

ZERUST® EXCOR®



HNTI
(Formerly Known as Harita-NTI Ltd)



THE LEADERS IN CORROSION SOLUTIONS

Zerust® Vapor Capsules
and VCI Diffusers Series

Zerust® Corrosion Inhibitor Liquids,
Additives, Cleaners and Rust Removers

Zerust® VCI Packaging Film
and VCI Kraft Paper Series

Why Choose Zerust®?

Leaders in Corrosion Prevention

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 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. In some regions of the world, Zerust is also known as Excor® due to language differences.

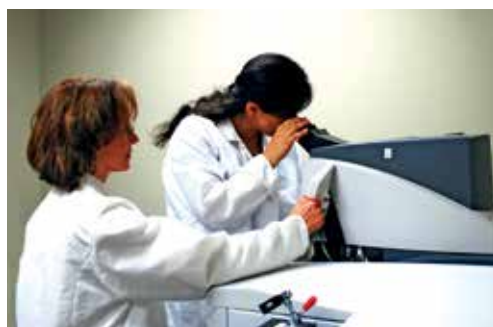
Zerust/Excor field engineers on four continents use decades of accumulated applications experience to:

- 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/Excor 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/Excor 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.

Zerust Lab Facility in
Circle Pines, Minnesota

Zerust® Corrosion Inhibitors

Zerust Integrated Corrosion Technology (ICT®) products and services include volatile corrosion inhibitors (VCIs) and other inhibitors and surface treatments. Zerust VCI packaging films and paper are safe* to use and contain proprietary chemical formulations that release an invisible, odorless, and corrosion inhibiting vapor into the air. The Zerust volatile corrosion inhibitor molecules settle on exposed metal surfaces in an enclosure and interrupt the electrochemical process that causes corrosion. Other Zerust ICT products augment the protection power of VCI technology to solve specific corrosion and surface preservation problems.

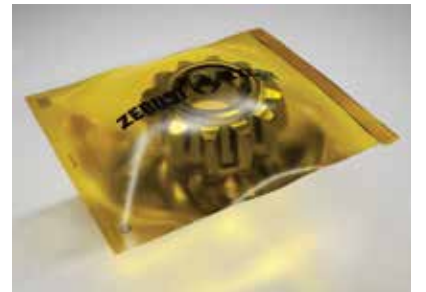
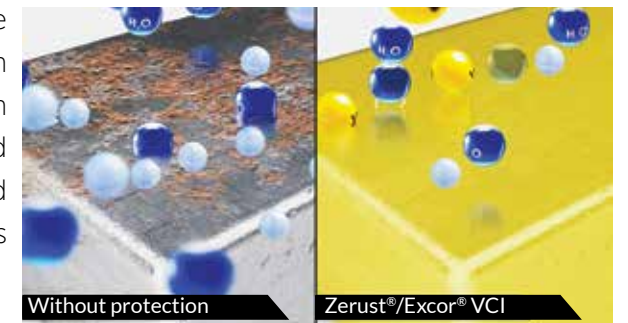


Illustration of a Zerust/Excor Volatile Corrosion Inhibitor Packaging System

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.

Our Commitment to Quality, Safety and the Environment

We are committed to making safe and effective products that reduce 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.



Product Overview

Zerust®/Excor® VCI Films, Bags and Kraft Papers



Zerust® VCI Packaging Film



Zerust® VCI Kraft Paper



Zerust® Corrosion Inhibitor Liquids & Additives



Zerust® Rust Removers & Cleaners



Zerust® Vapor Capsules & VCI Diffusers Series



Rust Preventive Aerosol (MRO)



Zerust® Precious Metal Protection



Zerust® Comprehensive Packaging Solution



Zerust carries and produces a wide range of corrosion inhibiting films, kraft papers, VCI bags, and VCI sheeting technologies. Zerust film and sheeting products come in various thicknesses, strength enhancements, protection types, colors, shapes and sizes. Your customer service representative can help recommend the ideal packaging solution for your application needs. The list below includes stock and non-stock options. Most products can be made in a range of metal protection types upon request.

