

# - THE CORROSION -

We have all already seen rust, for example on an umbrella that has been outside for the winter, or on anchors in ports during walks. This phenomenon of metal degradation is very often observed on iron and steel. How does corrosion occur and, above all, how can it be prevented?

## CORRO-WHAT ?



Corrosion is a naturally occurring phenomenon that attacks metals. In concrete terms, it is the free air and water that cause this phenomenon: oxygen, carbon dioxide and other gases react chemically with metals to form oxides (rust) while consuming ("eating") the metal. It appears in many different ways depending on the nature of the metals!

## EXAMPLES OF CORROSION

→ Copper corrosion: Copper corrodes in contact with air. It becomes covered with a greenish layer called verdigris. This layer is impermeable and isolates copper from the air and from the chemicals responsible of its corrosion, so that the corrosion stops as soon as it appears. The corrosion then remains superficial, it only modifies the external aspect. *The Statue of Liberty owes its greenish colour to the verdigris that has formed on the copper.*



→ Corrosion of aluminum and zinc: this corrosion is similar to the copper one. It only attacks the surface of the metal, on which an oxide layer (zinc oxide or aluminium oxide) is formed. However, the layers that form in both cases are greyish in colour. It is therefore difficult to distinguish them from the metal they cover and to identify their presence. They simply make the metal a little duller.

→ Iron Corrosion: Iron reacts with oxygen and water to form reddish rust that becomes a porous layer. This porous layer allows water and air to pass through and can continue to react with the iron until the iron is completely rusted. An iron object therefore corrodes deeply and can even disappear completely.



→ Corrosion of gold: there is none! Gold is unalterable in the free air and water, it is one of the "noble" metals. There are 7 other noble metals including silver and platinum. But then why does silver blacken? This change occurs only in the presence of sulphur and not in its natural atmosphere!

Corrosion is an unavoidable phenomenon that occurs in different ways depending on the metals and their composition. But there are ways to protect against it, such as plating, which is very often used at Amphenol Socapex!

## THE PLATING

There are many surface coatings: physical, chemical, electrochemical or even mechanical. You may know some without even being aware of it. An example, paint! It is not only for decoration, on the contrary, the aim is also to protect the product from external aggressions. A surface treatment will bring, modify or improve the properties of a part: resistance against corrosion, anti-friction, hydrophobicity, thermal and/or electrical conduction...



This is the aim of our plating department at Socapex: with perfectly controlled bath processes, they modify and/or add a thin layer of metal on the connectors to make them more efficient and resistant! For example, we propose a plating of Nickel, Cadmium or Black Zinc Nickel on Aluminium to protect the connector!

