

# Metallisation

Thermal spray equipment and consumables



## Equipment Specification

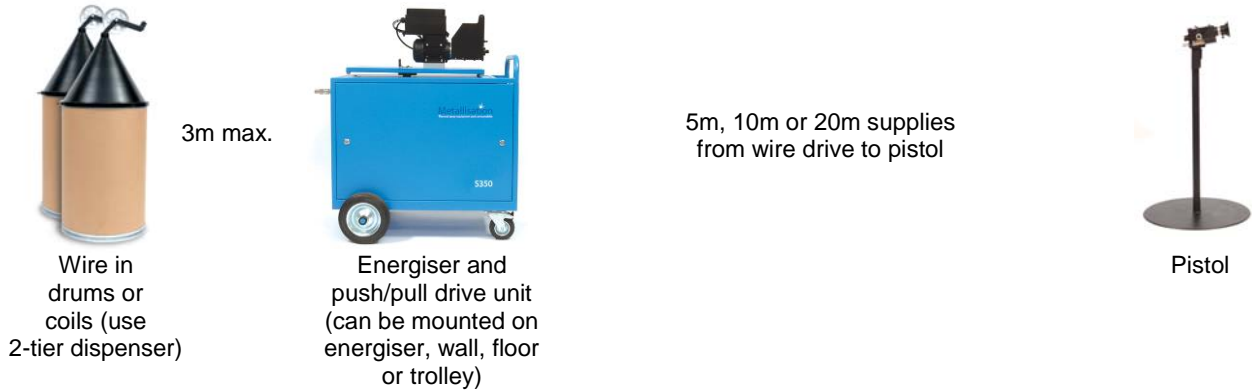
ARC140/S350-CL Arc Spray System

## TYPICAL SYSTEM CONFIGURATIONS

Pictured below is a range of typical system configurations. Variations of these configurations may be possible. Contact Metallisation to discuss your specific application requirements.

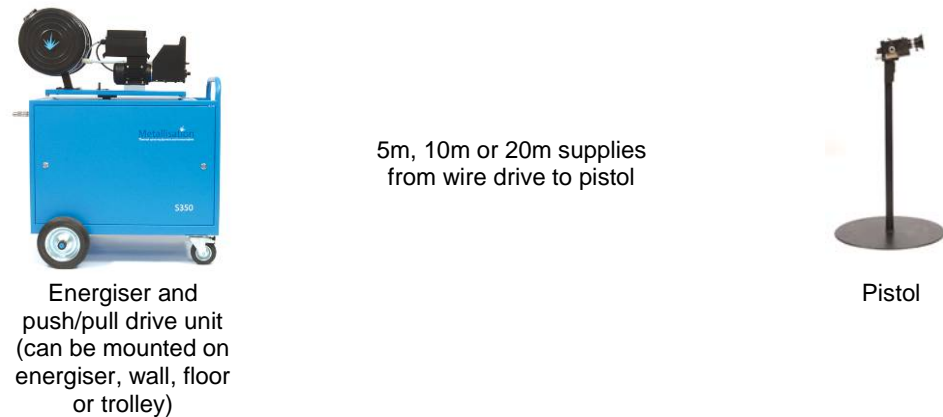
### STANDARD CONFIGURATION – PUSH/PULL WITH WIRE IN DRUMS

Most commonly used for in-house anti-corrosion applications where drums can easily be handled.



### STANDARD CONFIGURATION – PUSH/PULL WITH WIRE ON MIG REELS

Most commonly used for extended engineering applications or on-site anti-corrosion where the handling of drums is not easy



### STANDARD CONFIGURATION – PULL WITH WIRE ON MIG REELS

Most commonly used in engineering workshops where a compact footprint is useful and a 5m supplies package length is sufficient. Pull only is suitable for most application but for heavy usage, a 5m push/pull setup is recommended.



## EXTENDED CONFIGURATION – PUSH/PULL WITH WIRE ON MIG REELS

Most commonly used in hard to reach areas such as boilers where access for the energiser is limited.



Energiser

10m power, air and control supplies



Push/pull drive unit and MIG reels on power extension trolley with quick release connections

5m, 10m or 20m supplies from wire drive to pistol



Pistol

## EXTENDED CONFIGURATION – PUSH/PULL WITH WIRE IN DRUMS

Most commonly used for very long access applications where there is a benefit to remotely site the energiser away from the spraying area and maintain the benefit of having wire in drums.