Zerust/Excor Paper and Film Products		Typical Metal Protection Types*			
Product Name	Description	Ferrous	Non Ferrous	Multi Metal	Anti Tarnish
Zerust ICT420-35	VCI Kraft Paper			X	
Zerust ICT420-35P	Poly-Coated VCI Kraft Paper	X			
Zerust ICT 420 Creped	VCI Creped Kraft Paper			X	
Zerust ICT 427-35	VCI Kraft Paper - High Load			X	
Zerust VCI Kraft Envelopes	VCI Kraft Paper Music String Envelopes			X	
Zerust ICT504-LM	Moisture-Limiting VCI Film	X	X	X	X
Zerust ICT510-C	Stock Classic VCI Film	X	X	X	X
Zerust ICT510-CLHD	High-Density Classic VCI Film	X	X	X	X
Zerust ICT510-SM	Machine-Grade Stretch VCI Film	X		X	
Zerust ICT510-SK	Skin VCI Film	X	X	X	
Zerust ICT510-SRK	Heat-Shrink VCI Film	X	X	X	X
Zerust ICT510-OPS	Outdoor Preservation VCI Shrink Film	X	X	X	X
Zerust ICT510-G4	Acid-Gas Scavenger and VCI Film	X	X	X	X
Zerust ICT520-HS	High-Strength VCI Film	X	X	X	X
Zerust ICT520-XF	High-Strength Woven VCI Film	X	X	X	X
Zerust ICT520-SRA	Woven-Scrim Polyethylene VCI Fabric	X	X	X	
Zerust ICT520-CSL	Cold-Seal Adhesive VCI Film	X		X	
Zerust ICT520-CB1	Acid-Gas Scavenger Anti-Tarnish Film				X
Zerust ICT540-SD	Advanced Long-Term Protection VCI Film	X	X	X	X
Zerust ICT570-CC	Closed-Cell VCI Foam Sheeting	X			
Zerust Profile Board	Rigid-Plastic VCI Profile Board	X	X	X	
Zerust VCI Film Converted Products					
Zerust Re-Usable VCI Bags	VCI Film which can be re-used for protecting work-in-progress products	X	X	X	
Zerust VCI Bags and Tubing	VCI Film in a range of metal protection types, sizes, construction; gusset, flat, zipper	X	X	X	X
Zerust Weapon Protection Kits	VCI Bags designed to protect weapons and accessories	X		X	

* Metal protection types includes the most commonly selected stock and non-stock options. Please check with your Zerust/Excor representative for other options available upon request.

Zerust® ICT®700 Rust Preventative Additives

A range of high-performance rust preventative liquids and powder additives are offered by Zerust®/Excor®. These additives were developed to help you achieve rust-free results in a number of targeted applications.

Zerust Rust Preventative Additives and Water Conditioners

Zerust Product Name	Typical Application	Format	Incompatible Metals	Addition Rate
Rust Preventative Liquid Additives				
Axxatec™ 8110C	Closed system rust preventative additive	Liquid concentrate	None	10%
Axxanol 707C	Void space protection VCI additive	Liquid concentrate with VCI	None	.05-2%
Axxanol 710C	VCI Oil additive	Oil additive with VCI	None	.3-10%
Water-Soluble Additives				
AxxaVis™ PX-05-AN	Acid Neutralizer	Water-soluble powder	Limit contact with Aluminum	1-10%
AxxaVis PX-10-HRD	Hard Water Conditioner	Water-soluble powder	None	0.04-10%
AxxaVis HST-10	Closed system rust preventative additive	Water-soluble powder	Zinc, limit contact with copper	0.5-5%

Product Series Highlights



Targeted void space protection with Zerust corrosion inhibitors.



On left; submerged in untreated water (60 ppm Cl⁻, 300 ppm CaCO₃), on right; submerged in AxxaVis HST-10 treated water.

Axxatec 8110C is an aqueous-based additive for the protection of water-filled void spaces of hydraulic and coolant equipment.

Axxanol 700 Series are liquid concentrates with VCIs for adding to oils to protect void spaces.

