

# RUST PREVENTION

## CORROSION MANAGEMENT SOLUTIONS



## ARMOR SHIELD® SMARTY PAK™

### FEATURES AND BENEFITS

The ARMOR SMARTY PAK™ was developed for applications where both moisture control and vapor corrosion inhibitors are needed, specifically where paper fibers could be an issue or standard packaging (ARMOR WRAP® Paper or ARMOR POLY® Film) is difficult. SMARTY PAKs combine specialty desiccation, which adsorbs moisture, with ARMOR VCI (vapor corrosion inhibitor) Nanotechnology, which emits corrosion-inhibiting vapors to prevent rust. Clean, Safe and Easy to Use.

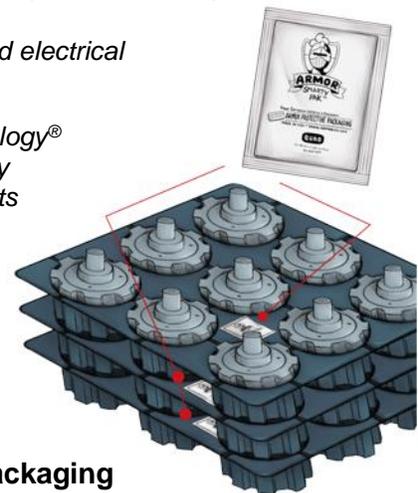
### WHY ARMOR?

Armor Protective Packaging® offers rust prevention and rust removal products that are clean, safe, easy, and that protect metals while in-process, in transport, or in storage. ARMOR combines its VCI (vapor corrosion inhibitor) Nanotechnology® with packaging materials such as paper and poly film to create products that displace moisture on metal and guard against rust. ARMOR also offers desiccants, emitters, foam pads and its Metal Rescue® Rust Remover Bath and Dry Coat™ Rust Preventative. For more than 40 years, ARMOR has worked with customers from around the globe to provide rust prevention and rust removal solutions and to Take the Work Out of Your Workday!

The SMARTY PAK is available in three sizes, the NANO (1-4 cu. ft. of protection), MINI (4-10 cu. ft.) and QUAD (10-35 cu. ft.) and it is easily inserted into packaging applications or containers.

- **Easy-to-Use:** no preparation needed
- **Simple Installation:** just insert into container/enclosure needing desiccation and vapor corrosion inhibitor
- **Continuous Protection:** up to 24 months depending on environment
- **Clean:** leaves no fibers; no messy grease or oils needed
- **Complements:** other ARMOR VCI products and liquid rust inhibitors
- **Compatible:** with mechanical and electrical components

The proprietary ARMOR VCI Nanotechnology® comes with more than 40 years of industry experience. With service on four continents and in more than 25 countries, ARMOR is positioned to Eradicate Rust wherever and whenever you need them.



### Approved By/Conforms:

- FDA for use in equipment packaging
- Global OEM companies
- RoHS – REACH Compliant

# TECHNICAL DATA

ARMOR PROTECTIVE PACKAGING CORROSION MANAGEMENT SOLUTIONS

## ARMOR SMARTY PAK™

### Product Overview

All Armor Protective Packaging® products utilize our proprietary and time-proven ARMOR vapor corrosion inhibitor (VCI) Nanotechnology®. ARMOR VCI's protective vapors adhere to a metal surface to form an invisible film only a few molecules thick to protect metal from the formation of rust/corrosion. ARMOR SMARTY PAKs combine these world-class corrosion inhibitors with the outstanding moisture adsorption properties of a specialized and innovative desiccant to offer superior metal protection. Ideal applications include motors, engines, pumps, transmission components, mechanical controls, electronics, returnable tray packaging or other applications that do not allow any fibrous materials.

### Compatibility of ARMOR SMARTY PAK™ with Metals

<u>Metal to be Protected</u>	<u>SMARTY PAK</u>
Aluminum	★ ★ ★
Aluminum Bronze	★ ★
Copper	★ ★ ★
Brass	★ ★
Bronze	★ ★
Cast Iron	★ ★
Galvanized	★ ★
Lead	★ ★
Molybdenum	○
Nickel	★ ★
Nickel Silver (Cu, Ni, Zn)	★ ★
Silver	★
Solder (Pb, Sn)	○
Steel	★ ★ ★
Tin (Pure)	★ ★ ★
Tinned Steel	★ ★ ★
Zinc	○
See Following Page for Zinc	

<u>Compatibility Key</u>	
★ ★ ★	Complete Protection
★ ★	Good Protection
★	This product will protect this metal from corrosion; however a more suitable formula may be available.
○	Testing is recommended
○ ○	Not Compatible

Recommended for both ferrous and non-ferrous metals including steel, iron, copper, brass, aluminum, and nickel. Magnesium alloys and galvanized metals should be evaluated in the usual method of handling as there are many variations of these metals. If SMARTY PAK will be in direct contact with metal, testing is recommended as it may cause discoloration of the metal.

