

# THE ARCSPRAY RECLAMATION OF BALL BEARING SEATS ON RUBBER COATED PRINT ROLLERS

## Application Data Sheet PP-DR-005

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### **INTRODUCTION**

The printing paper and packaging industries use a wide range of rubber coated steel rollers for applying ink, adhesive or the transportation of paper.

During use the bearings at each end of the rubber coated rollers will become impregnated with ink adhesive or other types of debris causing them to seize, inducing the roller shaft to rotate in the inner race destroying its fit.

By using the Metallisation Arcspray Process, it is possible to apply a thin coating of ichrome one step arc wire onto the bearing seat, bringing it back up to size at a small percentage of the replacement cost and enabling the rubber coating to remain intact.

The Metallisation Arcspray Deposits possess a higher degree of bond strength than most other sprayed deposits and the use of compressed air and electricity alone mean more economic coatings.

### **EQUIPMENT**

Metallisation 528E, 340 or 140E Arcspray

# MATERIALS

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## Metallisation 79E Ichrome One Step Arc Wire

Specially formulated material giving excellent adhesion to ferrous substrates when applied by the Arcspray process. The ideal material for one-step coatings where very thin machinable or feather-edge deposits are required.

The low shrink properties of 79E allow heavy deposits to be applied even on flat surfaces.

# METHOD

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## Cleaning

- (A) Remove bearings from roller ends
- (B) Degrease by solvent vapour process if equipment available
- (D) Inspect for cracking and longitudinal distortion

## Pre-Machining

- (A) Rough turn diameter being sprayed to a depth of 250µm (0.010") giving a parallel work surface

**Note:** On this type of application, 79E Ichrome One Step Arc Wire will only require a minimum thickness coating as it has excellent adhesion to ferrous substrates when applied by the Arcspray Process and the ability to be machined or ground to a feather edge.

## Cleaning

- (A) Degrease by solvent vapour process if available

## Preparation

- (A) Mask all machined surfaces adjacent to area requiring treatment with heavy duty masking tape
- (B) Thoroughly inspect for contamination prior to blasting
- (C) Thoroughly blast with clean no. 30-36 grade aluminium oxide grit
- (E) Ensure that area to be treated is thoroughly blasted.

# Application of Sprayed Coating

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## Masking

- (A) Apply Sprayshield masking fluid, using a small paint brush to all areas adjacent to the area being sprayed (small amounts of masking fluid on areas to be sprayed can be removed with emery cloth)
- (B) Check thoroughly area to be sprayed for contamination
- (C) **IMPORTANT:** Area to be sprayed should not come into contact with chains, rope slings, hands or any other form of contamination. Delays between blasting and spraying should not exceed 20 minutes.

## Spraying

Spraying should be as soon as possible after preparation and before any visible sign of deterioration occurs.

The roller should be mounted in a lathe chuck and rotated at a surface speed of not less than 18 metres/minute (60ft per minute).

**Note:** If rubber cover is in good condition and to be left intact during the spraying operation, it is essential that roller temperature is kept as low as possible during spraying and should not exceed 85°C.

## Bonding

- (A) The Arcspray Equipment should be set up in accordance with the Metallisation Manual for the spraying of 79E Ichrome One Step Arc Wire
- (B) The area to be sprayed should be cleaned with a suitable vacuum cleaner or clean air blast to remove any loose particles of grit
- (C) The first 75µm to 100µm should be applied in one single pass at a range of 75mm (3") with reduced air pressure to achieve high bond strength. The spraystream should be at 90° to the surface being treated and traversed by hand to give an even coating.

## Spraying Parameters Bond Coat

- |       |                         |                            |
|-------|-------------------------|----------------------------|
| (i)   | Range                   | 50 - 80mm (2" - 3")        |
| (ii)  | Nozzle air pressure     | 3 - 3.5 bar (43.5 - 50psi) |
| (iii) | Voltage before spraying | 38V                        |
| (iv)  | Voltage during spraying | 32 - 34V                   |
| (v)   | Amperage                | 150 amps max.              |

**NOTE:** Parameters may differ in accordance with length and type of powder cables and hoses being used.

### **Main Deposit 79E (To be applied immediately after bond coat)**

- (A) Apply 79E final deposit to the specified thickness including machining allowance.
- (B) The roller should be rotated to give a minimum surface speed of 18 metres/minute (60 feet per minute)
- (C) The Arcspray Pistol should be set so the spray stream is at 90° to the surface being coated and traversed at an even speed to give a deposit of not more than 0.13mm (0.005") per pass.
- (E) Using pre-set callipers check final sprayed deposit thickness to ensure there are no areas below finished sprayed diameter; including finishing allowance i.e. finish ground dimension plus 0.375mm - 0.5mm (0.015"-0.020").
- (F) Remove loose particles on surface with wire brush or clean air blast
- (G) Allow to cool thoroughly, preferably whilst rotating

### **Spraying Parameters - Main Deposit**

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|-------|-----------------------|--|
| (i)   | Range                 | 150 – 170mm (6" – 7")                          |
| (ii)  | Nozzle air pressure   | 4.5 - 5.0 bar (65 - 72 psi)                    |
| (iii) | Volts before spraying | 38V  |
| (iv)  | Volts during spraying | 32 - 34V                                       |
| (v)   | Amperage              | 200 – 350 amps, depending upon energiser used. |

### **Demasking**

- (A) Remove all masking tape.
- (B) Remove all overspray taking care to prevent coating damage
- (C) Remove all traces of Sprayshield with solvent

### **Finishing**

- (A) The roller ends may now be turned or ground back to original size and bearings fitted.

### **Grinding**

- (A) Grinding wheel type n° 46 grit blue V grade
- (B) Wet grind to final diameter taking light cuts using feed and speed in accordance with grinding machine manufacturer's instructions

### **Inspection**

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

## Finish Cleaning

- (A) Clean to remove any traces of grinding abrasive and loose particles
- (B) Wash with petroleum spirit/paraffin
- (C) Dry the surfaces with clean, disposable cloths or paper towel
- (D) Final inspection prior to packing

✦ REFERENCE TECHNICAL BULLETIN N°S :-

2.1.9 Metallisation 79E Ichrome One Step Arc Wire