Hot Dip Galvanising (HDG) 1.2.3

Preferred Surface Preparation Methods

The success of any coating system is related directly to the **degree of surface preparation** carried out and the coating used.

Prior to any surface preparation being carried out, the surface should be carefully inspected for any signs of fabrication and/or galvanising defects, as discussed in **Dulux Protective Coatings Tech Notes No. 1.2.2.** These MUST be rectified before any other preparation is commenced.

Galvanised Steel In-Shop

"Brush" or "Sweep" Abrasive Blast Cleaning

Brush (or "Sweep") **abrasive blast cleaning** is the preferred method of surface preparation for galvanising.

Surface Preparation Clause

1. Inspect the surface for any defects and rectify.
2. Remove all traces of surface contaminants such as oil, grease, dirt etc by washing with an alkali-based detergent (such as Gamlen CA-1) and fresh potable water. Ensure the surface is well rinsed with potable water.
3. Allow surface to dry, ensuring no further surface contamination occurs.
4. All surfaces to be painted are to be dry[1] abrasive[2] "Brush" blast cleaned to remove all surface corrosion (such as zinc corrosion products) and surface contamination (including surface post treatments), and lightly profile the surface with minimal reduction in galvanised coating thickness (no more than 10 microns). Visually the finished surface should show a dull appearance, which has a surface profile suitable for the adhesion of the coatings.
5. Remove all spent abrasive and residual dust by using compressed air, sweeping with a clean brush or vacuum cleaning prior to application of the coating.
6. The surface should be inspected prior to coating to ensure no contamination is present and no surface defects exist. If so, rectification is required before any coating is applied.
7. Apply initial coating before any surface deterioration occurs.

Galvanised Steel On-Site

As mentioned earlier, the preferred and more reliable method of surface preparation for galvanising is to "brush" abrasive blast clean, however this process in most cases is not practical in-situ. Where it is not possible to use the preferred method of “brush” abrasive blasting, other methods such as power tool cleaning and/or hand tool cleaning may be possible. **Power or hand tool cleaning** will require **greater care and effort** in the preparation of the surface and is unlikely to achieve the level of preparation that could be achieved by “brush” blasting. As previously stated the success of any coating system is related directly to the level of surface preparation.

[1] This method does not lend itself to be carried out in an "on site" or "in situ" situation. However in some such cases this method could be carried out using a "wet" abrasive blast process

[2] Care should be taken in the selection of the abrasive as to minimise the removal & damage of the zinc coating

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Power Tool Cleaning

When "brush" abrasive blast cleaning is **not available**, **power tool cleaning** generally produces an improved result compared to hand tool cleaning and so is generally the next best option to use.

Not all power-tool cleaning methods are equal, however. For example, power wire brush is not acceptable. Why? The steel wire brush leaves behind particles of steel on the surface, which then rusts. The brush also reduces the natural profile and polishes the surface.

Acceptable power tool cleaning methods using abrasive paper (silicon carbide, preferably) are as follows:

- Abrasion with orbital sander fitted with 80 – 100 grit abrasive paper.
- Abrasion with rotating disc sander fitted with 80 – 100 grit abrasive paper.
- Light abrasion with disc sander fitted with 60 - 80 grit abrasive paper. (Care MUST be taken to avoid excessive removal of the zinc layer.

Surface Preparation Clause

1. Inspect the surface for any defects and rectify
2. Remove all traces of surface contaminants such as oil, grease, dirt etc by washing with an alkali-based detergent (such as Gamlen CA-1) and fresh potable water. Ensure the surface is well rinsed with potable water.
3. Allow surface to dry, ensuring no further surface contamination occurs.
4. All surfaces to be painted are to be completely abraded by **power tool cleaning** and ensure all surface corrosion (such as zinc corrosion products) and surface contamination (including surface post treatments) is removed and a profile is imparted to the whole surface. Visually the finished surface should appear dull, which has a surface profile suitable for the adhesion of the coatings[3].
5. Remove all residual dust by using sweeping with a clean brush or vacuum cleaning prior to application of the coating.
6. The surface should be inspected prior to coating to ensure no contamination is present and no surface defects exist. If so, rectification is required before any coating is applied.
7. Apply initial coating before any surface deterioration occurs.

Hand Tool Cleaning

Generally **hand tool cleaning** is **not a preferred method** of preparation for galvanising due to the **difficulty** in achieving the necessary level of **consistency** and **thoroughness** required to ensure a successful result. While in some circumstances it may be the only available preparation method it is much less likely to provide the high level of cleanliness and uniformity for successful paint application and performance as compared to "brush" abrasive blasting.

[3] It is imperative that the method of surface preparation used imparts a mechanical profile to the surface but does not polish nor burnish the surface. A rule of thumb for a good surface preparation would be that the HDG surface has a consistent dull grey appearance.