

Fine plastering of hot-dip galvanized component surfaces

Coating galvanized components has long been proven to be effective. It improves corrosion protection and also offers the option of individual color design.

Preparatory measures for coating galvanized component surfaces are summarized under the term fine plastering. Fine plastering is generally an abrasive process for preparing galvanized component surfaces. Different grinding processes and grinding devices are used (e.g. eccentric sanders, pipe belt grinders, angle grinders with disc attachments). In order to be able to sand in a controlled manner, it is recommended to avoid a grit larger than P80. After fine plastering, the material should be stored and transported in a dry place.

Fine plastering is divided into two main categories:

1 Industrial fine plastering

This process represents the least amount of work for fine plastering.

The "galvanizing" standard DIN EN ISO 1461 only requires that points, noses, zinc runners and ash, as well as larger hard zinc spots are removed. Surfaces are not sanded or not completely sanded. The typical structure of a galvanized surface is retained.

The risk of injury from the component itself that will later be in use must be excluded with this process and its functionality must be ensured. This means that holes are drilled out if they are closed by zinc, threads are re-cut, and thickenings on screw-on and contact surfaces are removed as far as possible.

2 Decorative fine plastering

Coating companies and metalworkers often choose decorative fine plastering. This should offer a mixture of an appealing look and feel as well as the necessary corrosion protection. It differs from industrial fine plastering in that all surfaces of the component are sanded and smoothed, as far as they are accessible by machine. However, some errors can occur here that negatively affect the corrosion protection or the adhesion of the subsequent coating.

In principle, the minimum layer thickness according to DIN EN ISO 1461 must be maintained even after the entire surface has been sanded. This means that if, for example, 80 µm of zinc coating is required, this must still be present as a minimum layer thickness after sanding.¹

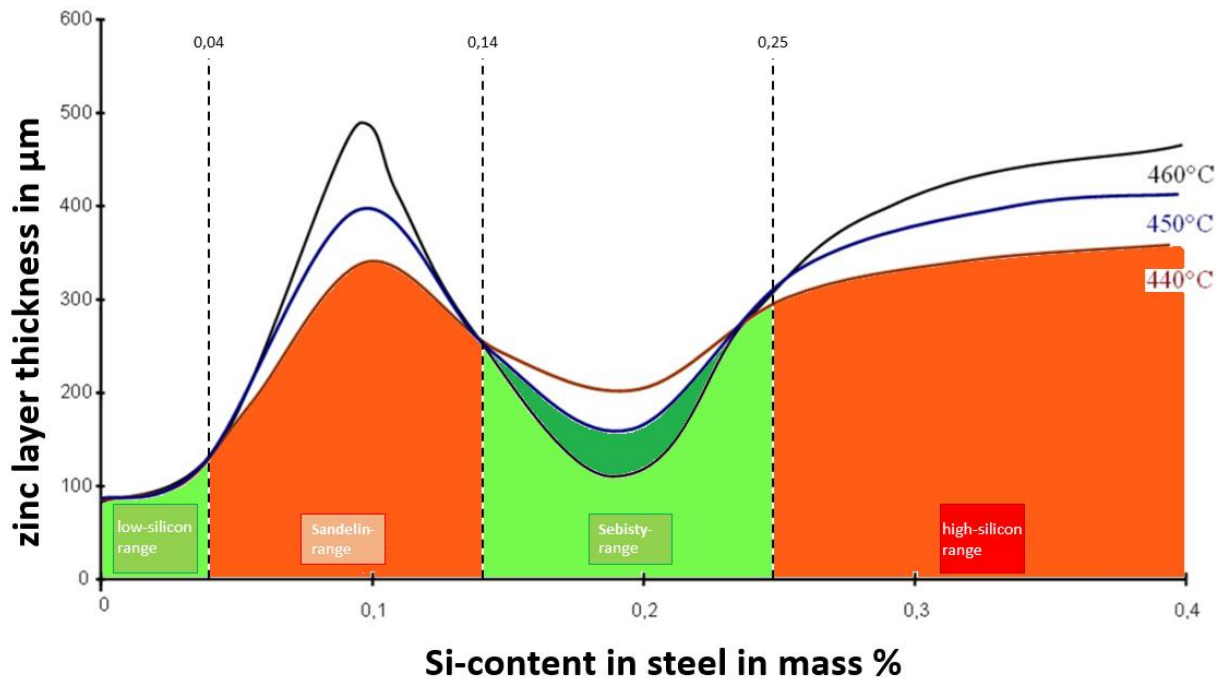
Unfortunately, when sanding over completely, zinc often flaks off, edges are ground through on profiles, and weld seams are ground through. In these places, the galvanization no longer provides any significant corrosion protection. Please do not use zinc sprays or zinc pastes to repair the surface yourself.

The biggest disadvantage of this fine-finishing process, however, is the great effort involved. To keep this to a minimum, contact the galvanizer, who can give you advice on the optimal design and the selection of the type of steel.

The selection of the right type of steel initially influences the formation of the zinc layers

Since the galvanizer usually operates his zinc kettle at a constant temperature of 450°C, the selection of the right steel has the greatest influence on the size and quality of the zinc coating, the associated corrosion protection and the effort required for further processing. (see graphic) High zinc coatings and a rough structure of the galvanization also encourage the storage of hydrogen, which escapes when the coating is heated again in the coating furnace (outgassing). Despite all measures, this is not the responsibility of the coating company and therefore does not constitute grounds for complaint.

¹ This also means that the metal construction company knows the location of use and the environmental influences (corrosivity category C1-CX) as well as the required protection period (very short - very long) and communicates this to both the galvanizer and the coater. Only on the basis of this information can the correct zinc coating be generated and the correct coating system, including pre-treatment, selected. (see DIN 55633, among others)



Designation	Si- and Ph-content	Appearance and thickness of the zinc layer
low-silicon range	< 0,04% Si und 0,02% Ph	Silvery shiny, zinc flower, low zinc layer thickness
sandelin-range	> 0,04% - ≤ 0,14% Si	Grey, partly gritty or rough, high zinc layer thickness
sebisty-range	> 0,14% - ≤ 0,25% Si	Silvery shiny to matt grey, medium layer thickness
high-silicon range	> 0,25% Si	Matt gray, high layer thickness

ILB recommends a mixture of industrial plastering and decorative plastering. Depending on the appearance of the galvanized goods, the metalworker must decide for himself.

Since ILB cannot influence upstream process steps up to the final plastering itself, galvanized material is always degreased with alkali, zinc phosphated and passivated, and swept if necessary. An epoxy powder primer is then applied and, depending on the requirements for compliance with the corrosivity category and protection duration, color or other properties, a powder top coat is applied.

When obtaining different offers, please always compare the coating process offered, not just the price. ILB offers a guarantee on the coating of goods you have already plastered. A single-layer powder coating on plastered zinc goods combined with incorrect pre-treatment will, in the worst case, only last a few months!