Energiser

10m power, air and control supplies



Wire in drums or coils (use 2-tier wire Dispenser)

3m max. wire to drive



Push/pull drive unit on power extension trolley with quick release connections

5m, 10m or 20m supplies from wire drive to pistol



Pistol

## INTRODUCTION

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The following specification covers the standard range of ARC140/S350-CL Arcspray systems. For the specific offer, please refer to a detailed quotation and cross-reference the part numbers for each piece of equipment.

The new Metallisation ARC140/S350-CL (Closed Loop) is a unique blend of ability and innovation. We've taken our proven performer, the ARC140 pistol and drive system plus the sealed, switched voltage S350 Energiser and added Closed Loop current control. This enables the operator to set the spray current independent of wire type before starting the job, enabling easier setup and protection of the system from over-current. The control function is now controlled by a simple PLC which ensures improved reliability as less component parts are required. It also makes fault finding simple using a standard multimeter with the I/O for the PLC/

The S350CL energiser features sealed electronics for excellent reliability in the harshest of spray environments. The design also allows for multiple customer-specific packaging options for the wire drive and dispense. In one option, for example, the unit is neatly mounted on the energiser, leaving it free to swivel and follow the operator when spraying. Other options include floor or trolley mounting of the wire drive unit.

There is no motor in the pistol. Instead, the Arc140/S350-CL uses our patented 'Synchrodrive' system, where a single, sealed motor and flexible drive arrangement, powers a reliable, positive drive push/pull up to a length of 20m. This results in a long reach and lightweight flexibility of the pistol and supplies – and more comfortable and productive working conditions for the operator.

**Safety:** The equipment quoted will produce levels of noise, ultra violet light and dust that will require safety measures to be taken by those using the equipment. It may use pressurised gases. Careful consideration should also be given to the positioning of this equipment. It is the responsibility of the user to ensure that all appropriate measures are taken to ensure safe operation in accordance with local requirements. Metallisation will be pleased to advise as appropriate.

## BENEFITS

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### NEW S350CL ENERGISER

- Closed Loop Current Control – easy setup / reliable spray rate / over-current protection.
- Easy setup – set the spray current before starting to spray
- Over-current limit protection – protects all parts of spray system from over-current, regardless of wire type
- PLC control for improved reliability and ease of maintenance / fault finding
- PLC program supplied on an EPROM in case the PLC needs reprogramming
- 350 Amp continuous operation
- Easy access energiser panels & external fuse bank for reduced Mean Time to Repair (MTTR)
- Large 'Site Capable' wheels and rigid handle offers excellent portability on site and in workshop
- Sealed electrical control circuit - reduces dust ingress for added reliability
- Clear displays and large controls give ease of operation

### GENERAL BENEFITS

- Push/Pull system for a more stable arc ensuring quality coatings with consistent operation.
- Patented Flexible Drive system (Synchronised)
- 5 to 20 Meter supplies packages from the wire to the pistol for spraying accessibility.
- New, higher powered, sealed / lubed for life inverter drive motor.
- Air-cooled cables reduce pistol supply weight and operator fatigue.
- Lightweight and good balance for ease of pistol manoeuvrability.
- Suitable for Anti-corrosion and engineering wires, steels, copper and bronzes etc.
- Uses 1.6mm to 2.5mm wire sizes without changing feed rollers.
- Easy to maintain, less than 3 minutes to change contact tubes and nozzles. Contact tubes and nozzles do not require adjustment.
- Low running costs as compared with gas systems.
- Soft start for smooth start ups reducing electrical loading on components.
- Steel reinforced conduits for extended service life.
- Choice of coating textures
- Wire dispense packaging options allow drive unit to be compactly mounted on the energiser or separately on the floor / wall or site capable trolleys
- When wire drive is energiser mounted, the drive unit can rotate through 180° to follow the operator whilst spraying
- Power extension trolley designed to allow the energiser to be sited away from the spray job
- 10m extension supplies package as standard. Longer lengths possible for certain applications. Check with Metallisation for more details.
- Quick release power, air and control couplings allow quick assembly / disassembly of package

