

How to Choose an Anti-Corrosion Cover

Introduction

High speed transportation damage caused by the impact of rocks and sand and moisture damage caused by rain and snow can lead to unwanted warranty costs. At best, providing protection during transportation ensures that asset looks pristine upon arrival, and the time and expense to clean a dirty asset upon delivery is avoided. A manufacturer's reputation is enhanced by pristine asset delivery. Corrosion prevention throughout the asset's life is another reason that protection is sought.

The U.S. Army's Corrosion Control and Prevention Executive evaluated the cost effectiveness of equipment covers against other corrosion prevention and control solutions [1]. The evaluation concluded that covers:

1. Reduce corrosion and protect equipment.
2. Have an average return on investment (ROI) of 19:1.
3. Have a higher ROI
 - a. in more environmentally difficult regions and,
 - b. when used to protect more expensive equipment.
4. Always provide benefit regardless of location.

There are three fundamental considerations when selecting a cover material:

- What is the cover to protect against?
- Where is the asset located?
- How often are you planning to use the cover?

Protection

Covers protect against dirt, dust, rain, snow and bird feces during transportation and throughout asset life. Assets transported by road during winter must be protected against corrosion caused by the salt blend which is sprayed onto roads to prevent ice formation [2]. Covers also protect against degradation resulting from solar exposure. For example, rubber gaskets, tires all degrade under ultra-violet (UV) exposure [3].

Bird feces is more than unsightly, it is acidic [4] and will start the degradation of an asset's coating system. UV, moisture, salts and dirt all contribute to the coating system degradation cycle. This breakdown leads to corrosion of the asset's metal and compromises the performance of electrical and electronic systems [5].

Location

The route an asset is shipped or where the asset is operated contribute to the decision-making process. The Department of Defense uses the ISO corrosivity categories to determine how best to protect assets as shown in Figure 1. The majority of North America is susceptible to corrosion. In those central regions, where

the corrosivity categories are lower, wind-driven dirt and dust may damage the asset.

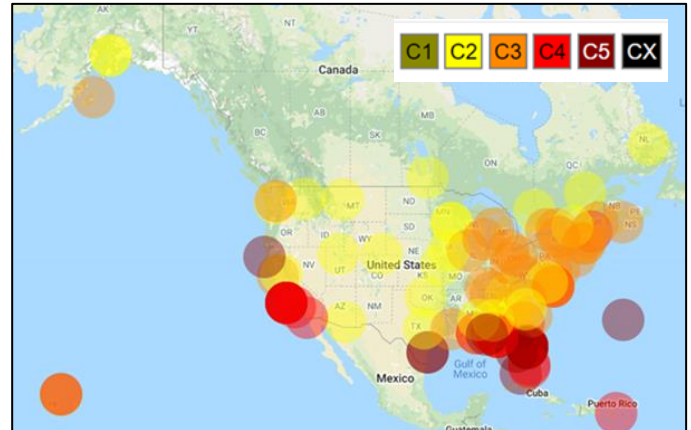


Figure 1. ISO Corrosivity Categories

Protection Frequency

Frequency of cover use is also an important consideration. The selection of a cover just for shipping will differ from a cover selected to protect against seasonal conditions and will again differ from a cover employed on a daily basis.

Packaging Selection Factors

The larger and more unusually configured the equipment, the harder it is to package and thus more expensive to transport.

Select a packaging process that is simple and avoids production bottlenecks and inefficiencies. Fast and simple packaging processes that reduce labor will drive down costs and increase productivity.

Customers expect delivery of unblemished equipment. That expectation increases with the expense of that equipment. Failure may result in loss of reputation and adversely impact future orders.

Anti-Corrosion Cover Selection

To select the right anti-corrosion cover material, the threat, location, and use cycle, needs to be known.

Use cycle drives material strength. The more frequent use the material needs to be stronger and more robust. If corrosion protection is a key requirement, then cover materials with vapor corrosion inhibitors (VCI) and adequate moisture vapor transmission rates (MVTR) need consideration.

Covers for transportation and seasonal protection may require a shrinkable material. Protection of expensive coating systems and glass from abrasion would necessitate the selection of a material with a soft inner liner. Custom-fitted covers are less likely to allow salt, sand, and other contaminants to reach the equipment than standard tarpaulins.

Historical Packaging Options

There are three main methods of protecting industrial equipment, from manufacture through transportation to the delivery site: tarpaulins, wood crating, and shrink wrap.

Tarpaulins have been employed significantly to protect assets from the elements. Tarpaulins are available in standard sizes and while relatively easy to use, a tarp fee is normally imposed by the trucking company.



Figure 2. Asset wrapped with a tarpaulin on a truck

Crating industrial products for shipment is another method that has had widespread use. Skilled workers are required to construct a wooden crate for each pallet-mounted industrial product. The incremental weight increase of each wooden crate will result in additional shipping costs. In some cases, the weight of these crates may result in the truck's weight capacity being exceeded with fewer industrial products. Upon delivery, the wooden crates become waste and need disposal.



Figure 3. Asset protected by a wooden crate

Shrink wrap is one of the most common and cost-effective packaging options for heavy equipment. While often the cheapest option, it does have some drawbacks. The labor and time it can take to install, along with the variation in quality and consistency of the wrapping job, may make it an overall riskier packaging option.



Figure 4 Asset protected by shrink wrap

If the equipment is going to be traveling a long distance, or stored outdoors for a long period, it is common to apply an extra layer of shrink wrap for added protection, but beware of moisture buildup, which can lead to corrosion of the equipment that is supposedly being protected.

Custom designed covers enable rapid installation. They can be customized with inspection windows and access doors incorporating zippers, Velcro, and tie downs to suit specific applications. A soft non-abrasive inner liner protects against damage to glass and high-gloss paints and plastics. Shrinkable options are more robust than ordinary shrink wrap and ensure that products arrive on site looking as good as when they left the factory.

References:

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