






# GREEN RUST PREVENTION PACKAGING & REMOVAL

## THE 6 RS OF SUSTAINABILITY

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-  SUSTAINABILITY PARADOX
-  BIODEGRADABLE FABLE
-  6 RS OF SUSTAINABILITY

## THE SUSTAINABILITY PARADOX

### WHICH GROCERY BAG IS GREEN?

This is what is called The Sustainability Paradox, which is a frustrating conundrum, occasionally in our attempt to buy things that are 'better for the planet' we end up causing unintended damage somewhere else. Let's take a common everyday item. Re-Usable Grocery Bags. Although cutting out plastic bags from your life sounds like a good move, most people don't stop to think about the impact of creating the bag itself. In 2019, the Administration of Environment and Food of Denmark put together an assessment of the environmental impacts of different types of shopping bags, from the thin, flimsy polyethylene bags all the way up to the most "eco-friendly" organic cotton totes.

As it turns out, it takes exponentially more resources to make a tote bag compared to the cheap polyethylene. The report analyzed how many times you'd need to use each type of bag to equal the environmental impact of creating that bag.

NUMBER OF USES NEEDED TO OFFSET CARBON FOOTPRINT OF ONE DISPOSABLE BAG



# REPLACING PLASTIC STRAWS: DON'T BE "SUCKED" INTO THINKING YOU'RE SAVING THE PLANET

What about another example of the sustainability paradox – we all heard about this one - plastic straws. The BBC was one of the first to report that a global fast-food chain introduced paper-based straws to replace their plastics straws. While on the surface this sounded like a great idea to be “green or sustainable” – it was not. Why - the problem was the paper straws they used, were not-recyclable. That fast-food joint isn't the only business that's sending out mixed messages on plastic straws.



When a “coffee company” announced that it would remove straws from cold drinks it was pretty exciting. The goal was to remove 1 billion straws in 28,000 stores around the world. The only problem was the new system created MORE plastic waste by weight than the original cup and straw combination

We use the three examples - cotton totes, paper straws, and plastic cups because these items represent the conflicting goals of sustainability, it's the sustainability paradox - where some solutions may appear eco-friendly but may have unintended negative consequences, and vice versa. We want you to keep in mind the sustainability paradox as our industries discuss ways to be sustainable.

## MICROPLASTICS 101

Small-sized toxic micro-plastics in an aquatic terrain can be ingested by the smallest wildlife and work their way up the food chain including larger and larger consumers, until eventually reaching human consumption.



## THE BIODEGRADABLE FABLE

### WHY BIO-BASED & COMPOSTABLE PLASTICS ARE NOT THE ANSWER

Because in our industry what we see now is called the biodegradable fable... the biodegradable fable is the epitome of the sustainability paradox. So when you hear someone say to you we make biodegradable or compostable plastics, there are three ways this is misleading.

#### LANDFILL

- Biodegradable polymer-based films require high temperature and sunlight to biodegrade and these conditions are unrealistic given the current waste and composting systems. So that bag you think might be biodegrading somewhere, it isn't.

**It's trying to break down but it isn't biodegrading well.. Well then you might think ... of recycle it... but you CAN'T RECYCLE**

- Most are still made from petrochemicals, but other chemicals are added to cause the plastic to break down to smaller pieces even though if it isn't working well in a typical landfill- if exposed to the right conditions in manufacturing it - making them difficult to recycle.

**WORSE FOR THE ENVIRONMENT – because of those chemicals that make cause small breakage**

- If they enter the ocean, they can be worse as smaller plastic pieces are easily ingestible.

# THE 6 RS OF SUSTAINABILITY

Often, like a tote bag or paper straws what at first glance, seems like a no-brainer -- such as biodegradable or compostable poly bag --isn't necessarily the best.

We have to look closely at the full picture-and even then, measuring the scope of impact is not easy.

