

PREPARATION FOR SPRAYING

Technical Bulletin 5.2.1

Sprayed coatings adhere to surfaces mainly by mechanical and physical means; in a few instances, metallurgical or chemical bonding may occur to a small degree. Whatever the mechanism of adhesion, it is vital that the surface to be sprayed is clean and adequately roughened. Over 80% of coating failures are due to poor or incorrect surface preparation.

Initial Inspection

Surfaces to be sprayed should be examined to ensure that previous coatings have been removed, that welds are properly dressed and that no cracks or other defects exist.

Methods of Preparation

Degreasing

Oil and grease must be removed before preparation begins. Without this, grit and tools will become contaminated and the oil will spread over the surface. Vapour degreasing is preferable, where this is not practicable, care must be taken to ensure that solvents do not simply re-distribute the contaminant thinly over the entire surface. Porous materials such as castings may require baking to ensure removal of oils.

Gritblasting

This is the most commonly used method of preparation. Sharp abrasive grit is projected towards the surface, either mechanically or by compressed air. Blasting cleans the surface, increases the surface area and provides a profile into which the surface will key. It is important that the grit is of the correct type and size, is not contaminated and does not contaminate the surface, For further information, see Technical Bulletin 5.2.2.

Rough Machining

This method is commonly applied to surfaces which are required to bear a thick deposit. It increases the surface area and provides a profile which will resist shearing between coating and substrate, For further information, see Technical Bulletin 5.2.4.

Bond Coating

Originally developed to provide a rough keying profile on ground steel surfaces which were too hard to grit blast, bond coats are now extensively used to enhance adhesion on mechanical and gritblasted surfaces. Laboratory tests indicate that bond coats not only increase bond strength, but will also give more consistent adhesion, For further information see Technical Bulletin 5.2.4.

Combined Techniques

The above methods may be combined to give superior coating adhesion.

Preheating

Preheating is rarely needed, but is essential for certain substrates, e.g. glass, to prevent thermal shock - usually no further preparation is needed in these cases. Preheating is advisable when spraying bores or internal diameters with high shrink materials or thick deposits. It is also recommended when environmental conditions are such that water, from burning gases or the atmosphere, may condense onto the workpiece during spraying. Care must be taken to avoid excessive temperatures 175°C (347°F) maximum. Surfaces should be re-gritblasted immediately after heating to remove the thin oxide film which will form.

Care of the Prepared Surface

Prepared surfaces are chemically and physically very active. They must not be allowed to deteriorate or become contaminated. They must be handled with care and not touched with naked hands, ropes or slings. Clean, lint-free cotton gloves or sheets should be used to protect prepared surfaces during handling.

Spraying must begin as soon as possible after preparation. The allowable time interval depends on the material and on ambient conditions. It should not exceed four hours: in hot or humid conditions the maximum allowable delay may be very much less. If longer delays occur, the surface must be re-prepared unless special storage facilities are available.

REFERENCE INFORMATION :-

5.2.2 Surface Preparation by Gritblast

5.2.4 Bond Coating