## ARC140 PISTOL

Part No.	Description
ARC140F-EV16	Arc140 Pistol for 1.6mm pull (Engineering)
ARC140F-CG16	Arc140 Pistol for 1.6mm push/pull (Engineering)
ARC140-CG16	Arc140 Pistol for 1.6mm wires (all wires)
ARC140-CG20	Arc140 Pistol for 2.0mm wires (all wires)
ARC140-CG23	Arc140 Pistol for 2.3mm wires (all wires)
ARC140-CG25	Arc140 Pistol for 2.5mm wires (all wires)



The Pistol has been designed to give consistent throughputs with high coating quality. It is a lightweight, heavy-duty unit with robust but compact construction.

### TECHNICAL OVERVIEW

- ✦ Designed and used in practice for anti-corrosion and engineering coatings.
- ✦ Standard 1.6, 2.0, 2.3 and 2.5mm wire size
- ✦ No requirement to change feed rollers when changing wire sizes.
- ✦ Quality coating.
- ✦ CG (constant geometry head) ensuring smooth feed, repeatable wire alignment and no adjustment of contact tubes / nozzle arrangement required.
- ✦ The Wire Drive Unit utilises intermeshed steel wormshaft and bronze wormwheels, being driven by a lightweight, flexible drive.
- ✦ Lightweight air-cooled conductor cables are fitted; which reduces the operator supported weight and further improves the overall balance of the Pistol.
- ✦ Closed arc for improved spray conditions and efficiency.
- ✦ Arc140F pistol includes flywheel for better stability at low spray rates with engineering wires

**Technical data**

Description	Characteristics
Maximum Current	<b>350 Amps</b>
Weight	<b>2.3 Kgs</b>
Weight – at a held height of 1.2 M	<b>4.5 Kgs – inc Cables and Hoses</b>
Width	<b>102mm</b>
Length	<b>457mm</b>
Height	<b>229mm</b>

**Typical performance figures for the Arc140 pistol**

Material	Wire Diameter	Throughput (kg/hr @ 350A)	Coverage m <sup>2</sup> /kg/100μ
Metallisation Wire 02E Zinc	2.0mm <b>2.3mm</b>	<b>36.0</b>	<b>0.82</b>
Metallisation Wire 01E/17E/25E Aluminium & Alloys	2.0mm <b>2.3mm</b>	<b>8.5</b>	<b>2.88</b>
Metallisation Wire 021E Zinc/Aluminium 85/15	2.0mm <b>2.3mm</b>	<b>31.0</b>	<b>1.00</b>
Metallisation Wire 05E Copper	<b>1.6mm</b>	<b>15(@300A)</b>	<b>0.91</b>
Metallisation Wire 30E,35E,45E, 55E,57E,60E 65E,80E,84E Steels	<b>1.6mm</b>	<b>13.6(@300A)</b>	<b>1.02</b>
Metallisation Wire 75E Nickel Aluminium	<b>1.6mm</b>	<b>16.4(@300A)</b>	<b>1.09</b>
Metallisation Wire 10E Aluminium Bronze	<b>1.6mm</b>	<b>13.6(@300A)</b>	<b>1.37</b>
Metallisation Wire 15E Phosphor Bronze	<b>1.6mm</b>	<b>19(@300A)</b>	<b>0.91</b>
Metallisation Wire 70E/71E Monel	<b>1.6mm</b>	<b>17.2(@300A)</b>	<b>1.02</b>
Metallisation Cored Wire 103T FeCrB	<b>1.6mm</b>	<b>7.2(@180A)</b>	<b>1.18</b>

Throughput is assumed to be independent of wire diameter. Preferred wire diameter shown in bold. All data provided is an approximation and is offered as guidance only as performance can vary depending on application and parameters.