At ARMOR, we're working as hard at being an outstanding steward to our beautiful earth as anything else we do. So what do we have for you today – it is back to the basics –it's pretty straight forward information because we are not interested in promoting the sustainability paradox. What are interested in is taking the work out of your workday, making your role easier and sharing our 6Rs of sustainability.


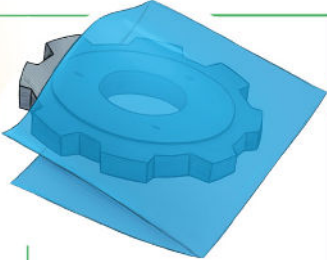




## #1 REDUCE *USE LESS. WASTE LESS.*

In 2005, ARMOR was the first rust prevention VCI manufacturer to use innovative engineering to bring multi-layer (co-extruded) films to the market. ARMOR debuted the DEFENDER™, a three-layer film that strategically places VCI on the inside layer, closest to the metal part, and added unique barriers, allowing the film to be down-gauged by 25-30%. That's 25 - 30% savings of materials that are never used or introduced into the environment. Less CO2. Less storage. Less transportation. Less waste.

## LIGHT BULB ANALOGY

We like to use the incandescent bulb vs. the LED bulb analogy to explain the source reduction concept when comparing mono film vs. DEFENDER™ Film.

INCANDESCENT BULB			LED BULB		
	<i>Gives off 90% of energy as heat, not light</i>	<b>VCI MONO FILM</b> <ul style="list-style-type: none"> <li>• 70% of VCI not used</li> <li>• Traditional VCI film</li> <li>• Barrier by thickness only</li> </ul>		<i>Uses 75-80% less energy than an incandescent bulb</i>	<b>DEFENDER FILM™</b> <ul style="list-style-type: none"> <li>• Uses 25% less material</li> <li>• VCI only where you need it</li> <li>• Innovative barrier layers</li> </ul>

## CALCULATE

### DID YA KNOW?

ARMOR's got a "Sustainability Calculator" on our website! You can calculate just how many pounds of plastic you can save by using DEFENDER Film rather than mono film.

Give it a try!  
[armorvci.com/sustainability-calculator/](http://armorvci.com/sustainability-calculator/)

# 2 REMOVE METAL RESCUE® CHELATION PROCESS



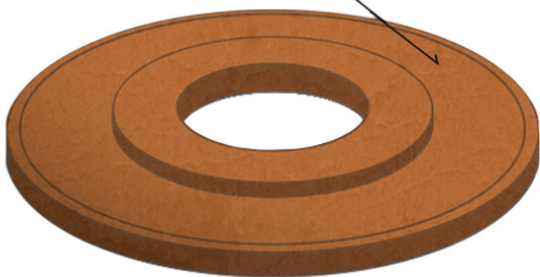
Hundreds of thousands of pounds of metal have been saved by using ARMOR's Metal Rescue® to remove rust. Metal Rescue® Rust Remover BATH is a water-based rust remover designed to remove rust from iron and steel. It doesn't use harsh chemicals or acids; just safe, water-based rust removal. It's the most effective, environmentally friendly, biodegradable, nonflammable, fume free rust remover on the market.

## THE CHELATION PROCESS

How Metal Rescue works to remove rust from metal parts.

