

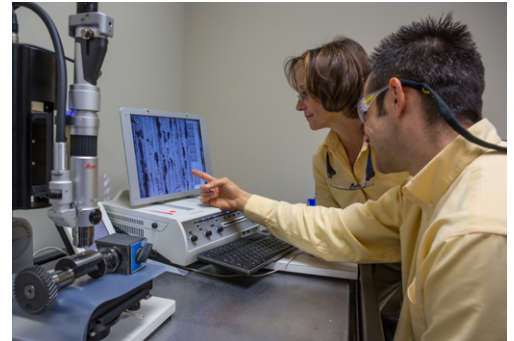
ZERUST® Vapor Capsules and VCI Diffusers Series



■ ZERUST® Global Corrosion & Cleaning Management Solutions

How ZERUST® Works for You.

For over 50 years, beginning with the invention of VCI-infused plastic packaging products, ZERUST®/EXCOR® has led the market in quality corrosion solution products. We are dedicated to providing expert corrosion management services and broadening the range of corrosion solutions for our customers. In addition, ZERUST® users have access to on-site support from ZERUST®/EXCOR® representatives in more than 70 countries. As a result, our customers have peace of mind when they choose ZERUST® for corrosion control management.



ZERUST® VCI Emitters and Diffuser Series

In addition to traditional VCI film and other packaging products, ZERUST® offers the ICT® 800 VCI Emitter and Diffuser Series. Emitters/Diffusers provide targeted vapor corrosion protection in hard-to-reach enclosed spaces or can be used as added protection to ZERUST® packaging products. Emitters/Diffusers emit powerful ZERUST® Vapor Corrosion Inhibitor (VCI) molecules into an enclosure that settle on metal surfaces and protect them from corrosion.

Our Commitment to Quality, Safety, and the Environment

We are committed to making safe and effective products that reduce the industry's impact on the environment. ZERUST®/EXCOR® products are approved by many major companies' toxicology, engineering, and packaging departments and comply with health and safety regulations around the globe, including the following:



- REACH Regulation Compliant (EC No 1907/2006)
- European RoHS Directive Compliant
- Do not contain SVHC (Substances of Very High Concern)
- Labelled in accordance with GHS (Globally Harmonized System) and are compliant under UN GHS, EU CLP, US OSHA HazCom, and CA WHMIS

ZERUST® is a business unit of Northern Technologies International Corporation (NASDAQ: NTIC), Headquartered in Minnesota, USA. The management system of ZERUST® products is ISO 9001:2015 certified.

ZERUST®/EXCOR® VCI Emitter and Diffuser Guide

It is essential to restrict airflow to the surrounding container. Airflow may remove the protective vapor from the space faster than it is released from the diffuser. Protection ratings for each product assume a relatively empty enclosure to enable direct diffusion paths. When the enclosure is filled with many dividers or objects that lengthen the VCI diffusion pathways, it is good practice to double the number of diffusers.

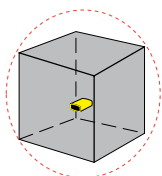


Instructions for Installing Emitters and Diffusers

1. To activate, simply take the diffuser out of its packaging.
2. Note the installation date. Vapor Capsule products include a space to mark the date.
3. Place the diffuser in the enclosure following the principles below.
4. Make sure the diffuser has maximum surface space exposed for ideal diffusion.
5. Tightly seal the enclosure to restrict airflow. Metals in the enclosure will be protected for up to two years, depending on the product used.

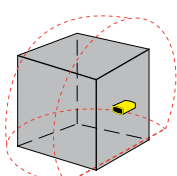


Center Position



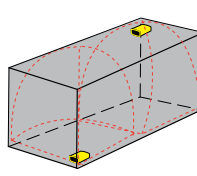
The ideal location is the center of the enclosure.

Side Position



Good for most applications and provides optimum protection.

Corner Position

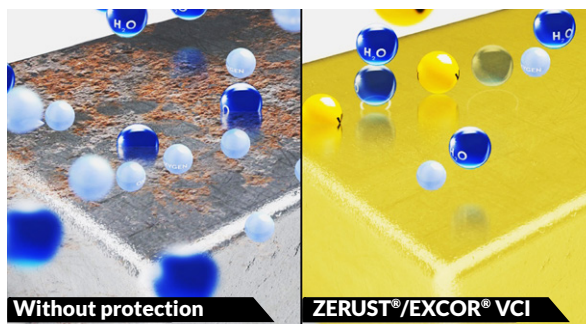


In large enclosures, two capsules may be placed on diagonally opposed corners to protect the entire space fully.