AxxaVis PX-05-AN is a powder, that when added to rinse water, enables it to neutralize acids. Use to control flash corrosion on metals caused by acids left over from cleaning and rust removal treatments as Zerust AxxaClean™.

AxxaVis PX-10-HRD is a powder additive that conditions hard water to prevent scale and scum when deionized water is not available. It increases the performance of Zerust products that require dilution, such as Axxatec and AxxaWash™ concentrates.

AxxaVis HST-10 is a powder additive to treat hard water and deactivate chlorides. Add product to tap water to make it suitable for hydrostatic test processes conducted on pressure vessels such as pipes, heat exchangers, storage tanks and ship voids.

Zerust® ICT®700 Rust Preventative Coatings

Zerust® offers a full line of corrosion inhibitor liquids that complement our VCI packaging solutions. Zerust RPs and coatings range from effective aqueous-based solutions to greases designed to give standalone protection.



Zerust Rust Preventatives and Coatings

Zerust Product Name	Metals Protected					Outdoor Protection Life (Up To)	Indoor Protection Life (Up To)*	Designed for Use with Packaging	Application Method			Formulation Base	Surface Finish
	Ferrous	Aluminum	Brass	Zinc	Copper				Spray/Fog	Brush	Dip		
Water-Based Coatings													
Axxatec™ 77C (4% dilution)	✓	✓	✓		✓	Not recommended	4 months	Yes	✓	✓	✓	Water-based	Thin, cloudy, visible
Axxatec 80C (7.5% dilution)	✓					Not recommended	12 months	Yes	✓	✓	✓	Water-based	Clear, dry to touch
Axxatec 85-F	✓					Not recommended	12 months	Yes	✓			Water-based with VCI	Clear, dry to touch
Solvent-Based Coatings													
Axxanol™ 33CD	✓	✓	✓	✓	✓	Not recommended	6 months	Yes	✓	✓	✓	Solvent-based	Dry to touch
Axxanol 34CD	✓	✓	✓	✓	✓	Not recommended	6 months	Yes	✓	✓	✓	Solvent-based	Very thin oil
Ze-VERP Series	✓					Not recommended	6 months	Yes	✓	✓	✓	Solvent-based	Very thin oil
Oil-Based Coatings													
Axxanol 33	✓	✓	✓	✓	✓	Not recommended	12 months	Yes	✓	✓	✓	Oil-based	Thin oil
Axxanol 46-BIO	✓	✓	✓		✓	3 months	12 months	No	✓	✓	✓	Bio-based oil	Thin oil
Greases													
Axxanol Spray-G	✓	✓	✓	✓	✓	12 months	24 months	Yes	✓			Oil-based with solvents	Thin oily grease
Axxanol Z-Maxx LV	✓	✓	✓	✓	✓	12 months	24 months	Yes		✓		Oil-based	Light grease (NLGI 0)
Axxanol Z-Maxx	✓	✓	✓	✓	✓	12 months	24 months	Yes		✓		Oil-based	Thick grease (NLGI 2)
VCI Oil Coatings													
Axxanol 750	✓	✓	✓	✓	✓	Not recommended	10 months	Yes	✓			Oil-based with VCI	Thin oil

* Indoor protection life rated for items stored indoors or under shelter in temps less than 100°F/38°C and in less than 70% relative humidity. Check with your Zerust representative for details on Zerust packaging products that extend protection life up to five years and beyond. Water-based product test results are per ASTM D2247 humidity chamber testing. Oil- and solvent-based product test results are per ASTM B117 salt spray testing.

** These plus signs help identify products with positive safety and/or environmental properties. See brochure page 8 for full description.

Zerust® ICT®600 Rust Removers

Zerust® AxxaClean™ rust and tarnish removers are powerful solutions for the rework and recovery of metal items. Zerust offers a range of technologies, from pH neutral products to more aggressive products that also inhibit flash corrosion on cleaned surfaces.

