

FLAMESPRAYED ANTI-SPARK COATINGS ON CRANE HOOKS

Application Data Sheet LE-FC-002



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 Flamespray 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 Mark 61 System

MATERIALS

Bond

Metallisation T405/1 Flamespray Bonding Material Exotherms during spraying which produces very high bond strength coatings.

Main Deposit

Metallisation 15E Phosphor Bronze Flamespray 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

- (a) The Flamespray Equipment should be set up in accordance with the Metallisation Manual for the spraying of T405/1 Flamespray Bonding Material.
- (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) Apply T405/1 Bond Coat to a depth of 75µ-100µm.
- (d) The coating should be applied evenly by rotating the component in front of the Flamespray Pistol, keeping the spraystream at as near as possible to 90° from the surface being treated.
- (e) Spraying Parameters Bond Coat
 - (i) Range: 100mm (4")
 - (ii) Nozzle Air Pressure: 3.37 bar (55 psi)
 - (iii) Oxygen Pressure: 2.0 bar (30 psi)
 - (iv) Acetylene Pressure: 1.02 bar (15 psi)

Flowmeter Settings Bond Coat

<u>Gas</u>	<u>Oxygen</u>
5.5	2.2

15E Main Deposit (to be applied immediately after bond coat)

- (a) The Flamespray Equipment should be set up in accordance with the Metallisation Manual for the spraying of 15E Phosphor Bronze Wire.
- (b) Apply 15E Main Deposit to specified required thickness (typically 0.40-0.50mm)
- (c) The coating should be applied evenly by rotating the component in front of the Flamespray Pistol keeping the spraystream at as near as possible to 90° from the surface being treated.
- (d) Spraying Parameters Main Deposit 15E
 - (i) Range: 15cm (6")
 - (ii) Nozzle Air Pressure: 4.45 bar (65 psi)
 - (iii) Oxygen Pressure: 1.5-1.8 bar (25-30 psi)
 - (iv) Acetylene Pressure: 1.02 bar (15 psi)

Flowmeter Settings Main Deposit 15E

<u>Gas</u>	<u>Oxygen</u>
5.5	2.25

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 :-

1.1.8 Metallisation IV Flowmeter

5.2.2 Surface Preparation by Gritblasting

2.3.8 Metallisation Wire 15E Phosphor Bronze

2.3.17 Metallisation Bonding Material T405/1