What is VCI?

VCI is an abbreviation for Vapor Corrosion Inhibitor or Volatile Corrosion Inhibitor. VCIs are molecules that inhibit corrosion by forming a thin, protective layer on a metal surface within an enclosed space. This invisible layer prevents moisture and environmental elements from reacting with the metal surface and causing corrosion. The molecules dissipate when the enclosure is opened and do not need to be removed.

"In effect, the ZERUST® VCI corrosion protection applies and removes itself."



ZERUST® Vapor Capsule Diffusers

ZERUST® Vapor Capsule diffusers are easy-to-use capsules that contain ZERUST® corrosion inhibiting technology. Vapor Capsules emit powerful corrosion-inhibiting molecules that settle on metal surfaces and protect them from corrosion. All are safe for electronics, odorless, residue-free, and designed to work in restricted spaces.

Use Vapor Capsules to provide multimetal corrosion protection in almost any enclosure or as a supplement to other ZERUST® packaging products for added protection. In addition, use Vapor Capsules to protect electrical components in enclosures since they do not interfere with the electrical conductivity or resistance of the contact surfaces.



Coverage Specifications - Multimetal Protection

Product Name and Part Number	NSN National Stock Number	Volume of Protection (Up To) [†]	Radius of Protection (Up To) [†]	Duration of Protection (Up To) [†]	Adhesive Backing
VC1-1 (S) 375-M-00006	6850-01-426-3539	4 ft ³ (0.12 m ³) [†]	1 ft (30 cm) [†]	1 year [†]	Yes
VC1-1 375-M-00001	6850-01-338-1393 Prior: 4440-01-481-3150*	4 ft ³ (0.12 m ³) [†]	1 ft (30 cm) [†]	1 year [†]	Yes
VC2-1 375-M-00002	6850-01-475-9949 Prior: 6850-01-345-7431* Prior: 4440-01-475-9949*	35 ft ³ (1 m ³) [†]	2 ft (60 cm) [†]	1 year [†]	Yes
VC2-2 375-M-00003	6850-01-133-0373	35 ft ³ (1 m ³) [†]	2 ft (60 cm) [†]	2 years [†]	Yes
VC6-1 375-M-00004	6850-01-590-1676	900 ft ³ (25 m ³) [†]	6 ft (200 cm) [†]	1 year [†]	No
VC6-2 375-M-00005	6850-01-348-1090 Prior: 6850-01-348-1390*	900 ft ³ (25 m ³) [†]	6 ft (200 cm) [†]	2 years [†]	No
ZAK-M22 375-M-00202	-	35 ft ³ (1 m ³) [†]	2 ft (60 cm) [†]	2 years [†]	Yes

*Obsolete NSN

Military Users

For additional information on CID A-A-59441, NSN, and proven military applications, visit www.zerust.com/military or email military@zerust.com.

Our domestically sold diffuser products are proudly manufactured in the USA.



Products with or without adhesive may need to be secured with a cable tie. Particularly when vibration, cold, or surface contaminants may cause the adhesive to be ineffective over time.

ZERUST® Activ™ Series

ZERUST® Activ™ series products combine a fast-acting volatile Flash Corrosion Inhibitor (FCI™) with a Vapor Corrosion Inhibitor (VCI) to protect ferrous and aluminum metals in enclosed spaces. This combination goes to work in minutes to protect against both flash rust and provide long-term corrosion protection with its progressive VCI chemistry. Use Activ™ series products to protect equipment and assets in corrosive and contaminated environments.

The Activ™ series technology is available in different product offerings optimized to protect in a range of applications and void sizes.

