# Painting of metal products

## Why products are painted?

Painting of metal products is used to give the products surface properties that it doesn’t have naturally. Without painting metal products start to rust and erode and in case of wood products surfaces are easier to clean when they have a lacquer layer on them. So, the surface durability of the products is improved with painting. In addition, the surface color can be freely chosen, the shininess of the surface can be adjusted, and the surface structure can be adjusted. Painting can also be used for insulation such as fire insulation, humidity insulation and hygienic insulation. Painting increases the cost of manufacturing but it’s aim is to increase the life cycle of the product, lower the cleaning costs for the surfaces and to give the product a good-looking finish. Generally painting can be divided into two distinct categories. Painting for corrosion protection and painting for looks but often the needs overlap and both are needed. Corrosion protected paint coat is typically multi layered wet coat that is painted with high-pressure spray-painting machinery. When demanding good looking finish, the shininess of the surface, evenness of the paint coat, evenness of the color and wear resistance of the coating are some common demands. Common painting methods for good-looking finish are powder coating or wet painting.

## Chemical pretreatment of products

Chemical pretreatment is used to process the surface of products so that the surface can be coated with paint or other coating methods without problems. Chemical pretreatment is used for products that are manufactured from steel, zinc coated steel or from aluminum.

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| Impurity | Source of impurity | How to remove |
| Safety oil and grease | Added during manufacturing to prevent rusting | Mineral oils removable by water or solvent based washing procedures. Vegetable and animal greases hard to remove |
| Salts | Transportation or from human hand sweat | Removable by water-based washing procedures |
| Carbon dust and soot | Cold rolling | Removable by alkali or solvent based washing procedures |
| Cutting fluid | Sawing, milling, etc | Removable by water-based washing procedures |
| Pulling lubes and soaps | Manufacturing of wire and tube products | Removable by water-based washing procedures |
| Metal chips | Metalworking processes | Mechanical washing |
| Rust and surface rust | Storing in humid conditions, “old” material | Can’t be removed by washing. Acid pickling required or mechanical processing. Surface rust removable by chemical procedures |

Table 1: Impurities on metal surfaces