

ARCSPRAYED ANTI-SPARK COATINGS ON CRANE HOOKS

Application Data Sheet LE-FC-001



INTRODUCTION

In the Oil, Gas and Petro-Chemical Industries or the storage of munitions, there is always a very high risk of fire or explosion due to spark hazard. The sparks often being caused by friction between two steel components. By using the Metallisation Arcspray Process, it is possible to remove this major source of spark hazard by applying a thin layer of phosphor bronze onto the offending surface.

One of the most common components to be treated in this way is crane hooks, but it is also possible to apply this type of coating to steel fan housings or forklift truck forks.

Metalspraying is an economic method of producing a spark resistant surface on any standard manufactured steel component.

EQUIPMENT

Metallisation Arcspray 340 or 140E System

MATERIALS

Metallisation 15E Phosphor Bronze Arc Wire

Easily machinable material, very good for bearing surfaces and giving an excellent anti-spark coating.

METHOD

Cleaning

- (a) Steam clean if equipment available
- (b) Degrease by solvent vapour process, if material available
- (c) Check all surfaces are free from contamination and debris

Preliminary Inspection

Check for cracks or surface imperfections taking hooks below the manufacturers recommended operating tolerances.

Preparation

- (a) Mask surfaces adjacent to area requiring treatment with a heavy duty masking tape.
- (b) Thoroughly inspect for contamination prior to blasting
- (c) Thoroughly blast the area to be sprayed with clean chilled iron grit grade G24.
- (d) Ensure that areas to be treated are thoroughly blasted

A surface profile of between 75µm-100µm should be achieved. It is important that the surface to be sprayed should not come into contact with hands, oil, grease or other contaminants which may cause bond failure after spraying. Delays between blasting and spraying should not exceed 20 minutes.

APPLICATION OF SPRAYED COATING

Bonding and Simultaneous Spraying of 15E Phosphor Bronze

- (a) The Arcspray Equipment should be set up in accordance with the Metallisation Manual for the spraying of 15E Phosphor Bronze.
- (b) The area to be sprayed should be cleaned with a vacuum cleaner or a clean, dry air blast to remove any loose particles of dust or grit.
- (c) The first 75µ-100µm should be applied at close range (typically 100mm) and at lower air pressure to achieve a higher bond strength.
- (d) The coating should be applied evenly by rotating the component in front of the Arcspray Pistol, keeping the spraystream at as near as possible to 90° from the surface being treated.

Bond Coat

Spraying Parameters for Bond Spraying of 15E

- (i) Range: 100mm
- (ii) Nozzle Air Pressure: 3.7 bar (55 psi)
- (iii) Volts before spraying: 32-34V
- (iv) Volts during spraying: 28-30V
- (v) Current: 200A

Note: Parameters may differ in accordance with type and length of power cables and hoses being used.

Main Deposit

- (a) Apply 15E final deposit to specified required thickness (typically 0.40-0.50mm)
- (b) The coating should be applied evenly by rotating the component in front of the Arcspray pistol, keeping the spraystream at as near as possible 90° from the surface being treated.

Spraying Parameters Main Deposit 15E

- (i) Range: 150mm
- (ii) Nozzle Air Pressure: 4.3-4.6 bar (55 psi)
- (iii) Volts before spraying: 32-34V
- (iv) Volts during spraying: 30-32V
- (v) Current: 250A

De-Masking

- (a) Remove all masking tape
- (b) Remove all overspray taking care to prevent coating damage

Inspection

- (a) Check dimensions
- (b) Check for cracks, defects in sprayed coating, i.e. large pores or protrusions and loose particles.

Finishing

Under normal circumstances, it is possible to use the component in the as-sprayed condition without any problems but for cosmetic purposes, a light polish may be required.

 REFERENCE TECHNICAL BULLETIN N°S :-

5.2.2 Surface Preparation by Gritblasting

2.3.8 Metallisation Wire 15E Phosphor Bronze