Coverage Specifications

ZERUST® Product Name	Normal Environment*		Aggressive Environment*	
	Volume of Protection (Up To)†	Duration of Protection (Up To)†	Volume of Protection (Up To)†	Duration of Protection (Up To)†
ActivTab™(LS)-25	0.25 ft³ (0.0071 m³)†	6 months†	0.25 ft³ (0.0071 m³)†	15 days†
ActivCapsule™ FAC1-1s	4 ft³ (0.12 m³)†	1 year†	0.35 ft³ (0.01 m³)†	1 month†
ActivPak®(LS)-T330	5 ft³ (0.15 m³)†	1 year†	2 ft³ (0.05 m³)†	2 months†
ActivPak®(LS)-33	16 ft³ (0.45 m³)†	1 year†	5 ft³ (0.15 m³)†	2 months†
ActivPak®(LS)-T350	26 ft³ (0.75 m³)†	1 year†	7 ft³ (0.2 m³)†	2 months†
ActivPak®(LS)-35	35 ft³ (1 m³)†	1 year†	11 ft³ (0.3 m³)†	2 months†
ActivPak®-T330	5 ft³ (0.15 m³)†	2 years†	2 ft³ (0.05 m³)†	4 months†
ActivPak®-33	16 ft³ (0.45 m³)†	2 years†	5 ft³ (0.15 m³)†	4 months†
ActivPak®-T350	26 ft³ (0.75 m³)†	2 years†	7 ft³ (0.2 m³)†	4 months†
ActivPak®-35	35 ft³ (1 m³)†	2 years†	11 ft³ (0.3 m³)†	4 months†
ActivPowder™(LS)	1 lb = 280 ft³ (8 m³)†	For years†	1 lb = 90 ft³ (3 m³)†	1 year†
ActivPowder™	1 lb = 280 ft³ (8 m³)†	For years†	1 lb = 90 ft³ (3 m³)†	1 year†

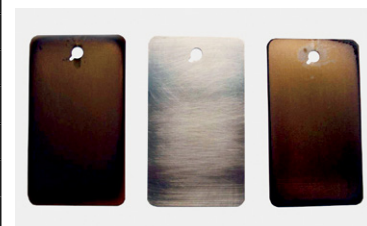
*Normal environment is defined as warehouses, light industrial areas, and shipping and storage in sealed packaging or enclosures. Aggressive environment is defined as areas located in the vicinity of salts and acid gases such as oceans, petrochemical sites, wastewater treatment, and pulp-paper plants or in enclosures that are not well sealed.

ZERUST® ActivPak®



ZERUST® ActivPak® offers advanced corrosion protection in a convenient and secure packet format.

Acid Gas Test Results



Left to right; Competitor 1 VCI, ZERUST® Activ™ protection, and Competitor 2 VCI.

ZERUST® ActivTab™(LS)



ZERUST® ActivTab™(LS) offers advanced corrosion protection in a tablet size for small areas.

ZERUST® ActivCapsule™



ZERUST® ActivCapsule™ provides Activ™(LS) technology in small hard-to-reach spaces.

ZERUST® ActivPowder™



ZERUST® ActivPowder™ protects large void spaces in challenging environments.

Select the
Activ™ Series
Product Right
for Your
Application.

ZERUST® ActivDri™ Emitters & Diffusers

ZERUST® ActivDri™ packets are patent-pending, economical, effective, and easy-to-use dual action, moisture control vapor corrosion inhibitor (VCI) sachet products. ActivDri™ packets protect against environmental contaminants and humidity that aggressively corrodes metal parts, components, electronics, and electrical components/equipment. Corroded metal components will lead to quality rejects, while corroded electrical components may cause system reliability issues, system malfunction, and intermittent connection errors, leading to production stoppages and safety hazards.

Use ActivDri™ packet's dual-acting moisture and corrosion control to protect highly sensitive metal parts and electrical components from corrosion damage during operation, shipping, and storage.