Zerust AxxaClean Rust and Tarnish Remover Series

Attributes	AxxaClean ICT620-RR	AxxaClean 2048	AxxaClean 3048
Corrosion Removal Power	Light to medium rust, even in cracks and crevices	Medium corrosion, even in cracks and crevices	Heavy corrosion, even in cracks and crevices
Speed	Slow	Moderate	Rapid
Metals Treated	Ferrous	Ferrous, brass, copper	Ferrous, brass, copper
Application Methods	Immersion	Immersion, brush-on, spray	Immersion, brush-on
pH Level	Neutral pH of about 7	Mild acidic pH of about 2.5	Stronger acidic pH between 0.5-1.5
Temperature For Use	70°F (21°C) or above	70°F (21°C) or above	40°F (4°C) or above
Compatibility (<24 hour soak)	Safe for metals*, paint, gaskets, rubber, plastics	Safe for metals*, paint, gaskets, rubber, plastics	May attack soft metals*, some paints and coatings
Post-Cleaning Action	Do not let product dry on surface. Recommended DI or RO water rinse. Wipe off and dry well.	Do not let product dry on surface. Recommended DI or RO water rinse. Wipe off and dry well.	Do not let product dry on surface. Recommended DI or RO water rinse. Wipe off and dry well.
Corrosion Protection	Additional corrosion protection needed	Provides flash-corrosion protection in controlled environments	Provides flash-corrosion protection in controlled environments

*Test before use on zinc and cadmium. Check with your Zerust technical representative for details.

AxxaClean™ ICT®620-RR: Light to Medium Rust Remover



Zerust 620-RR is a pH neutral immersion dip that removes rust, even in crevices, pits and threads. It replaces labor-intensive abrasive cleaning that may damage surfaces. The product works by breaking the chemical bond of rust and does not harm other metals or non-metals. Surfaces may be darkened with carbon residue after cleaning. Cleaned parts must be protected to prevent flash rusting.

AxxaClean 2048 and 3048: Light to Heavy Rust and Tarnish Removers



These are a series of easy to use products that rapidly remove rust and tarnish, even in cracks and crevices. They clean and deoxidize ferrous metals, brass, copper and various alloys without leaving a gray residue. The products also provide temporary protection from flash rust or re-tarnishing for several days in a controlled environment. Multiple viscosities and strengths are available for a wide range of applications.

Zerust® ICT®600 Surface Cleaners and Washers

The Zerust line of advanced surface cleaners remove residual contaminants and soils left by metalworking processes. Use as a final wash step to control corrosion on contaminated or highly reactive metals. After cleaning, thoroughly dry metals before the application of Zerust corrosion inhibiting coatings and VCI packaging products.



Panel on left cleaned with tap water, panel on right cleaned in a solution of AxxaClean HPW-100.

Zerust Surface Cleaners and Washers

Zerust Product Name	Metals Treated	Effective Against	Dilution Rate	Pressure Range
High-Pressure Cleaners				
AxxaClean™ HPW-100C	Best for ferrous, safe for all metals except zinc	Chlorides, sulfates	1-5%	0 to >3000 psi
HarSol Series	Best for ferrous, safe for all metals except zinc	Oil, Grease and Contamination	Ready to use	0 to 3000 psi
High-Pressure Washers				
AxxaWash™ NW-10C	Best for ferrous, safe for all metals except zinc	Chlorides, sulfates, hydrocarbon soils	1-5%	0 to 3000 psi

AxxaClean HPW-100C Non-Foaming, Demulsifying Cleaner



AxxaClean HPW-100C high-pressure wash additive prevents flash corrosion after cleaning processes by providing powerful deactivation of ionic contaminants, such as highly corrosive chlorides and sulfates on metal surfaces. It is non-foaming and can be applied by immersion, high-pressure or ultra high-pressure wash.

AxxaWash NW-10C Cleaner and Emulsifying Degreaser



AxxaWash NW-10C wash additive deactivates corrosion causing ionic contaminants such as chlorides left by metalworking fluids. It also degreases and removes hydrocarbon soils. It can be applied by immersion, high-pressure or ultra high-pressure wash. AxxaWash NW-10 is recommended for use on highly reactive ferrous metals such as cast iron exposed to inorganic salts and other contaminants.

