



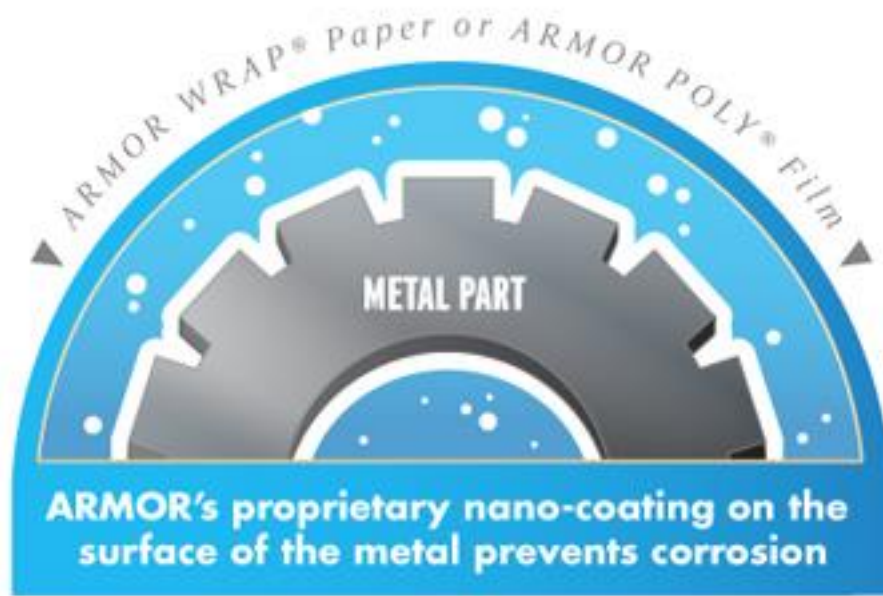
Technical Resource

VCI NANOTECHNOLOGY

What is ARMOR VCI?

The strength of Armor Protective Packaging®'s corrosion management products come from its proprietary ARMOR VCI Nanotechnology. This technology is what we like to call “the power behind the shield,” and it is the rust protection that is a part of ARMOR's entire product line.

In its simplest terms, ARMOR VCI Nanotechnology uses “Vapor Corrosion Inhibitors” (VCI) to protect ferrous and non-ferrous metals. Vapor corrosion inhibitors are a class of chemical compounds that emit rust-inhibiting vapors into an enclosed air space. These VCI vapors, in turn, circulate in the enclosed area and work to prevent the formation of corrosion on metal surfaces. Typically, packaging materials such as paper or poly film are the carrier for the VCI chemicals.



How does ARMOR VCI work?

ARMOR has engineered highly specialized corrosion inhibitors based on ionic salts. Our packaging materials are infused with the corrosion inhibitors, carrying them into the packaging environment. In the presence of moisture the salts dissolve to form ions, permeating the packaging environment with corrosion inhibitors. The inhibiting ions are attracted to, and deposit on, metallic surfaces displacing moisture in the process and re-associating to form a stable nanocoating only a few molecules thick. Electrical current attempts to flow from the anode through the electrolyte into the cathode but cannot, because of the VCI's presence.

The volatility of VCI is a convenient way to apply the inhibitor. It is desirable for a VCI to provide the inhibitor rapidly and to have a lasting effect. Therefore, the compound should have a high enough volatility to saturate all the accessible vapor space as quickly as possible. But at the same time, it should not be too volatile because it would be lost rapidly through any leaks in the package or container in which it is used. The optimum vapor pressure of VCI should be just sufficient to maintain an inhibiting concentration on all exposed metal surfaces. ARMOR products are formulated to have both a lasting effect and volatilize quickly to saturate a vapor space.