



WALLCOLMONOY



“Tight spray patterns and high spray rates to ***produce dense, wear resistant overlays***”

## Spraywelder™ System

# WALL COLMONOY'S HARD-SURFACING EQUIPMENT

The **Spraywelder™ System** offers tight spray patterns and high spray rates to produce dense, wear resistant overlays. The **Model J-3** is the culmination of more than 65 years of technical innovation following the invention of our first thermal spray gun.

The **Sprayweld™ Process** offers numerous advantages that favor its use in many applications:

- Adjustable equipment settings to suit your application
- High powder deposition efficiency minimises powder loss
- Close tolerance control
- Reduced finishing time
- Wide range of system alloys

In the Sprayweld™ Process, a powdered alloy is thermal sprayed onto a part and subsequently fused to the base metal by a heat source. This creates a smooth, nonporous, metallurgically bonded overlay, producing a fused coating within 0.25 mm (0.01”) of the required finished dimension.



Model J-3 Spraywelder™ System

# Spraywelder™ System

## THE 5-STEP PROCESS:

### 1. SURFACE PREPARATION

The surface to be overlaid should be clean and free of oil or oxides. Surface preparation involves the following:

- Degreasing
- Undercutting
- Grit blasting

Our Microbraz® Green Stop-Off™ may be applied to prevent thermal spray materials from bonding to adjacent surface areas.

### 2. PREHEATING

Preheating temperature varies with the type of base metals:

- Mild steels (<0.25% Carbon): <149°C (<300°F)
- Austenitic stainless steel (300 series): 316 - 371°C (600° - 700°F)
- Martensitic steel (4340 and 400 series): 260° - 371°C (500° - 700°F)

### 3. SPRAYING

To produce a uniform, mechanically bonded overlay, the following resources are needed:

- Spraywelder™ including pistol, panel, and hoses
- Spraywelder™ grade powder
- Oxy-acetylene or oxy-propylene gases
- Compressed air
- Variable-speed turning device (as a lathe)
- Clean, dry air

### 4. FUSING

The objective of fusing is to transform the mechanical bond created in the spraying operation into a metallurgical, or welded bond. Most common methods include oxy-fuel torch, controlled atmosphere furnace or induction. The Colmonoy® and Wallex® overlay and base metal surface must reach a temperature between 982 - 1138°C (1800 - 2080°F) (based on powder selection), at which point the overlay will wet and bond with the base surface without running or losing its shape.

### 5. FINISHING

Wall Colmonoy's Spraywelder™ powders are easily finished by grinding or machining. For finishing recommendations, request a technical data sheet.

## EASY TO OPERATE, SAFE, RELIABLE & VERSATILE WITH BUILT-IN EFFICIENCY:

### Easy to Operate

- System control panel may be positioned up to 3 meters (10 feet) away
- All flow adjustments are located on the panel
- Quick-Release, production-sized 9 kg (20 lb) detachable hopper
- Compressed air circuit is used to carry powder to torch (expensive inert gases not required)
- Powder feeder uses a unique carburetor to mix air and powder so that no vibrator is needed
- Lightweight pistol is compact and operates at any angle

### Safe

Dual check valves prevent back flow in either the oxygen or fuel-gas supply hoses.

### Reliable

The J-3 Spraywelder™ System is the culmination of over 65 years of technical innovation. It was designed from our vast field experience, built for years of daily use with a proven record of success.

### Versatile

For use with a wide range of powdered alloys, including Spraywelder™ Powders (optimised for use with the Spraywelder™), other Spray & Fuse alloys and metallizing powders, such as SoloCoat™ One-Step Self-Bonding Thermal Spray Powders.

### High Spray Rates

Up to 8 kg (19 lbs)/hr with standard model, and 14 kg (30 lbs)/hr with high-output unit.

### Tight spray patterns



98% of the spray powder hits the part within a 19 mm (3/4 in) target when using the D nozzle at 4.5-5.4 kg (10-12) lbs/hr.

### Dense coatings

Flame energy of up to 92,000 BTUs and increased target efficiency deliver hot metal spray particles to the base metal. The final result is a strong, dense overlay.



## EQUIPMENT

### The Spraywelder™ System includes:

- Pistol and one selected tip
- Tool post holder
- Panel with hopper, carburetor, gauges and flow meters for regulating powder, air, oxygen and fuel-gas rates
- Air filter/regulator with gauge and fitting
- Complete hose kit with dual check valves
- Operating manual, including parameter charts for spraying different powders
- Tool and parts kit (wrenches, tip cleaners, o-rings, etc.)



