

General Information:

The pre-treatment of metal substrates is an important requirement for the adhesion and durability of the coatings. The term cleaning includes removal or treating of all “**inherent residues**” and “**foreign inherent residues**” which could cause contamination to the coating, prevent positive adhesion or support corrosion. Welds, joints, and especially corners and edges should be rounded with a minimum radius of 2mm. (responsibility of the steel worker). The requirements of **ISO 12944 Part 3-4** and **ISO 8501 Part 1-3** should be observed.

The inherent residues on the surface are:

- Mill scale and scale
- Corrosion / rust
- Metal-specific salts

The foreign inherent residues on the surface are:

- Oil / grease
- Dust
- Salts
- Alkali
- Soiling any kind
- Existing coatings

With regard to cleaning methods, we differentiate between “**Technically possible/normal procedures**” and “**Industrial or commercial processes**”.

1. Cleaning:

Workpieces must be degreased before any preparation is started. The type of cleaning agent depends on the material, the impurities present (“**inherent residues**” and “**foreign inherent residues**”), on the requested degree of purity and on pertinent legal regulations applicable for chemicals used in such processes. Normally, degreasing is executed with solvent-based media or water solutions. On some surfaces, e.g. structural surfaces which cannot be sanded, it is recommended to use pickling for the cleaning process.

2. Technically possible/normal procedures for surface treatment:

Impurities, such as rust, loose/seized weld spatter, mill scale and scale should be mechanically removed. This includes: grinding, brushing, and blasting (with metal or mineral abrasives). The mechanical pre-treatment can also be used to remove the old coating. The degree of surface roughness increases the effective adhesion. Bare metal surfaces should not be touched with bare fingers or hands. Always wear gloves. Surfaces must be coated immediately after cleaning and preparation, otherwise there is the risk of renewed corrosion.

3. Industrial or commercial processes:

For industrial cleaning the workpieces are usually put in immersion tanks rather than using spray jets for cleaning. The use of ultrasonic or electrolysis immersion tanks will further improve cleaning processes. For “**inherent residues**” the best cleaning process is the use of e.g. pickling, with acids and bases. Depending on the process, the components are subsequently cleaned with a rinse and/or coated with a conversion layer. This very thin non-ferrous layer increases the surface profile (roughness), providing excellent adhesion for subsequent coatings, - and it has an added anti-corrosive effect.

As a rule, the conversion layer to be coated may be:

- Phosphate on steel
- Pickling or phosphate on aluminium
- Pickling by alkalis on galvanized steel

Painting:

Before application of coating materials the substrates must be absolutely dry. There should also be a minimum temperature of about 10°C. 20-30°C would be perfect, as this also means the sprayer can handle the materials effectively. The humidity should not be too high, and the parts must reach an ambient temperature - otherwise there is a risk of condensation. The instructions of the paint manufacturer should be followed.

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