### IRON OXIDE

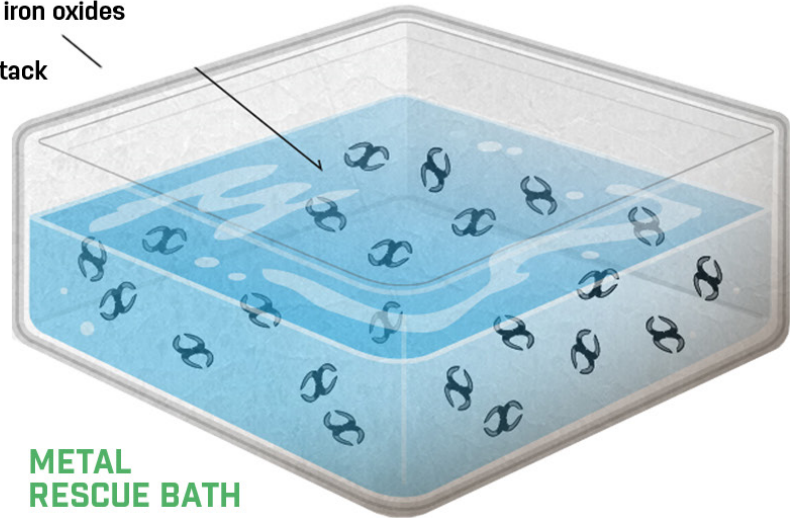
- Hydrated Oxide:  $FeO \cdot H_2O$
- Iron Oxide-Hydroxide:  $FeO(OH) \cdot H_2O$
- Iron Oxide:  $Fe_2O_3$



RUSTY PART

### CHELATING AGENT IN WATER

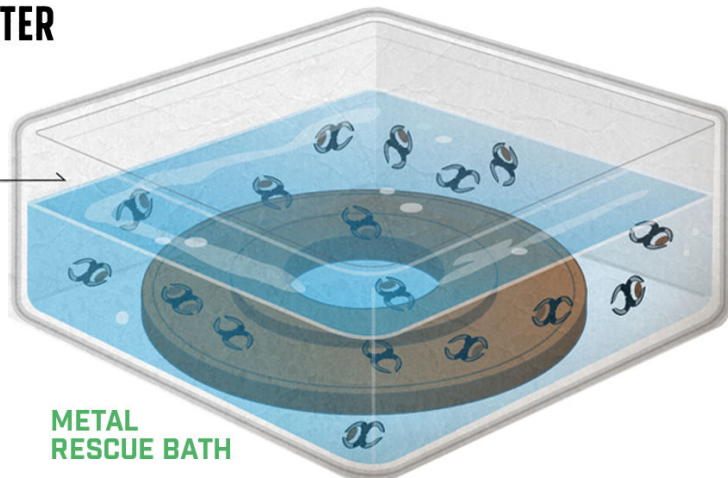
- Sequesters iron oxides
- pH neutral
- Does not attack non-rusted metal surface



METAL RESCUE BATH

### CHELATING AGENT IN WATER

- Physically grabs iron oxide
- Lifts iron oxide off of surface
- Holds iron oxide in solution



METAL RESCUE BATH



Chelating Agent



Chelating Agent Grabbing Iron Oxide

# 3 RECYCLED

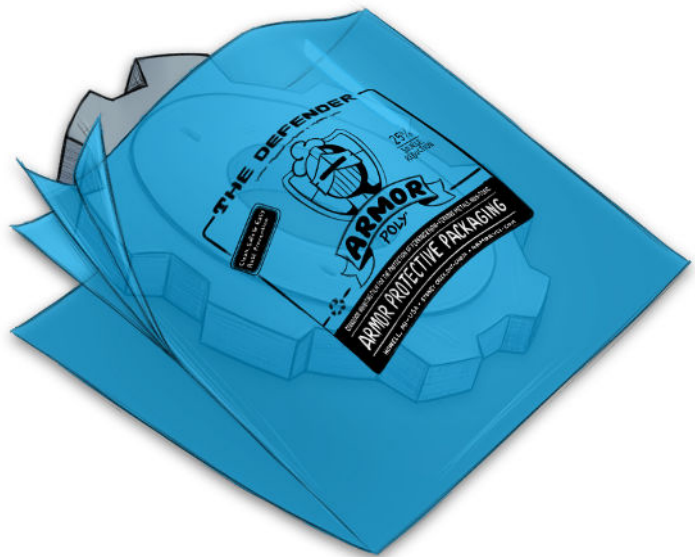


You should look for a company that utilizes recycled content in products whenever possible and without sacrificing their integrity or performance.