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 are designed to work in restricted spaces.

Use Vapor Capsules to provide multi-metal corrosion protection in almost any enclosure or as a supplement to other Zerust packaging products for added protection. 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 - Multi-metal Protection

Product Name and Part Number	NSN National Stock Number	Volume of Protection	Radius of Protection	Duration of Protection	Adhesive Backing
VC1-1 (S) 375-M-00006	6850-01-426-3539	4 ft ³ (0.1 m ³)	1 ft (0.3 m)	1 year	Yes
VC1-1 375-M-00001	6850-01-338-1393 Prior: 4440-01-481-3150*	4 ft ³ (0.1 m ³)	1 ft (0.3 m)	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 (0.6 m)	1 year	Yes
VC2-2 375-M-00003	6850-01-133-0373	35 ft ³ (1 m ³)	2 ft (0.6 m)	2 years	Yes
VC6-1 375-M-00004	6850-01-590-1676	900 ft ³ (25 m ³)	6 ft (2 m)	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 (2 m)	2 years	No

*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. Do not place in direct contact with copper, brass or zinc and test before use in the same void space.

Coverage Specifications - Multi-metal Compatible*

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 ft ³ (0.0071 m ³)	6 months	0.025 ft ³ (0.0007 m ³)	15 days
ActivCapsule™ FAC1-1s	4 ft ³ (0.12 m ³)	1 year	0.35 ft ³ (0.01 m ³)	1 month
ActivPak®(LS)-T330	5 ft ³ (0.15 m ³)	1 year	2 ft ³ (0.05 m ³)	2 months
ActivPak(LS)-33	16 ft ³ (0.45 m ³)	1 year	5 ft ³ (0.15 m ³)	2 months
ActivPak(LS)-T350	26 ft ³ (0.75 m ³)	1 year	7 ft ³ (0.2 m ³)	2 months
ActivPak(LS)-35	35 ft ³ (1 m ³)	1 year	11 ft ³ (0.3 m ³)	2 months
ActivPak-T330	5 ft ³ (0.15 m ³)	2 years	2 ft ³ (0.05 m ³)	4 months
ActivPak-33	16 ft ³ (0.45 m ³)	2 years	5 ft ³ (0.15 m ³)	4 months
ActivPak-T350	26 ft ³ (0.75 m ³)	2 years	7 ft ³ (0.2 m ³)	4 months
ActivPak-35	35 ft ³ (1 m ³)	2 years	11 ft ³ (0.3 m ³)	4 months
ActivPowder™(LS)	1 lb = 280 ft ³ (8 m ³)	3 years	1 lb = 90 ft ³ (3 m ³)	1 year
ActivPowder	1 lb = 280 ft ³ (8 m ³)	3-15 years	1 lb = 90 ft ³ (3 m ³)	1-5 years

*Do not place in direct contact with copper, brass, zinc or other red and yellow metals. Test before use of product in the same void space as these metals.

**Normal environment defined as warehouses, light industrial areas, and shipping and storage in sealed packaging or enclosures. Aggressive environment 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 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 and hard to reach spaces.

Zerust ActivPowder



Zerust ActivPowder protects large void spaces in challenging environments.

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.

Select the Activ Series Product Right for Your Application.

Zerust®/Excor® VCI Diffuser Series

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. 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.

Product Name	Part Numbers	Protection Type	Volume of Protection	Duration of Protection	Product Specs
ICT870-OC VCI Foam Pad	375-F-00007	Ferrous	Up to 1.5 ft ³ (0.04 m ³)	1 year	2 x 5 x .25 in (5.08 x 12.7 x .64 cm)



Length of Tube Strip for ferrous protection.

Zerust Tube Strip and Pipe Strip

Zerust Tube Strip and Pipe Strip products are designed to protect long narrow enclosures. Tube Strip is a flexible quarter-inch plastic tubing designed to protect tubes up to 2 inches in diameter such as gun and rifle barrels. Pipe-Strip consists of Vapor Capsules assembled on a 40 foot plastic strip and is designed to protect pipes up to 24 inches in diameter.

