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SUBJECT: PREPARATION AND PAINTING OF GALVANISED STEEL

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Introduction

Galvanising is a form of anti-corrosion treatment for steel. The process involves the steel being immersed into molten zinc at a temperature of 450ºC.

The benefits of this process are that it provides a corrosion resistant finish to the steel that can last up to 30 years depending on the quality if the galvanising process and the location of the finished item.

Once a steel section has been galvanised, it becomes very difficult to coat without correct preparation and use of suitable paint systems. If a galvanised surface is prepared correctly and coated with a high performance paint system, then the performance and durability of the finished item will be much better than either galvanising or painting alone.

Preparation of Galvanising

There are two methods of preparation of galvanised steel, one involving blast cleaning and the other involving the use of HMG Mordant T Wash.

Blast Cleaning

Blast cleaning gives the best preparation results, but it is very expensive and a special abrasive must be used to avoid removing too much zinc coating.

The abrasive grit used must be non-metallic and of a fine grade. The blast pressure used should be approximately 30psi at the nozzle and approximately 70psi at the compressor.

An even surface must be obtained giving a profile of not less than 20 microns, equating to Swedish Standard Sa2.5. An ideal profile would be between 20 and 30 microns.

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It is generally accepted that suitable paint systems can be applied directly onto blast cleaned and degreased galvanising, but it is always advised to use HMG Mordant T Wash before the application of a full paint system.

Blast cleaning must always be carried out where the galvanised steel is to be immersed into water or buried.

HMG Mordant T Wash

The surface of the galvanised steel must be degreased and free of contamination prior to the application of HMG Mordant T Wash to ensure that the treatment reaches all parts of the surface.

Apply HMG Mordant T Wash to the surface by brush, rag, roller or spray, but do not allow the Treatment to pool on the surface of the galvanising. The HMG Mordant T Wash must remain on the surface until the surface turns either very dark grey or preferably black.

The use of HMG Mordant T Wash can be seen as an indicator of surface contamination. If the surface does not turn either very dark grey or black, it can be assumed that there is a barrier between the Mordant wash and the galvanised steel. If this occurs, the contaminated surface must be degreased again, ensuring that all contamination is removed, and re-treated with HMG Mordant T Wash until the required reaction is achieved.

Degreasing Galvanised Steel

Degreasing galvanised steel should be done as thoroughly as with any other metallic surface to ensure that all oil, grease, wax, dirt and other foreign matter is completely removed. This will ensure that no loss of adhesion is encountered due to surface contamination.

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Degreasing can be done using HMG Prep Clean Solvents. Used with an absorbent cloth that must be changed regularly to ensure that contaminants are removed and not merely transferred to another part of the substrate.

Health and safety regulations must be adhered to when using these products.

If large areas of galvanised steel are to be degreased and subsequently coated, it is advised that the surfaces be cleaned prior to degreasing using a high pressure hot water detergent wash and then cleaned again with clean hot water through a high pressure wash. After the surface has been cleaned and thoroughly dried, HMG Prep Clean Solvents can then be used.

If any exposed galvanised surfaces are to come into contact with alkaline solutions, these solutions must be tested for strength, as alkaline above pH 10 may dissolve the Zinc coating on the surface of the steel, leaving the metal open to corrosion.

Paint systems for Galvanised Steel

Research and development projects have shown that the choice of resin system and Dry Film Thickness (DFT) have a major bearing on the overall performance of coatings applied to a galvanised surface.

Most alkyd systems containing drying oils and other coatings that may suffer from being applied to an alkaline substrate should not be specified.

High film thickness is not necessary over galvanised steel and over application of high performance coatings may result in a lack of adhesion.

Film thickness of a total surface coating system should not exceed 150 microns, except in the event of the finished object being in an immersion situation.

It is essential that any potential paint system be tested before application to galvanised steel, to ensure that adhesion and durability are satisfactory.