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## ARMOR PROTECTIVE PACKAGING CORROSION MANAGEMENT SOLUTIONS

### ARMOR SMARTY PAK™

The chart below contains the results of commercially available galvanized test panels using various techniques.

Zinc Galvanized Process Type	Loading Weight	Smarty Pak
Q-Panel Hot Dip Galvanized SP-104186	90 g/m <sup>2</sup>	★ ★ ★
ACT Hot Dip Galvanized unexposed #31894 HDG G70 70U	70 g/m <sup>2</sup>	★ ★
ACT Hot Dip Galvanized exposed #55321 HDG60GR60GR	60 g/m <sup>2</sup>	★ ★ ★
ACT Electro Galvanized #23598 E60 EZG 60G	60 g/m <sup>2</sup>	★
ACT Zn/Fe Hot Dip Galvanized #19287 HIA ZN/FE A45	45 g/m <sup>2</sup>	★
ACT Zn/Fe Electro Galvanized #19289 EIA ZN/FE A30A45	30 - 45 g/m <sup>2</sup>	★

#### Proper Storage

When it is necessary to remove a portion of SMARTY PAKs from the original container, it is important to protect both the removed paks, and the remaining paks within the original container. ARMOR suggests that only those paks that will be used within a four-hour period be removed from their original packaging and storage container. Store SMARTY PAKs within an airtight, protective container to prevent water vapor contamination during movement, temporary storage, and final use. SMARTY PAKs begin to adsorb water vapor as soon as they are exposed to the air, so they must be protected at all times. Always re-seal storage container as soon as possible and place in a cool, dry location – avoid exposure to high heat and/or direct sunlight. When packaged and stored properly, the shelf life of SMARTY PAKs is 24 months from date of manufacture.

# TECHNICAL DATA

## ARMOR PROTECTIVE PACKAGING CORROSION MANAGEMENT SOLUTIONS

### Length & Amount of Protection

The ARMOR SMARTY PAK will protect metal for approximately 12-24 months depending upon airflow, moisture content and conditions such the container/space size and the frequency of opening the space. Three sizes are available and the amount of protection varies by application:

NOTE: In calculating the range of SMARTY PAK protection, the assumption was made that applications requiring desiccant and rust prevention VCI are typically conditions of high temperature and high humidity coupled with large fluctuations between day/night of low temperatures and humidity. Therefore, the main consideration for the amount of coverage focuses primarily on packaging barrier properties and length of storage. Applications where the packaging barrier properties are excellent (ie. foils, multi-layer films) and where shorter length of protection is required (approximately one year) can be satisfied using the higher range of protection designated by each pak. Applications where poor barrier properties and longer protection is needed should use the lower end of the coverage range.

- NANO (1-4 cubic feet/ 0.02-0.11 cubic meters)
- MINI (4-10 cubic feet/ 0.11-.28 cubic meters)
- QUAD (10-35 cubic feet/ 0.28-99 cubic meters)

You will need to evaluate your needs, depending on storage environment, package integrity, condition of the parts and their location within the enclosure. Testing is always recommended in any application before use.

### Packaging:

NANO	900 per poly bag/box
MINI	300 per poly bag/box
QUAD	75 per poly bag/box

### Wash hands thoroughly after handling this product and before eating.

All products manufactured Armor Protective Packaging® are warranted to be first class products and free from defects in material and workmanship. Liability under this warranty is limited to the net purchase price of any of such products proven defective or at our option to the repair or replacement of said products upon their return to us transportation prepaid. All claims on defective products must be made in writing 30 days after the receipt of such products in your plant and prior to further processing or combining with other materials and products. We make no warranty, express or implied, as to the suitability of any of our product for any particular use, and we shall not be subject to liability from any damages resulting from their use in operations not under our direct control. This warranty is exclusive of all other warranties, express or implied, and no representative of ours or any other person is authorized to assume for us any other liability in connection with the sale of our products.

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