The products are easy to use and can be trimmed to accommodate many length tubes or pipes. To use, insert product into the length of the enclosure and cap the ends. They emit VCI molecules that saturates the air, protecting interior surfaces from corrosion.



Tube Strip inserted in a handgun barrel.

Coverage Specifications - Ferrous Metal Protection

Product Name and Part Number	NSN National Stock Number	Diameter of Pipe	Duration of Protection	Product Specs
Tube Strip 475-F-00001	6850-01-590-1673	Up to 2 in (5 cm)	2 years	.25" diameter, 1000' length, 12 lb. roll



A section of Pipe Strip.

Coverage Specifications - Multimetal Protection

Product Name and Part Number	Diameter of Pipe	Length of Strip	Duration of Protection	Product Specs
PS2-10 525-M-00001	Up to 12 in (30 cm)	40 ft (12 m)	2 years	10 Capsules on 4 ft centers
PS2-16 525-M-00002	Up to 24 in (60 cm)	40 ft (12 m)	2 years	16 Capsules on 2.5 ft centers

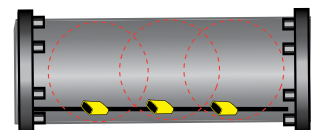


Illustration of a Pipe Strip protecting a large pipe.

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. 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. They are ideal for protecting electrical components in small sections of enclosed cabinets or control boxes.

Coverage Specifications - Multi-metal Protection

Product Name and Part Number	NSN National Stock Number	Volume of Protection	Radius of Protection	Duration of Protection	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-00005	-	1 ft ³ (.03 m ³)	0.6 ft (0.2 m)	2 years	No	10
1 x 3 inch 425-M-00006	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 have printing. See photo on right.



1" x 3" Plastab in an electronics enclosure.

Zerust Cor-Tab® Tablets

Zerust Cor-Tab tablets provide basic corrosion protection for metal items in small and 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 six months in an enclosure or package.



Coverage Specifications - Multimetal Protection

Product Name and Part Number	NSN National Stock Number	Volume of Protection	Radius of Protection	Duration of Protection
CT-25 450-M-00001	6850-01-348-1092	0.25 ft ³ (.007m 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

ICT[®]400 and 500 VCI Packaging Guide

Zerust[®]/Excor[®] Technology is Easy to Apply

Use Zerust[®]/Excor[®] VCI Packaging for Clean, Dry and Corrosion-Free Products.

Zerust VCI Film



Zerust VCI Film is available in a wide range of options.

Zerust VCI Bags



Zerust VCI Bags can enclose a part or line a box in seconds.

Zerust VCI Stretch Film



Zerust VCI Stretch Film securely encloses products.

Zerust VCI Skin Film



Zerust VCI Skin Film secures parts to Zerust treated cardboard.

Zerust VCI Shrink Film



Zerust VCI Shrink and Outdoor Shrink Film conform to objects.

Zerust VCI Foam Sheeting



Zerust Foam Sheeting offers corrosion protection as well as physical protection.

Zerust VCI Scrim Film



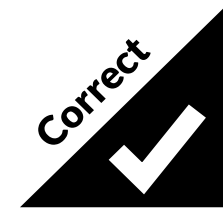
Zerust Scrim contains woven strands for strength and tear resistance.

ICT400 VCI Kraft Paper Series

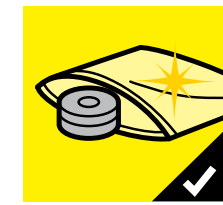


Zerust VCI Kraft Paper and Poly Paper are cost-effective corrosion inhibiting packaging.

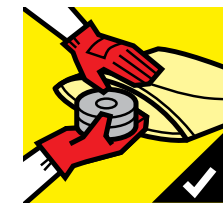
To use Zerust VCI Packaging, simply place metal parts into Zerust[®]/Excor[®] packaging and seal tightly. Zerust vapor molecules diffuse from the packaging, saturate the interior of the package and form a powerful corrosion inhibiting molecular layer on all exposed metal surfaces. Later, when the parts are removed from the packaging, the Zerust corrosion inhibiting molecules will vaporize into the atmosphere. Parts will be clean, dry and corrosion-free — and ready for immediate use.



