



Technical Resource

CORRUGATED CARDBOARD CONSIDERATIONS: DID YOU KNOW YOUR CORRUGATED CARDBOARD PACKAGING COULD BE CAUSING CORROSION?

When using corrugated cardboard in packaging, it is important that the cardboard is specially treated or the acidity that is often present in the fibers can transfer to the metal part(s) causing corrosion. Cardboard sheets are often used to separate one row of parts from another in a package. If the cardboard is not treated, the cardboard will absorb moisture in storage and transit and will induce corrosion on the surface of the parts that is in contact with the cardboard.

In the manufacturing process of corrugated cardboard, the pulp is dissolved by nitric acid. This acid has to be neutralized using several rinsing steps. To save money, some manufacturers shorten these rinsing steps and as a consequence there is acidic residue that remains in the pulp used to make the cardboard. During transportation, especially during night hours when the temperature goes down and relative humidity goes up, porous packaging like corrugated cardboard absorbs moisture and it activates any acidic residue left behind. If the cardboard is in direct contact with the metal parts, it can easily lead to corrosion by providing an acidic electrolyte as demonstrated in the photo to the right.



As a solution, the surface of metal parts should never be allowed to touch corrugated cardboard. A sheet of VCI film or paper (such as ARMOR POLY® or ARMOR WRAP®) should be placed between the cardboard surface and the metal part (as shown in the photo below). A sheet of VCI film should also be placed on the top row of parts to prevent the cardboard from touching the row of parts immediately below it. Another approach would be to insert the cardboard sheet into a flat bag made of VCI film thereby covering both sides of the cardboard sheet.

Assessing the shipping and packaging conditions and other variables that can influence corrosion formation allows for the design and use of protective packaging solutions that will preserve and protect. While moisture cannot be completely removed from the packaging, porous packaging materials reduce relative humidity and condensation (as long as they are not acidic porous packaging which can actually increase corrosion as described above). Uniquely, ARMOR's VCI Nanotechnology found in ARMOR's product line, responds and adjusts to temperature and humidity fluctuations, increasing and decreasing as needed.

