

Finishing and renovation - Applicable for coatings formed during hot dip galvanizing

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This branch standard has been developed for finishing, removal and renovation of defects to the zinc layer after hot dip galvanizing. The information is based on experience and the hot dip galvanizing standard, EN ISO 1461.

This branch standard is applicable for goods that are galvanized at low temperature (450-460 °C). The best results and lowest costs, in relation to the requirements, are obtained from a joint cooperation between the galvanizer and the customer.

Finishing

According to Table 1, finishing requirements during visual inspection of the goods can be divided into three classes, where F stands for finishing and the number indicates the finishing class.

Table 1. Finishing specifications

- F1 Sharp thorns are smoothed so that the galvanised goods can be handled without risk of hand injuries.
- F2 Visual inspection of the goods, performed at a distance of at least 1 metre, shall prove to be free from visible errors, such as blisters, thorns, zinc ash and flux residue (provided the construction does not have pockets without drainage and vents). This is the normal class for finishing according to the requirements in EN ISO 1461.
- F3 According to F2, but with the stated surfaces free from minor defects, such as clumps, drips and runs. Suitable finishing class for hot dip galvanized goods that will be painted.

Class F1 does not fulfil the demands in the standard (EN ISO 1461), but can be used for goods that will be cast and only require coverage and handleability.

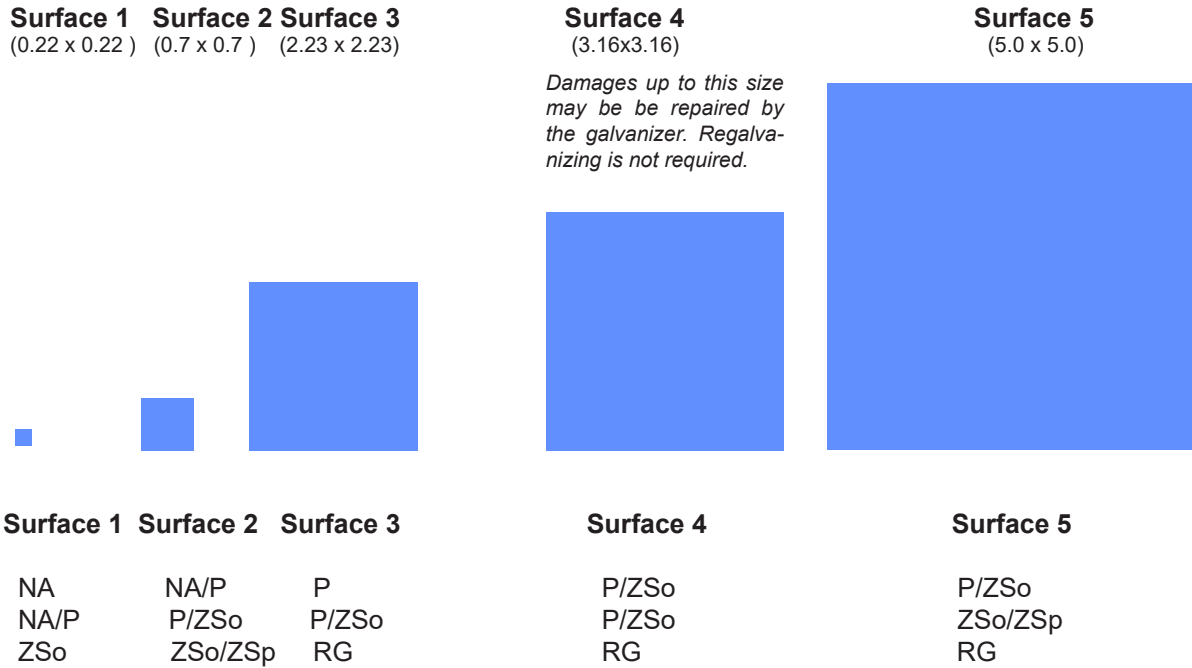
Classes F2 and F3 may reduce corrosion protection, to a certain degree, in areas where finishing have been made, if it is not properly done. Class F3 cannot be obtained on the entire surface, in larger designs, without considerable additional work. A high-quality surface finish, on smaller details, can be obtained with high temperature galvanizing (Dip temperature of approximately 550 °C).

Actions in case of damage in the layer

Table 2 includes three classes (1,2, and 3) where different renovation methods are recommended, depending on the surface size and the actual specifications. Renovation requirements essentially depend on the corrosive environment the product will be exposed to. The maximal applicable surface, for each repair method, is provided in the figure. It should be noted that, according to the EN ISO 1461 standard, the largest uncoated area that a galvanizer is allowed to renovate is 0.5% of the object's total surface area or 10 cm². If the uncoated area is larger than that, then the object is to be re-galvanized, unless otherwise agreed upon by the purchaser and the galvaniser. For practical reasons, larger defects may need to be repaired onsite at the installation point, e.g., if they have occurred during transport.

Scratches and elongated stains, smaller than 1.5 mm, are repaired as stains according to Surface 1.

Table 2. Different size of damages as well as suggested corrections (unit: cm).



* The damage must not exceed 0.5 % of the total construction area, or 10 cm².

NA = No action

ZSo = Zinc solder

RG = Regalvanizing

P =Painting with zinc rich paint, minimum 92 % Zn

ZSp = Zinc spraying

Cleaning before renovation:

Painting – cleaning with a stainless steel brush.

Zinc solder – is directly applied to the hot steel at the zinc bath or is heated during application. The surface area is carefully grinded clean. Zinc solder is preferably applied on hot steel at the kettle.

Zinc spraying - cleaning by blasting. When blasting, it is important to ensure that the zinc layer does not peel (delaminate) away from the edges. It should be noted that zinc spraying is not suitable for minor defects, as grit blasting under such conditions results in that the zinc layer being removed from a significantly larger area than the original damage.

The coating thickness of the renovated area shall be a minimum of 100 µm, unless the purchaser instructs the galvanizer otherwise. If the coating thickness is ordered according to the National NA appendix of the EN ISO 1461 standard, then the coating thickness of the renovated area shall exceed the “min. average”, provided in Table NA.1, by 30 µm.

Special processes

In addition to the above classifications, special processes can occur, e.g., cleaning of threads (applies to threads that cannot be centrifuged), protection of surfaces that are not to be covered by zinc, control and reprocessing of holes, protection against wet storage stain, packaging, transportation, etc.