ARMOR utilizes recycled content whenever possible, without sacrificing performance. As recycled resin technology continues to improve, recycling gains more ground each year. Using recycled content makes sense from both an environmental and business mindset.

Today ARMOR currently has a minimum of 30% post-consumer recycled in our ARMOR DEFENDER™, CRUSADER™ and SEA™ films and 50% in all of our ARMOR POLY® films.

**TODAY, IN ALL FILMS POSSIBLE, ARMOR HAS ACHIEVED 30% RECYCLED CONTENT!**



# 4 RECYCLABLE



Recycling is a good way to positively impact the environment. It reduces pollution caused by waste and negates the use of virgin raw materials. Vast amounts of energy are needed to make products from raw materials, while recycling requires way less energy and preserves our natural resources. Nearly all ARMOR products are recyclable including ARMOR WRAP® Papers and ARMOR POLY® Films.

**Recycling 1 ton of paper saves 17 mature trees, 7,000 gallons of water, 3 cubic yards of landfill space, 2 barrels of oil and the energy equivalent of 165 gallons of gasoline.**

# 5 RENEWABLE



FSC  
www.fsc.org



SUSTAINABLE  
FORESTRY  
INITIATIVE



ARMOR WRAP® Papers are made from wood, which is a renewable and recyclable natural resource. Due to increased use of sustainable resources, the demand for paper in the USA is growing year-after-year.

- 2.5 billion trees are planted in the USA alone each year (millions more grow naturally)
- 65% of paper used in the USA was recovered for recycling
- Over 67% of U.S. pulp and paper mills' energy needs are a result of renewable biomass and fuels.

**PAPER IS MADE FROM WOOD, A  
NATURAL RESOURCE THAT IS  
RENEWABLE AND RECYCLABLE.**



# 6 REJECT

ARMOR products prevent and reject rust in a clean, safe and easy-to-use way. Our prevention technology preserves and protects expensive metal parts from rust while preventing the use of millions of gallons of messy oil and hazardous RP sprays that are extremely harmful to our environment.

## WATT HOURS OF ENGERGY WASTED BECAUSE OF RUST

**6,950 WATT HOURS OF  
ENERGY ARE NEEDED TO  
PRODUCE 1 KILOGRAM OF  
IRON FROM IRON ORE**

**13,900 WATT HOURS  
OF ENERGY TO  
PRODUCE 1 KILOGRAM  
OF STEEL**

## LET'S REVIEW!

At ARMOR we say our products are Clean, Safe & Easy. We are living up to our reputation of being a company that is EASY to work with by making going green easy for you. We don't have to complicate life and we don't need to complicate sustainability.

## ARMOR'S 6 RS OF SUSTAINABILITY

1. Reduce the amount of plastic created and used by using co-extruded products – Use the same amount of bags, just use less poly to make them.
2. Remove rust and by doing that – you can save precious metal
3. Find products that have post consumer Recycled Content – look for the recycled content symbol and know the % of recycled content in the products you are using to prevent corrosion.
4. When choosing a product, find one that is Recyclable – and back to that biodegradable – read the fine print – make sure a company that says their products are biodegradable and compostable – that they are in traditional landfill spaces.
5. Some of earth's resources are finite. Design packaging that promotes using Renewable resources
6. And in all ways – Reject Rust – protect your parts from corrosion. Think of this 6,950 watt hours of energy are needed to produce 1 kilogram of iron from iron ore and 13,900 watt hours to produce steel. So we have come full circle – we know you are here to reject rust -



**WATCH A DEEP-DIVE INTO R #1, 2 AND 6 NOW WITH "THE TWO GUYS" OF ARRUSTED DEVELOPMENT!**

**Rs #1 & 2:**

[youtube.com/watch?v=jSjMx28Pr00](https://youtube.com/watch?v=jSjMx28Pr00)

**R #6:**

[youtu.be/66iKW61yVSg](https://youtu.be/66iKW61yVSg)

**TAKING THE WORK OUT OF YOUR WORKDAY**