1. Fan Spray Adaptor



2. Pistol Extension



3. Equipment Group

## ACCESSORIES

### 1. Fan Spray Adapter

Mounts easily to the Spraywelder™ pistol and provides fast, efficient coverage of large areas. The fan spray's 1 x 2-1/2 inch oval-shaped spray pattern eliminates wavy build-up and reduces the number of passes required to coat large, flat or bowed surfaces.

### 2. Pistol Extension

Available in lengths of 18 to 40 inches (457-1016 mm) for spraying inner diameters, as small as 5". Features include a 90-degree head and a water- or air-cooled design.

### 3. Equipment Group

Includes all tools needed to complete the setup of a Spraywelder™ System station (except air, oxygen and acetylene):

- Two-stage oxygen and acetylene regulators
- Fusing torch butt
- Oxygen and acetylene Y-connectors
- Heating tips, type II (sizes 8, 12 and 15)
- Oxy-fuel twin gas supply hose, 15 ft (5 m)
- Friction lighter
- Temperature crayons (95°, 260°, and 345° C)
- Microbraz® Green Stop-Off™
- Tube of cylinder grease (for gas valve camshaft)

## FOR SMOOTH, LONG-WEARING OVERLAYS

### COLMONOY® (nickel-based)

ALLOY	HRC (NOMINAL)	FUSING TEMP °C (°F)	DESCRIPTION
<b>4</b>	37	1050 (1925)	<b>Premium Nickel-Chromium-Boron Alloys</b> Crushed powders have more surface area than spherical atomised powders. They heat and fuse faster, and form denser mechanical bonds.
<b>5</b>	48	1025 (1880)	
<b>6</b>	58	1030 (1890)	
<b>72</b>	58	1060 (1940)	<b>High Wearing Tungsten Alloys</b> Atomised nickel-based alloys containing chromium carbides and alloyed tungsten for resistance to high abrasion, heat and fretting corrosion.
<b>88</b>	60	1100 (2020)	
<b>42</b>	37	980 (1800)	<b>Corrosion-Resistant Alloys</b> Atomised nickel-based alloys containing chromium for increased corrosion and oxidation resistance combined with borides and carbides for enhanced wear and abrasion resistance.
<b>52</b>	48	1065 (1950)	
<b>62</b>	58	1025 (1875)	
<b>69</b>	60	1030 (1890)	
<b>730</b>	60	1070 (1960)	<b>Composite Alloys</b> Uniquely formulated nickel-based composites containing tungsten carbide for resistance to sliding abrasion.
<b>75</b>	60	950 (1065)	
<b>750</b>	60	1070 (1960)	

### WALLEX® (cobalt-based)

<b>42</b>	44	1140 (2080)	<b>Cobalt Alloys</b> Cobalt-based nickel-chromium alloys for good metal-to-metal wear resistance under corrosive and high-heat conditions.
<b>50</b>	60	1095 (2000)	
<b>55</b>	58 min	1110 (2030)	<b>Composite Alloy</b> Uniquely formulated cobalt-based composite containing tungsten carbide for resistance to sliding abrasion.

Colmonoy® and Wallex® Surfacing Alloy powders may be used with many popular thermal spray systems. Please specify thermal spray system when ordering powder. For a complete list of available alloys and properties, request the Surfacing Alloys Selector Chart.

For more information visit [www.spraywelder.com](http://www.spraywelder.com)



**WALLCOLMONOY**

**Wall Colmonoy. Making Metals Work Harder Since 1938.**

Alloy Industrial Estate | Pontardawe Swansea Wales (U.K.) SA8 4HL | Tel +44 (0) 1792 862287 | Fax +44 (0) 1792 869474 | Web [www.wallcolmonoy.co.uk](http://www.wallcolmonoy.co.uk)

CINCINNATI | LOS LUNAS | OKLAHOMA CITY | PUNE (INDIA) | WALES (U.K.) | WINDSOR (CANADA)

*The information provided herein is given as a guideline to follow. It is the responsibility of the end user to establish the process information most suitable for their specific application(s).*

*Wall Colmonoy Limited (UK) assumes no responsibility for failure due to misuse or improper application, or for any incidental damages arising out of the use of this material or process.*