PWA5

PWA10

PWA25

PWA50

PWA100

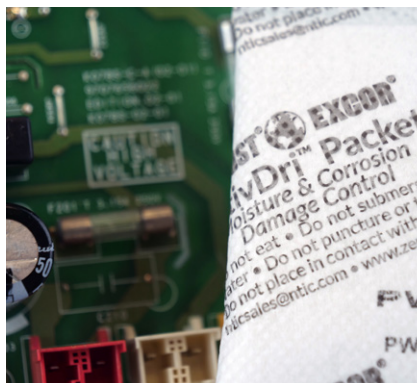
Coverage Specifications

Product Name	Part Number	Physical Dimensions*	Volume of Protection (Up To)*	Duration of Protection (Up To)*
ActivDri™ PWA5	375-M-00212	2" x 4" (5 cm x 10 cm)	3.5 ft ³ (0.1 m ³)*	1 year [†]
ActivDri™ PWA10	375-M-00213	3 2/5" x 4" (8.64 cm x 10.16 cm)	7 ft ³ (0.2 m ³)*	1 year [†]
ActivDri™ PWA25	375-M-00214	3 2/5" x 5" (8.64 cm x 12.7 cm)	17.5 ft ³ (0.5 m ³)*	1 year [†]
ActivDri™ PWA50	375-M-00215	3 2/5" x 5 1/2" (8.64 cm x 13.9 cm)	35 ft ³ (1 m ³)*	1 year [†]
ActivDri™ PWA100	375-M-00210	3 2/5" x 6 1/2" (8.64 cm x 16.51 cm)	53 ft ³ (1.5 m ³)*	1 year [†]

*Physical dimension tolerance +/- 10%

Electrical Uses

- IT Infrastructures
- Batteries, battery terminals, and charging stations (Electric vehicles)
- Printed circuit board assemblies (PCBA)
- Connectors and contacts
- Metallic wire terminals, screw terminals, and spring clamp terminals
- Electrical panels, circuit breakers, and relay switches
- Electrical connectors and wire harnesses



ActivDri™ moisture and corrosion control packets are used to protect highly sensitive metal electrical components from corrosion damage during shipping and storage.

ZERUST®/EXCOR® VCI Diffuser Series

ZERUST® Tube Strip and Tube Strip Pro

ZERUST® Tube Strip and Tube Strip Pro products are designed to protect against corrosion within tubes, pipes, and gun barrels. Tube Strip is a flexible quarter-inch plastic tubing designed to protect tightly sealed tubes and pipes up to 2"† in diameter (Tube Strip Pro: up to 4"†) for up to 2 years†. ZERUST® Tube Strips and Tube Strip Pro are easy to install. Simply insert the Tube Strip inside a ferrous tube or pipe and cap the ends tightly. VCI molecules diffuse from the Tube Strip and saturate the air inside of the pipe, protecting interior surfaces from corrosion.

Coverage Specifications

Product Name and Part Number	NSN National Stock Number	Diameter of Pipe†	Duration of Protection†	Protected Metal Type	Product Specs
Tube Strip 475-F-00001	6850-01-590-1673	Up to 2 in (5 cm)†	Up to 2 years†	Ferrous	.25" diameter, 1000' length, 12 lb. roll
Tube Strip Pro 475-M-00005	-	Up to 4 in (10 cm)†	Up to 2 years†	Ferrous (Yellow metal compatible)	.12 - .14" diameter, 500' length, 5 lb. roll

ZERUST® Pipe Strip

ZERUST® Pipe Strips are a residue-free, long-term corrosion protection system for the interior surfaces of ferrous and non-ferrous pipes and tubes during shipment, storage, or work-in-progress. ZERUST® Pipe Strips are Vapor Capsules assembled on long plastic strips that can be made to any length. Pipe Strips are ready-to-use, and installation is easy—simply place the strip inside the pipe along its length and cap the ends. ZERUST® VCI saturates the air inside of the pipe, protecting all interior surfaces from corrosion for up to 1 year†. Protected pipes are always ready to use. Simply uncap the pipes and pull the strip out.

Coverage Specifications

Product Name and Part Number	Diameter of Pipe†	Length of Strip	Duration of Protection†	Protected Metal Type	Product Specs
PS2-10 525-M-00001	Up to 12 in (30 cm)†	40 ft (12 m)	Up to 1 year†	Multimetal	10 Capsules on 4 ft centers
PS2-16 525-M-00002	Up to 24 in (60 cm)†	40 ft (12 m)	Up to 1 year†	Multimetal	16 Capsules on 2.5 ft centers

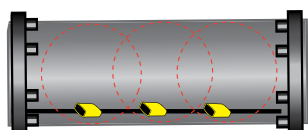


Illustration of a Pipe Strip protecting a large pipe.



Length of Tube Strip for ferrous protection.