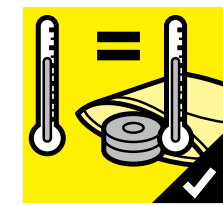
Instructions For Use



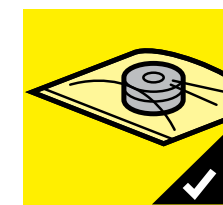
Pack only clean and dry parts.



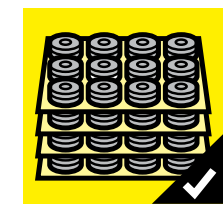
Always wear clean and dry gloves when handling metal parts to protect them from corrosion causing fingerprints.



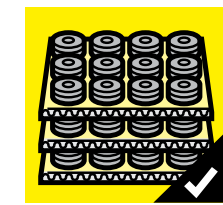
When packing, the temperature of the parts should be near room temperature to avoid condensed moisture.



Tightly close packages with tape, heat seal, zip ties or by folding over. Reseal after every use.



Insert additional Zerust materials as interleave for added protection in larger and tightly packed or layered packages.



Avoid direct contact of metal with wood, paper or cardboard (sources of moisture and acid).

Types of Zerust Films and Papers

Ferrous

Protect iron, steel and cast iron metals using the trademark yellow Zerust Ferrous Packaging. Clear and custom colors and printing are available.

Non-Ferrous

Protect aluminum, copper, brass, bronze and galvanized steel with Zerust Non-Ferrous Packaging. Custom colors and printing are available.

Multimetal

Protect combinations of ferrous and non-ferrous metals with Zerust Multimetal Packaging. Custom colors and printing are available.

Anti-Tarnish

Protect silver, copper and related alloys from tarnishing with Zerust Anti-Tarnish and other special acid-gas scavenging packaging films.

Integrated Corrosion Technology (ICT[®])

Zerust wrapping products can be integrated with additional corrosion inhibiting technologies for application-specific protection such as anti-static, rip-stop, water vapor barriers, acid-gas scavengers (AGS), UV block, custom sizes, reusable covers and more.

With Zerust[®], packaging and corrosion protection become one application step. No messy greases or time-consuming removal.



Large items wrapped in outdoor preservation VCI shrink film.



ActivPak[®] fast-acting diffuser gives added protection in packaging.



Large assemblies protected in Zerust gusseted VCI bags.

ZERUST® ICT®510C-AN VCI Film Series

ZERUST®/EXCOR® ICT®510C-AN VCI packaging film series are nitrite-free and non-amine formulated products. They are ideal for the protection of metals in corrosive environments or for metal types susceptible to flash corrosion. Difficult-to-protect surfaces such as cast iron, powdered metal, and machined metal parts benefit from this strong and fast-acting inhibitor. In addition, the product is able to passivate typical levels of corrosion causing-contaminants left on part surfaces from metalworking processes such, as chlorides, nitrates, and sulfides.

ZERUST® ICT®510C-AN series offer product formulations for specific applications. Reference the product series chart below. For additional protection, the packaging may be used with ZERUST® corrosion inhibitor liquid RPs and VCI diffuser products. Check with your ZERUST®/EXCOR® representative for a comprehensive corrosion management solution most effective for your metal assets.



Product Name	Purpose
ICT®510C-AN Class SMP	General multimetal protection where there are some concerns with flash corrosion, trace amount of contaminants on metal surfaces, and/or protection in challenging environments (hot and high humidity).
ICT®510C-AN Class YMP	General protection for non-ferrous only metal components.
ICT®510C-AN Class PRO	Robust multimetal (and ferrous) protection where there are high concerns with flash corrosion, small amount of contaminants on metal surfaces, and/or protection in aggressive environments (acid gas, hot and high humidity).

