



Technical Resource

ARMOR's Green and Sustainable Packaging Corrosion Solutions

Armor Protective Packaging® products have been “green” and certainly “sustainable” long before it was the vogue buzz word that it is today. In providing corrosion inhibiting and rust removal products that are safe, clean and easy to use, ARMOR products provide tremendous environmental and economic benefits while protecting public health, welfare and environment over their full commercial life cycle.

Given the importance of the sustainability movement, ARMOR has put forth additional resources and focus on both our product line and the way we do business. Here are some of the ways that ARMOR maintains its environmental and sustainability leadership.

Sustainability and the 7 R's of Sustainable Corrosion Management

By the most popular definition (traced to a 1987 UN conference), sustainability is defined as meeting present needs without compromising the ability of future generations to meet their needs. As applied to corrosion management and the shipping and storing of metal products, sustainability means reducing the negative impact on the environment and on people through increased use of renewable materials, reduction in the amount of oils and harmful chemicals used and using less energy in manufacturing and shipping.

ARMOR's 7 R's of Sustainable Corrosion Management include:

1. **Reduce or eliminate** use of oils, greases, coatings or other harmful chemicals
2. **Remove rust** when present, in a safe, clean and easy manner
3. **Reduction in materials** used to create protective packaging
4. **Renewable products** should be used as much as possible
5. **Recycled** content should be used and products should be recyclable
6. **Revenue** is obviously important so products should bring economic benefit
7. **Reading (education)** is important to identify responsible solutions

Customers large and small are becoming increasingly more aware of their impact on the environment and future generations. Fueled by Wal-Mart's “packaging scorecard”, companies are implementing sustainable strategies that impact their supplier's packaging and corrosion prevention decisions. In fact, while the primary and initial goals may have been to preserve the environment and future generations, upon close inspection, many of the 7 R's of sustainability and “greening” are actually cost savings as well.

ARMOR Helps Customers Improve Their Sustainability By...

- Offering customers eco-friendly recycled, recyclable, safe and reusable corrosion prevention solutions and products
- Analyzing, evaluating and recommending to customers the most effective solution to corrosion management possible



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ARMOR Helps Customers Improve Their Sustainability By... (continued)

- Combining corrosion prevention with protective packaging to eliminate hazardous chemicals, oils and redundancies in packaging
- **Helping achieve the 7 R's of Sustainable Corrosion Management**
 1. **Reduce or eliminate oils or other harmful chemicals**
 - Oils, while effective, are hazardous to the environment and people
 - Oils or greases require removal before processing, use, or painting, adding tremendous waste and disposal issues
 - Solvent-based RP liquids pose health concerns and waste water disposal issues and costs
 - ARMOR products do not contain oils, solvents, VOCs or any harmful chemicals
 2. **Remove rust when present in a safe, clean and easy manner**
 - Metal Rescue™ is a water-based rust remover bath
 - It is safe on everything except rust, including skin, paint, rubber, plastics
 - Salvaging a part from rust versus scrapping it reduces energy usage, greenhouse gases and the carbon footprint
 - Other methods such as acids are harmful to the environment and the person performing the de-rusting
 3. **Reduction in materials used to create protective packaging**
 - ARMOR WRAP® Papers are impregnated with vapor corrosion inhibitor on both sides of the paper unlike most competitors, thus eliminating the need to use two pieces of paper-providing a 50% savings in source reduction from one-side coated VCI papers
 - The Defender™ bag material is able to be reduced 25% compared to similar sized mono-extruded bags
 4. **Renewable products should be used as much as possible**
 - ARMOR WRAP® Papers are made of a natural, renewable resource
 - ARMOR is fully RoHS compliant (a directive from the European Union that mandates certain products put in the market within the EU shall contain restrictive levels of specific hazardous substances)
 5. **Recycled content should be used and products should be recyclable**
 - ARMOR POLY® and ARMOR WRAP® product lines are fully recyclable and made from a significant amount of recycled content without jeopardizing product quality or performance
 - ARMOR WRAP® Papers and ARMOR POLY® Films are available in biodegradable forms



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ARMOR Helps Customers Improve Their Sustainability By... (continued)

6. **Revenue is obviously important so products should bring economic benefit**
 - ARMOR products are cost effective as they combine the corrosion inhibitor with protective packaging in one easy and clean step
 - Compared to the total cost of oiling (or solvent based RPs), removal of the oil and waste water disposal costs- ARMOR products are often significant cost savings

7. **Reading (education) is important to identify responsible solutions**
 - ARMOR remains informed about the latest trends and technologies in sustainable and green packaging through programs such as Michigan State University's School of Packaging Sustainable Packaging Forum
 - Continued education through research and organizations such as NACE (Association of Corrosion Engineers) help ARMOR influence our product development to create even greener and more sustainable solutions for corrosion