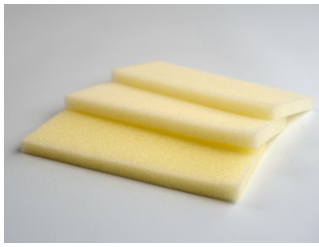
Roll of Tube Strip Pro



A section of Pipe Strip

ZERUST®/EXCOR® VCI Diffusers

ZERUST® ICT® Open Cell VCI Foam Pad



ZERUST® VCI Foam Pad

ZERUST® ICT® Open Cell VCI Foam Pads provide superior corrosion protection to ferrous metals and are compatible with non-ferrous metals. They contain a high saturation of proprietary ZERUST® VCI technology and are nitrite and chromate free. As a result, the foam pads effectively reduce corrosion even on lightly contaminated metals. Open cell foam pads provide VCI protection in plain packaging or can be used as additional targeted protection in VCI packaging.

Coverage Specifications

Product Name	Part Numbers	Protection Type	Volume of Protection [†]	Duration of Protection [†]	Product Specs
ICT®870-OC VCI Foam Pad	375-F-00007	Ferrous	Up to 1.5 ft ³ (0.04 m ³) [†]	Up to 1 year [†]	2 x 5 x .25 in (5.08 x 12.7 x .64 cm)

ZERUST® Z-PAK®



Z-PAK®-01 VCI Packets

ZERUST® Z-PAK® is an economical, effective, and easy-to-use vapor corrosion inhibitor (VCI) diffuser packet that can be used alone or, more typically, with other ZERUST® packaging products to provide robust temporary corrosion protection for ferrous metals during shipment, storage, or work-in-progress.

Coverage Specifications

Product Name	Part Number	Volume of protection (Up to) [†]	Radius of protection (Up to) [†]	Protected Metal Type	Duration of protection (Up to) [†]
Z-PAK®-01	375-F-00100	3.5 ft ³ (0.1 m ³) [†]	1 ft (30 cm) [†]	Ferrous	Overseas shipments: 3 months [†] Domestic shipments and/or storage: 6 months [†]



- Hundreds of products in stock
- Orders placed by 10:00 AM CST are shipped same business day
- No minimum orders
- Blanket orders available
- Let us store products for you!
- Custom orders available

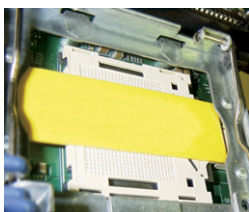
ZERUST® Plastabs®



ZERUST® Plastabs® are thin, light, and rigid polyethylene squares. Their small shape makes Plastabs® perfect for protecting critical surfaces within narrow or hard-to-reach areas in enclosures. In addition, some Plastabs® include peel-adhesive backing and can be affixed to most surfaces, or Plastabs® can simply be dispersed throughout packages of metal parts.

Use Plastabs® as a supplement to other ZERUST® packaging products, or use them alone for protection in tightly restricted spaces. For example, they are ideal for protecting electrical components in small sections of enclosed cabinets or control boxes.

Coverage Specifications



1" x 3" Plastab® in an electronics enclosure.

Product Name and Part Number	NSN National Stock Number	Volume of Protection (Up to) [†]	Radius of Protection (Up to) [†]	Duration of Protection (Up to) [†]	Adhesive Backing	Qty Per Pack
.5 x .5 inch 425-M-00003	-	0.1 ft ³ (.003 m ³) [†]	0.3 ft (.09 m) [†]	2 years [†]	No	1000
.75 x .75 inch 425-M-00002	-	0.2 ft ³ (.006 m ³) [†]	0.4 ft (0.1 m) [†]	2 years [†]	No	1000
.75 x .75 inch 425-M-00004	6850-99-551-9054	0.2 ft ³ (.006 m ³) [†]	0.4 ft (0.1 m) [†]	2 years [†]	Yes	1000
1 x 1 inch 425-M-00001	6850-01-362-9256	0.4 ft ³ (.01 m ³) [†]	0.5 ft (0.15 m) [†]	2 years [†]	No	1000
1 x 3 inch 425-M-00010	6850-01-590-1667	1 ft ³ (.03 m ³) [†]	0.6 ft (0.2 m) [†]	2 years [†]	No	1000

Note: 1 x 3 inch Plastabs are debossed.

ZERUST® Cor Tab® Tablets



ZERUST® Cor Tab® tablets provide basic corrosion protection for metal items in small, hard-to-reach enclosed areas. Simply place or sprinkle Cor Tabs® in the area you would like to protect and ensure airflow is restricted to the enclosure. Use Cor Tabs® to protect metal items such as electronic instruments, computer parts, small metal parts, and tools for up to 6 months[†] in an enclosure or package.

