ZERUST® EXCOR®



Natur-VCI® Film

Certified Compostable VCI Film
Technical Data Sheet

The ZERUST®/EXCOR® Natur-VCI® series is a patented (No.11,939,423), internationally certified, fully biodegradable, and compostable packaging material designed to protect against corrosion damage for metals in shipping, storage, and work-in-progress. Natur-VCI® products, with a thickness of 60 microns (2.3 mil) or less, pass the NACE Standard TM0208 VCI corrosion protection test, meet the international standards for compostable plastics, including ASTM D6400, EN 13432, and are certified 100% compostable by TUV Austria.

Natur-VCI® is engineered for safe disposal in a professionally managed composting facility, where the carbon in the film is utilized as a food source by microorganisms to completely break down the plastic into humus, water, and CO_2. The resulting humus can be used as a natural fertilizer and/or soil amendment in agriculture. Natur-VCI® meets the ASTM D6400 "Standard Specification for Labeling of Plastics Designed to be Aerobically Composted in Municipal or Industrial Facilities" and is certified (Cert # TA8012004702) by TUV Austria for the European EN 13432 standard "Packaging - Requirements for packaging recoverable through composting and biodegradation - Test scheme and evaluation criteria for the final acceptance of packaging."

Natur-VCI® Film diffuses invisible, odorless, and non-toxic ZERUST® Vapor Corrosion Inhibitors (VCI) that settle onto exposed metal surfaces inside the packaging or enclosure. Upon removal from the packaging, the VCI will dissipate from the metal surface, allowing immediate painting, welding, or further processing. Use Natur-VCI® to protect metal components, machined and cast parts, engines, molds, and more from rust and corrosion. Engineered for a broad range of applications, Natur-VCI® is available in a multimetal protection formulation and various packaging types, including rolls, sheets, tubing, and bags, ensuring an ideal packaging solution. Whether in storage or transit, ZERUST® Natur-VCI® Film delivers unparalleled performance.

Typical Properties

Appearance Typical color is translucent green. Subject to order minimums.

Substrates Multimetal protection formulation (ferrous, aluminum, brass, copper, and zinc). Given the higher water vapor transmission rate of Natur-VCI® compared to PE for yellow metals, it is critical to evaluate the usage condition before recommending it for use in high temperatures and humidity.

Property	Direction (Machine or Transverse)	Natur-VCI® Film*	ASTM Test Method
Film Thickness	-	2.3 mil (60 µm)	D-6988
Density	-	1.26-1.28 gm/cm^3	D792-13, Method A
Dart Impact Resistance	-	500 g	D-1709
Elmendorf Tear Strength	MD	100-200 gf	D-1922
	TD	200-400 gf	
Tensile Strength at Break	MD	28-40 MPa (4061-5800 psi)	D-882
	TD	28-40 MPa (4061-5800 psi)	
Elongation at Break	MD	500-900 %	D-882
	TD	500-900 %	
Water Vapor Transmission Rate	-	11-14 (g/100 in^2 day) @ 100°F (38°C), 90% RH	F-1249
Vapor Inhibiting Ability (VIA)	-	Pass	NACE TM0208

* Typical values, not meant to be a specification.

This data sheet provides general guidelines for operation, application, and removal. Please contact your ZERUST®/EXCOR® account representative for more specific recommendations on your particular operation and conditions.

Operating Summary

- Pack only clean and dry parts.
- Always wear clean and dry gloves when handling the metal parts to protect them from corrosion-causing fingerprints.
- When packing, the temperature of the metal parts should be about the same as the room temperature to avoid condensed moisture.
- Tightly close packages with tape, heat seal, zip ties, or fold over. If these are non-compostable, remove them before sending Natur-VCI® to compost sites.
- Insert additional ZERUST® materials (such as ICT®420-35 VCI Kraft Paper) as interleave for added protection in larger and tightly packed or layered packages.
- Avoid placing metal surfaces in direct contact with wood or cardboard (sources of moisture and acid).

Scan QR for more

product information and photos

Availability

ZERUST®/EXCOR® Natur-VCI® Film is a made-to-order product with a wide range of custom options, subject to minimum order quantities. Contact your ZERUST®/EXCOR® representative for ordering information.

Protection Info‡

Indoor‡	Depending on environmental conditions, it protects clean metals for up to 12 months‡ when used correctly.
Outdoor‡	Not recommended

Carbon Savings

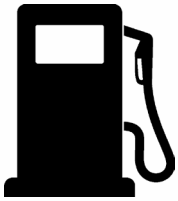
- By replacing 100 metric tons (100,000 kg) of conventional polyethylene plastic VCI packaging with Natur-VCI®, the following equivalent environmental benefits are achieved.*



118-ton reduction in CO_2 emissions for every 100 metric tons of VCI film.



Reduction in CO_2 emissions equivalent to 25 cars driven for a year for every 100 metric tons of VCI film.



Reduction in CO_2 emissions equivalent to the consumption of 50,262 Liters of gasoline for every 100 metric tons of VCI film.



Reduction in CO_2 emissions equivalent to the carbon sequestered by 1,951 tree seedlings grown for 10 years for every 100 tons of VCI film.

*WARN MODEL. Source: US EPA Greenhouse Gas Equivalencies Calculator (as of September 2019).

Storage

- Store in a cool, dry place and away from sunlight in the original packaging for up to 2 years from the date of shipment.

End-of-Life Disposal / Zero-Waste

- This product is intended to be disposed of in an industrial composting facility after use to reduce environmental impact.
- After parts* are shipped to the end-user, the Natur-VCI® bags may be reused to collect food scraps at the end user's facility and sent to their local compost site. Natur-VCI® meets ASTM D6400 and is certified by TUV Austria (Cert # TA8012004702).
  *Parts cannot be coated with rust-preventative oils.

Precautions

- Do not use for outdoor protection.
- Do not use with components that may transfer any type of coating or rust-preventative product on the Natur-VCI® film/bag.
- Safe for people. This product does not pose a health hazard to users due to its classification as an article according to EU REACH, UN GHS, US OSHA HazCom, CLP, and CA WHMIS regulations.
- Refer to the Safety Data Sheet (SDS) for safety information.

‡ 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.

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