## SUPPLIES PACKAGE

Part No.	Description
SUP140-EV5P	5M Supplies Package for S250/V300/S350 Energiser
SUP140-EV10P	10M Supplies Package for S250/V300/S350 Energiser
SUP140-EV20P	20M Supplies Package for S250/V300/S350 Energiser
SUP140-EX20P	Extension to 10M Supplies Package for S250/V300/S350 Energiser to make 20m
SUP08-EXT10L	10m Supplies pack for low power extension trolley (2008-PETL)

### STANDARD SUPPLIES PACKAGE INCLUDES



Power, Air and Control Cables



Flexible Drive Cable



Wire Conduits

### Technical overview

- ✦ 5 to 20 meter supplies packages for integration to S350 Energiser.
- ✦ Various wire conduits to suit different applications and wire dispensing methods.
- ✦ Steel reinforced conduits for extended service life.
- ✦ Lightweight air-cooled conductor cables reduce the operator supported weight & fatigue.
- ✦ Supply Package Extensions available, up to a maximum of 20m.
- ✦ Power cables fitted with twist and lock connectors into the energiser. Air hoses fitted with quick release fittings into the energiser.
- ✦ 7144 PTFE tubing is supplied when dispensing from drums to go between the drum dispensing cone and the wire drive unit.



**10M EXTENSION SUPPLIES (SUP06-EXT10L) INCLUDES**



Power cables  
2 off



Air hose  
1 off



Control cable  
1 off

**Technical overview**

- 10m Power Extension Trolley (PET) supplies package available as standard
- Up to 20m available for certain applications (check with Metallisation)
- Supplied with all fittings appropriate to connect to S350 Energiser and Power Extension Trolley
- Quick release power, air and control couplings allow quick assembly / disassembly of package

## ENERGISER

Part No.	Description
2227-PLC	S350 (ARC140) Energizer with closed loop current control
2227D-PLC	S350 (ARC140) Energizer with closed loop current control (220/380/440V)



This Energiser has been specifically designed for those users who are likely to spray a varying range of materials. Ideally suited for the Anti-corrosion industry and General Engineering Workshop.

### TECHNICAL OVERVIEW

- ✦ Closed Loop Current Control – easy setup / reliable spray rate / over-current protection
- ✦ PLC control for improved reliability and ease of maintenance / fault finding
- ✦ 350 Amp continuous operation (100% duty cycle)
- ✦ Specifically designed to suit only Arcspraying.
- ✦ Large 'Site Capable' wheels and rigid handle offers portability on site and in workshop
- ✦ Clear displays and large controls give ease of operation.
- ✦ Sealed electrical control circuit - reduces dust ingress for added reliability
- ✦ Easy access energiser panels & external fuse bank for reduced Mean Time to Repair (MTTR).
- ✦ Switched output voltage control
- ✦ 220V/380V/440V input supply options available (hard wired)

### S350 energiser specification

Description	Characteristics
Input Power Requirements	380/440V 50-60Hz 3 Phase
Optional Input Power	220V 50-60Hz 3 Phase
Fusing Required	28A/Phase (415V input)
Max Power Consumption	16 KVA
Duty	0-350 Amps @ 100% Duty Cycle
Output Voltage	0-50Vdc (nominal) Switched High/ Low & 1 – 5
Air Requirements	1.28m <sup>3</sup> /min @ 6bar (45cfm @ 90psi)
Weight	215 Kgs
Dimensions (W x L x H)	680mm x 900mm x 913mm

## WIRE DRIVE UNITS

Part No.	Description
ARC140-DUAEV-PLC	ARC140, inverter electric motor, push/pull drive unit
ARC140-DDAEV-PLC	ARC140, inverter electric motor, pull drive unit

### ARC140-DUAEV-PLC - ARC140, INVERTER ELECTRIC MOTOR, PUSH/PULL DRIVE UNIT



#### Technical overview

- ✦ Electric Inverter Drive Motor for smooth wire control.
- ✦ Includes inverter drive motor, gearbox, wire drive assembly and flexible drive connection.
- ✦ Push/pull mechanism positively drives the wire at the dispenser and also at the pistol via the flexible drive, ensuring constant speed at the drive unit and pistol
- ✦ Allows complete use of all the wire (unlike push only systems)

### ARC140-DDAEV-PLC - ARC140, INVERTER ELECTRIC MOTOR, PULL DRIVE UNIT



#### Technical overview:

- ✦ Electric Inverter Drive Motor for smooth wire control.
- ✦ Includes inverter drive motor and flexible drive connection.
- ✦ Pull mechanism positively drives the wire at the pistol via the flexible drive, ensuring controlled wire speed close to the point of arc
- ✦ Allows the complete use of the wire (unlike push only systems)
- ✦ Suitable for dispensing from MIG reels (most common) or coils