Coverage Specifications

Product Name and Part Number	NSN National Stock Number	Volume of Protection (Up to) [†]	Radius of Protection (Up to) [†]	Duration of Protection (Up to) [†]
CT-25 450-M-00001	6850-01-348-1092	0.25 ft ³ (.0071 m ³) [†]	0.40 ft (0.12 m) [†]	6 months [†]
CT-50 450-M-00002	6850-01-349-7073	0.50 ft ³ (.015 m ³) [†]	0.50 ft (0.15 m) [†]	6 months [†]
CT-10 450-M-00003	-	1 ft ³ (.03 m ³) [†]	0.60 ft (0.2 m) [†]	6 months [†]

Why Choose ZERUST®/EXCOR®?

In today's competitive global marketplace, your metal products must travel thousands of miles through aggressive atmospheres, extreme daily changes of humidity and temperature, and possibly extended storage before your customers ever see them.

ZERUST® corrosion solutions will resolve your corrosion problems while increasing your company's profitability by reducing operating costs, increasing process yields, and enhancing your customers' satisfaction. In some regions of the world, ZERUST® is also known as EXCOR® due to language differences.

ZERUST®/EXCOR® field engineers on four continents use decades of accumulated applications experience to:

- Identify and resolve corrosion causes in processes.
- Eliminate unnecessary packaging and materials handling processes.
- Design optimal customer corrosion management solutions.
- Provide point-to-point customer service in over 70 countries.



Worldwide ZERUST®/EXCOR® Technical Support

Our internationally recognized scientists and field engineers work closely with customers to design and implement comprehensive corrosion management systems. Then, ZERUST® representatives worldwide provide on-site technical support to ensure the efficacy of these solutions. ZERUST® applications engineers will assist with the on-site preparation and packaging of test shipments. At its destination, the shipment will be inspected and evaluated by a global ZERUST® representative.



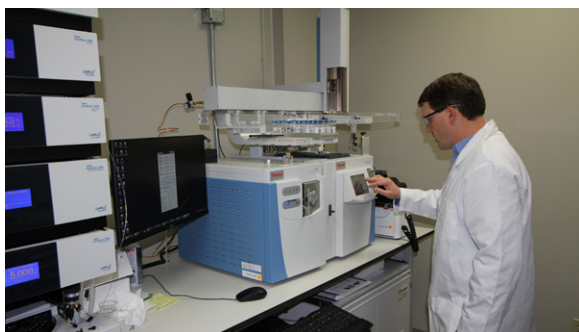
Laboratories and Test Facilities Across the Globe

The effectiveness of the proposed corrosion management system can be evaluated under extreme simulated climatic conditions in one of our many worldwide regional ZERUST® technical support centers. ZERUST® is a business unit of Northern Technologies International Corporation (NTIC). NTIC's management system is ISO 9001:2015 certified.