Product Information

Description	ZERUST®/EXCOR® ICT®510C-AN Film Series are polyethylene products compounded with nitrite-free, non-amine volatile corrosion inhibitors.
Protected Metal Types	ICT®510C-AN Class SMP: Multimetal protection ICT®510C-AN Class YMP: Non Ferrous protection ICT®510C-AN Class PRO: Robust multimetal (and ferrous) protection
Protection Duration	Protects clean metals for years when used correctly and utilized within three years from receipt. Not intended for outdoor use. Note use in high temperatures will reduce protection life expectancy.
Storage	Store in original packaging away from direct sunlight in conditions below 85°F (30°C) and 50% RH for up to 3 years from the date of shipment.

Integrated Corrosion Technology (ICT®)

ZERUST®/EXCOR® ICT®510C-AN Film utilizes Volatile Corrosion Inhibitor (VCI) technologies to protect metals in challenging situations. It is effective on metals that may be difficult to protect, such as highly porous and powdered metal parts.

Property	Direction (Machine or Transverse)	ZERUST® ICT®510C Film*	ASTM Test Method
Film Thickness	-	4 mil (102 µm)	D-6988
Dart Impact Resistance	-	300 g	D-1709
Tear Strength	MD	0.60 lb-f (2.7 N)	D-1938
	TD	0.65 lb-f (2.9 N)	
Tensile Strength at Yield	MD	1905 psi (13.1 MPa)	D-882
	TD	1538 psi (10.6 MPa)	
Tensile Strength at Break	MD	3045 psi (21.0 MPa)	D-882
	TD	2917 psi (20.1 MPa)	
Elongation at Break	MD	560%	D-882
	TD	610%	
Breaking Factor	MD	11.0 lb-f/in (1926 N/m)	D-882
	TD	11.5 lb-f/in (2014 N/m)	
Water Vapor Transmission Rate @78°F (26°C), 90% RH	-	0.06 g/(100 in ² /day)	F-1249
Vapor Inhibiting Ability (VIA)	-	Pass	NACE TM0208



VCI crepe paper ABRIGO



EXCOR VCI crepe paper ABRIGO is a crepe paper impregnated with VCI corrosion protection, which reliably protects metal parts from corrosion during transport and storage. The metal processing industry uses VCI crepe paper especially for packaging parts with irregular shapes. The good stretchability of crepe paper allows it to adapt to the contours of the packaged goods and it does not tear. Due to the crepe structure, the VCI crepe packaging also acts as a source of cushioning protection. To achieve an outer barrier layer, VCI crepe papers can also be coated with polyethylene.

For our crepe papers ABRIGO, we process base papers from 30–200 g/m² – the elongation can be adjusted from 5–200%. VCI crepe papers ABRIGO are available in rolls or as blanks.

Typical applications:

- Metal parts with irregular shapes
- Intermediate layer
- Wrapping of packaged goods
- Impact protection

Comprehensive Packaging Solutions (CPS)

HNTI team adds support to customer by providing trained manpower for rust preventive application and packaging to ensure best possible prevention against rust.

An exclusive team will be dedicated to perform tasks like washing, RP application, packaging, inspection for rust, maintaining rust preventive oil and records related to these processes.



Inspection



RP Dipping

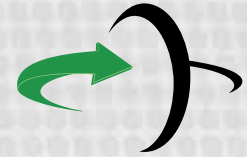


Packing

Domestic Customers

Major Global Customers

ZERUST  **EXCOR**



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(Formerly Known as Harita-NTI Ltd)

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Belarus	Germany	Norway	Tunisia
Belgium	Hungary	Peru	Turkey
Bhutan	India	Philippines	Ukraine
Bolivia	Indonesia	Poland	United Arab Emirates and
Brazil	Ireland	Portugal	MENA
Canada	Italy	Republic of Congo	(Middle East & North Africa)
Chile	Japan	Romania	United Kingdom
China	Kazakhstan	Russia	United States
Colombia	Korea	Singapore	Uruguay
Czech Republic	Latvia	Slovak Republic	Vietnam
Democratic Republic of the Congo	Lithuania	Slovenia	
	Luxembourg	South Africa	
	Malaysia		

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