## WIRE DISPENSE

### WIRE DISPENSING CONES (PULLEY)

Part No.	Description
21252	Wire Dispensing Cones – variable position (2 required)
7144	PTFE Wire Conduits (Supplied by the meter)
6274/5	½” Clamp Pads for PTFE Tubing
2006-DSP	Wire Dispenser Support Plate



#### Technical overview:

The Metallisation wire dispensing cone offers the ability to conveniently dispense anti-corrosion wires from production packs (drums). The wire is neatly guided to a dispense point, then over the pulley to give a free passage of wire from the drum to pistol. Benefits include:

- ✦ Suitable for dispensing Zinc, Aluminium and Zinc/Aluminium wire
- ✦ Specifically designed to suit Arcspraying with the each drum being individually insulated from each other.
- ✦ Variable position clamp assembly allows the clamp to be rotated to give the smoothest wire transfer path from the drum to the pistol.
- ✦ Drums available in 250 Kg for Zinc, 200kg for Zinc/Aluminium and 60Kg for Aluminium.
- ✦ Needs to be used with a wire drive unit (not included in the wire dispensing cone package) and drive support plate (shown above)

## TWO TIER WIRE DISPENSER

Part No.	Description
2006-2T	S350/S700 2 Tier Wire Stand

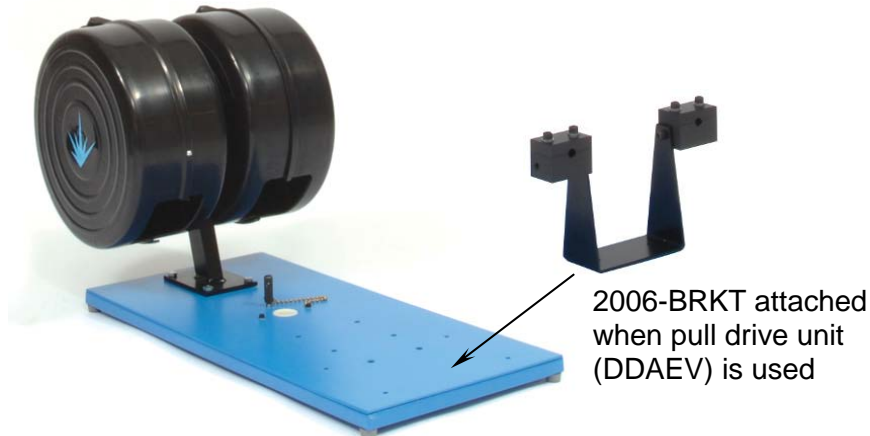


### Technical overview:

- ✔ Suitable for dispensing raw materials that are only available in coil form
- ✔ Wire straighter (for engineering wires) to ensure smooth wire feed to the pistol
- ✔ Specifically designed to suit Arcspraying with each coil being individually insulated
- ✔ Variable brake tension to ensure wire does not uncoil.
- ✔ Designed to ensure a smooth wire feed to the pistol.
- ✔ Rigid construction
- ✔ Lower tier swings out for Ease of loading and unloading of the Coils.
- ✔ Castors fitted to the bottom of the dispenser allowing excellent manoeuvrability.
- ✔ Shown above with the drive support plate (included in the 2 tier package)

## MIG REEL WIRE DISPENSER

Part No.	Description
2006-MIG	Wire Dispenser for MIG Reels
2006-BRKT	MIG Reel conduit bracket assy (DDA drive only)



### Technical overview

- ✦ Specifically designed to suit Arcspraying with the MIG reels being individually insulated from each other.
- ✦ Brake tension to ensure wire does not uncoil.
- ✦ MIG reel dust cover to ensure more consistent spraying.
- ✦ All common anti-corrosion materials and most engineering materials available on MIG reels.
- ✦ Designed to ensure a smooth wire feed to the pistol.
- ✦ The part number 2006-BRKT is required if the pull only version with the ARC140-DDAEV-PLC drive motor is used. The bracket will support the wire conduits to stop them from touching and includes the clamp pads to hold the suitable conduits.

