corrosion free.

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 corrosion technology experts on four continents ensures that our corrosion protection systems are both the most effective 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 solutions.
  4. Provide point-to-point customer service in over 40 countries.

Global Innovation and Support

The Zerust® Global Network Offers:

• 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.
Worldwide Zerust® Technical Support

Our internationally recognized scientists and field engineers work closely with customers 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.

Laboratories and Test Facilities

The effectiveness of various proposed corrosion solutions can be evaluated under extreme simulated climatic conditions in a regional ZERUST® technical support centers worldwide.

Trial Shipments

ZERUST® applications engineers will assist with the on-site preparation and packaging of test shipments. Upon request, data recorders can be incorporated into test shipments 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 to ensure that our customers’ corrosion protection requirements are met.

Datalogger Temperature and Humidity In-Shipment Recordings
Corrosion And Its Prevention

A Natural Aging Process For Metals

Corrosion is initiated when atmospheric moisture (humidity) settles on metals. This moisture will act as a conducting medium for the flow of ions and 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, depending on the metal.

ZERUST® Corrosion Inhibitors

ZERUST® is a line of integrated corrosion inhibitor technologies (ICT) products and services including volatile corrosion inhibitors (VCI) and other inhibitors and surface preparations. 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. Other ICT products augment the protection power of VCI technology to solve specific corrosion and surface preservation problems.

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® ICT® Technology

![Diagram of Zerust® ICT® Technology](image)
**Ferrous**

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

**Non Ferrous**

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

Colors (primarily): clear or blue

**Multi-Metal**

Products that contain combinations of the ferrous and non-ferrous metals listed above can be protected using ZERUST® Multimetal packaging.

Colors (primarily): clear or green

**Anti-Tarnish**

Protect silver, copper and related alloys from tarnishing with clear ZERUST® Anti-tarnish and other special acid-gas scavenging (AG-S) packaging films.

**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.

ZERUST® packaging materials have a shelf life of two years, and combined with subsequent in-service life of up to 5 years. It is highly recommended that customers consult with ZERUST® application engineers, to ensure the implementation of the appropriate products and the best packaging design.
• 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
• Integrated combinations of protection
  systems such as corrosion protection with
  VCI and acid-gas scavenging and anti-static
  properties can easily be provided for any
  customer’s specific requirements.

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

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.

Clean and rust-free axle parts
after trans-ocean shipment
and storage in central global
warehouse.

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

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

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.
ZERUST® Film is available in a wide range of sheeting, tubing and centerfold sheeting.

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

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

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

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

ZERUST® VCI Paper and Poly Paper are high-performance corrosion inhibitors.
Product Guide

ZERUST® Cushioning Film provides corrosion protection as well as physical protection.

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

More Corrosion Solutions from Zerust®

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

ZERUST® Liquid Additives and Coatings provide corrosion protection for parts in-between production processes and storage.

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