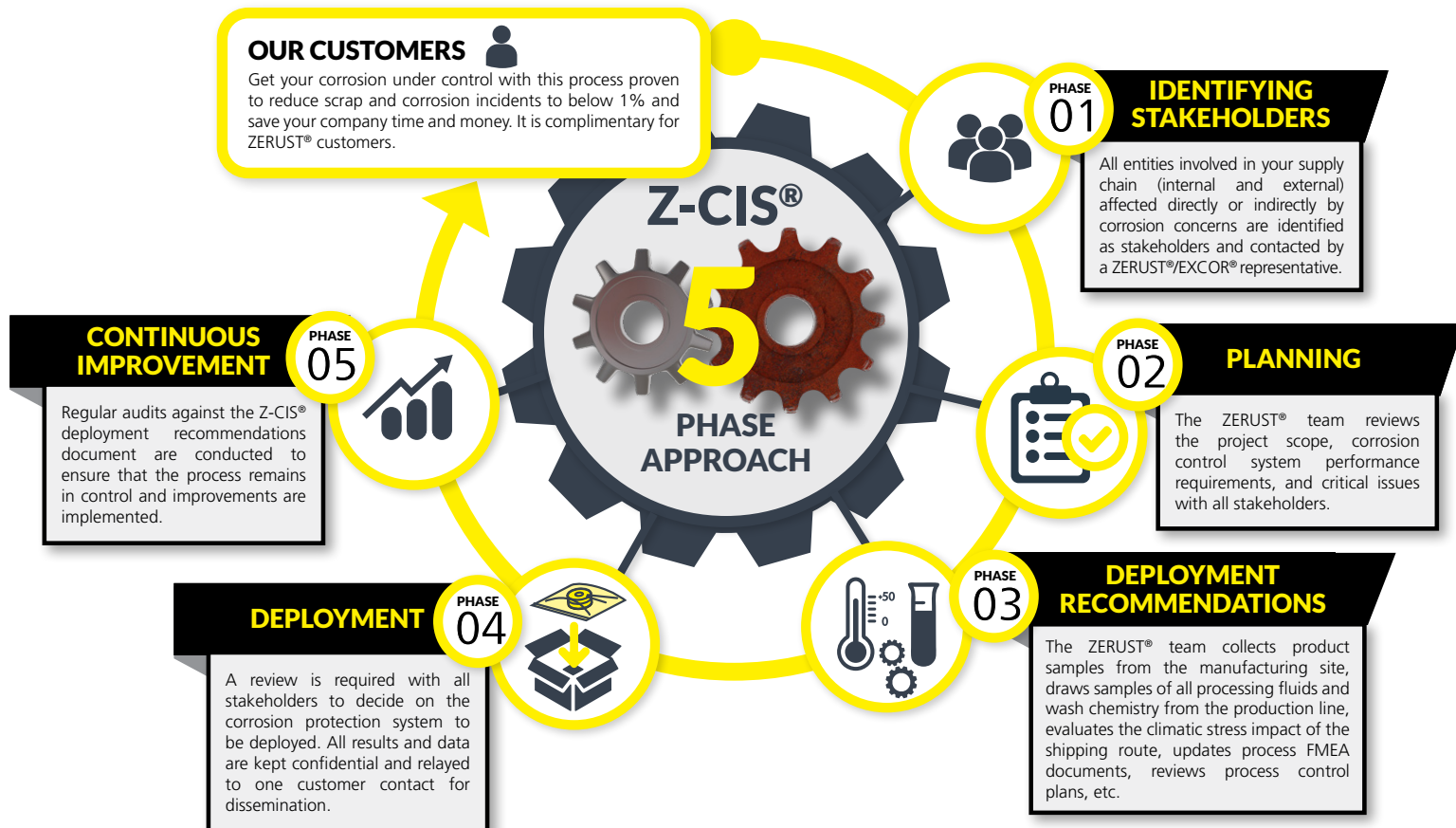


Choosing a Corrosion Management System

Z-CIS® is the ZERUST® Corrosion Inhibiting System and the proven methodology for deploying our comprehensive corrosion management solutions. It addresses the causes of corrosion at each stage in manufacturing processes, product handling, and in transit around the world. The Z-CIS® method is designed to meet both the rust-free and contaminant-free requirements of various OEMs sourcing from a global supply base. After implementing Z-CIS®, companies generally reduce costs related to corrosion by 10% or more and realize as high as 100% rust-free shipment yields. To get started, visit www.zerust.com/tellus.



Our GC/LC Mass Spectrometry is just one of the tools we use in our lab for testing a customer's process fluids and the effectiveness of recommended corrosion solutions.





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United Kingdom

United States

Uruguay

Vietnam

‡ DECLARATION

Corrosion protection claims are based on Northern Technologies International Corporation (NTIC) internal laboratory testing performed under controlled parameters on contaminate-free substrates. Real-world application corrosion protection duration on different substrates will vary and depends on factors such as, but not limited to, the application or use, environmental / storage conditions, surface cleanliness, type of substrates, and coating thickness (where applicable). The use of the term "Up to" in reference to time is defined as any time duration from zero up to a specified time frame, but in no event beyond the specified time frame. The use of the term "for years" is based on NTIC's experience with its products but is in no way guaranteed. The use of the term "Up to" in reference to volume is defined as any volume from zero up to a specified volume but in no event beyond the specified volume of protection. It is the customer's / user's obligation to evaluate product performance, corrosion protection duration, safety, and suitability for intended use within the scope advised in the data sheet and to comply with all applicable laws and regulations. **LIMITED WARRANTY/DISCLAIMER** Warranty is limited to the replacement of a product that fails to meet specifications. For full warranty and disclaimer information, visit www.zerust.com/warranty.