**NON POWERED EXTENSION TROLLEY**

Part No.	Description
2006-NPET	Non Powered Extension Trolley



**Technical overview**

- ✦ Allows movement of the drive unit and wire dispense around the site independently of the energiser
- ✦ Braked castors

**POWER EXTENSION TROLLEY**

Part No.	Description
2008-PETL	ARC140 extension trolley for ARC140-CL systems



**Technical overview**

- ✦ As above but designed to allow the energiser to be sited further away from the spray job, offering greater access to the work area and protecting the energiser from the harsh site environment
- ✦ Quick release power, air and control couplings to allow quick assembly / disassembly of the spraying system

## TOOLKIT



Appropriate hand tools are supplied with the Arcspray system along with an operating manual and pistol case

## OPTIONS

### ARCBEAM

Part No.	Description
ARCBEAM(140)	Arcbeam System Kit for Arc140, 1.6mm wires
ARCBEAM14020	Arcbeam System Kit for Arc140, 2.0mm wires
ARCBEAM14023	Arcbeam System Kit for Arc140, 2.3mm wires



Also comes with 6m air hose to connect to energiser (can be longer on request)

### Technical overview

- ✦ Reduces Arcspray footprint by forming a cone of compressed air outside the spray stream.
- ✦ Finer Coatings
- ✦ Improved Deposit efficiency when spraying onto small components (less overspray).
- ✦ Less apparent porosity.
- ✦ Increased hardness due to higher oxide content

### Technical data

Description.	Characteristic
Maximum Current	350 Amps
Compressed Air	0.7m <sup>3</sup> / min @ 3.5 Bar



## ARC EXTENSIONS

Part No.	Description
ARC140EX500	Arcspray deflector extension 1.6mm, 500mm Long
ARC140EX1000	Arcspray deflector extension 1.6mm, 1000mm Long
ARC140EX1500	Arcspray deflector extension 1.6mm, 1500mm Long



Also comes with 6m air hose to connect to energiser (can be longer on request)

### Technical overview

- ✔ Suitable for internal bores (min Diameter 75mm) or recesses.
- ✔ Variable deflected spray from 0 to 75 Degrees

### Technical data

Description.	Characteristic
Maximum Current	200 Amps
Compressed Air	0.6m <sup>3</sup> / min @ 4.5 Bar

## REMOTE PENDANT

Part No.	Description
2227-PENDANT	Remote Pendant for Stop / Start / Spray and Wire Feed



Also comes with 6m control cable to connect to energiser (can be longer on request)

- ✔ Allows remote operation of the system for when pistol is mounted to a robot or manipulator.
- ✔ Connects into energiser in place of the pistol control cable
- ✔ Eyelet to support pendant.
- ✔ Stop / Start Button Control.
- ✔ Key switch for Spray and Wire Feed.
- ✔ Safety Key control to lock off Spray and Wire feed when not in use.



## NOTES

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## USEFUL INFORMATION

### MATERIAL USAGE

The table below shows approximate material throughput and coverage assuming a spray rate of 350A with 2.3mm diameter material.

MATERIAL	THROUGHPUT KG/HR @ 350 Amps	COVERAGE (KG/M <sup>2</sup> /100μ)
Metallisation Wire 02E Zinc	36.0	1.22
Metallisation Wire 01E/17E/25E Aluminium & Alloys	8.5	0.35
Metallisation Wire 21E Zinc/Aluminium 85/15	31.0	1.00

### TIME TO SPRAY

The table below shows the approximate time it would take to spray a given area with 100 μm coating thickness.

MATERIAL	AREA (m <sup>2</sup> @100μ)	TIME
Metallisation Wire 02E Zinc	1	2 mins
	10	20 mins
	100	3 hrs 20 mins
Metallisation Wire 01E/17E/25E Aluminium & Alloys	1	2.5 mins
	10	25 mins
	100	4 hrs 10 mins
Metallisation Wire 021E Zinc/Aluminium 85/15	1	2 mins
	10	20 mins
	100	3 hrs 20 mins

For thicker or thinner coatings, the spraying time varies in proportion to the thickness. For example, it takes approximately 2 minutes to spray a 1m<sup>2</sup> area of zinc at 100μ . It would take 4 minutes to spray the same area at 200μ.

The given times are approximate 'gun-on' spray times and do not make any allowance for stoppages, wire changes, part manipulation etc.

**Note:** The information given above is intended for guidance purpose only. Material usage and time taken will depend on a number of factors, these including the quality of the prepared substrate and the shape and size of the job.

# Metallisation

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