



# ARMOR SHIELD™ CF33 CORROSION INHIBITING EMITTER

## Frequently Asked Questions

### What is it?

The ARMOR Shield™ CF33 Corrosion Inhibiting Emitter is a unique reticulated foam emitter containing ARMOR's proprietary VCI Nanotechnology™ used to emit a corrosion inhibiting vapor into an enclosed space. It is the most advanced emitter available due to its reticulated foam design and versatility. The unique capillary action allows the vapors to be released at a controlled rate over a long period of time.

### How do I use it?

Place the Shield emitter on the inside of the enclosure by peeling off the top of the adhesive strip on the back, and sticking it to a flat surface. It also offers a pre-punched hole to allow for hanging (use a cable tie or string), if there is no flat surface available. The emitter begins to work immediately, filling the enclosed space with VCI vapors.

**\*\*Proximity is important --** the closer the emitter is to the metal, the faster the vapors will reach the critical areas.

### Where do I use it?

ARMOR Shield emitters can be used in any application where exposed metal in an enclosed space is in danger of corroding. They are ideal for corrosion prevention in the following ways:

- Electrical, electronic and electro mechanical control panels
- Electrical light fixtures/security alarm systems
- Electric motors
- Switch gear and relay cabinets
- Battery operated devices/gadgets
- Junction fuse boxes/bus bars
- Marine/aerospace/military instruments
- Computer and telecommunication equipment
- Scientific or medical instruments and devices
- Tools, small parts and spare part boxes
- Power generation units
- Conductive leads, connectors and terminals
- Printed circuits

### Why should I use the ARMOR Shield emitter?

Many applications require superior corrosion protection for valuable equipment during storage, transit, and plant shutdowns. ARMOR's Shield emitter provides quick and easy VCI protection in an enclosed space. ARMOR Shield emitters are easy to remove, provide long-lasting protection for most metals, and offer corrosion prevention when ARMOR VCI packaging is not available.

### What types of metals will the Shield emitters protect?

ARMOR Shield emitters release protective vapor corrosion inhibitors (VCI) to prevent corrosion on steel, copper, zinc, and multi-metals in general. VCI vapors are a similar proprietary formulation to that found in ARMOR VCI paper and film products.



### **What are the benefits?**

- Easy, no prep-work
- Compact and space-saving in size.
- Simple installation (self-stick or hang via string/cable tie)
- Continuous protection of up to 24 months (depending upon air flow, size of space, etc)
- Conforms to REACH and other global standards
- Safe, non-toxic and safe to handle
- Complements other ARMOR products
- Compatible with electronics and mechanical components
- Does not interfere with electrical, optical and mechanical surface performance
- Multi-metal performance
- Ideal to protect valuable equipment during operation and shutdown

### **How many emitters should I use?**

- When the Shield emitter is adhered to a flat surface it protects up to 17 ft<sup>3</sup> (Cubic Feet)
- When the Shield emitter is hung from the center of the space it protects up to 33 ft<sup>3</sup> (Cubic Feet)

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.

### **How does the VCI protect the metal?**

The ARMOR Shield CF33 Emitter works to protect metal in much the same way as ARMOR WRAP® VCI paper and other ARMOR packaging. The Shield emitter's unique capillary action allows protective vapors to attach themselves to the metal's surface to form an invisible nanocoating only a few molecules thick to protect metal from corrosive attack. This protective layer prevents nominal amounts of moisture, salt, dirt, oxygen, and other materials from depositing on the metal and causing corrosion.

### **What is the length of protection?**

12-24 months depending upon air flow and conditions such the container/space size and the frequency of opening the space.

### **How do you know when to replace an emitter?**

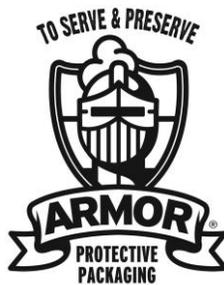
ARMOR's Shield emitter includes a date installation identification card that allows the user to document the date of installation. ARMOR recommends checking cabinets every 6 months to monitor effectiveness and upcoming expiration dates.

### **Are the vapors hazardous?**

No. ARMOR VCI products are safe to use and provide numerous benefits compared to other hazardous chemicals. Contact Armor Protective Packaging for applicable SDS information.

### **How long does it take for the Shield emitter to become effective?**

The Shield emitter is effective immediately, but may take a few hours (from 6 to 36 hrs) to fill the package space and deposit on all surfaces, providing clean, safe and easy protection. It is



important to note that proximity is critical -- the closer the emitter is to the metal, the faster the vapors will reach the critical areas.

### **Are emitters environmentally safe?**

Yes. The ARMOR proprietary formulation conforms to REACH and other global standards and replaces hazardous chemicals and oils that traditionally were used to prevent rust.

### **Why is the color of my Shield emitter fading or changing color?**

The Shield emitter is made from urethane foam. The discoloration of urethane foams is a natural phenomenon that is the result of unavoidable exposure to light and oxidizing gases (including those produced by gas-fired furnaces and motor emissions). Any change in color is **purely cosmetic** and **will not impact** the emitter's effectiveness in protecting metal surfaces from corrosion.

### **How do you remove VCI chemicals from the surface of a part?**

Once emitter is removed from the package, the protective layer immediately begins to dissipate. The emitter provides clean, dry protection and in most applications, removal is not necessary.

### **What about enclosures, cabinets or boxes that are not completely sealed?**

The ARMOR Shield CF33 Emitter will still provide a great benefit to the metal parts inside cabinets that aren't completely sealed. ARMOR recommends cabinets remain closed as much as possible in order to reduce airflow, and maximize the effectiveness of the emitter. If it is not possible to completely enclose the space, additional emitters should be added and changed more frequently.

### **What if the electrical cabinet comes with a fan to release heat?**

While this is not the ideal environment for VCIs, metals will still benefit from ARMOR's VCI Nanotechnology® chemistry but will need to be replaced more often. We recommend testing any atypical applications with ARMOR VCI products before use.

### **How does VCI effect electrical properties such as resistance, dielectric strength, etc.?**

Nothing is worse than corrosion on metal! Corrosion can adversely affect electrical properties. Using the Shield emitter will eliminate these adverse effects. To be safe, ARMOR recommends testing any applications of concern prior to full-scale usage.

### **Will it work in high temperatures?**

Higher temperatures cause corrosion to progress faster. However, higher temperatures also cause ARMOR VCI chemicals to activate faster. The Shield emitter provides "intelligent" protection – it self-adjusts its vaporization rate and emits more VCIs. We recommend testing in any elevated temperature applications.

### **In what quantities are ARMOR Shield Emitters offered?**

Single 10-emitter packages; 10 packages per box (100 total); or 60 boxes per pallet (600 total).

F: Product Standards/Product Data/ARMOR Shield Emitter CF33 FAQs