



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 minimizes 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

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 Nicrobraz® 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 (optimized 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.

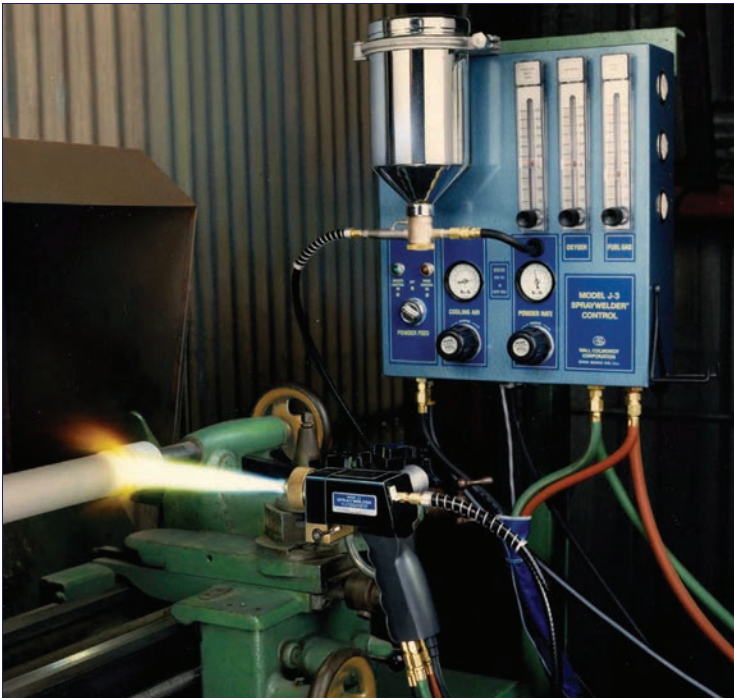
Tight spray patterns



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	HARDNESS HRC	FUSING TEMP °C (°F)	DESCRIPTION
4	35-40	1050 (1925)	Premium Nickel-Chromium-Boron Alloys Crushed powders have more surface area than spherical atomized powders. They heat and fuse faster, and form denser bonds.
45	43-46	1045 (1910)	
5	45-50	1025 (1880)	
56	50-55	1030 (1885)	
6	56-63	1030 (1890)	
84	40-45	1095 (2000)	
72	57-62	1060 (1940)	
88	59-64	1100 (2020)	
98	55-60	1015 (1860)	Corrosion-Resistant Alloys Atomized nickel-based alloys with chromium and molybdenum for increased corrosion and oxidation resistance.
69SC	58-63	1030 (1890)	
42SA	35-40	980 (1800)	Nickel-Chromium-Boron Alloys Atomized nickel-based alloys containing chromium carbides for abrasion and corrosion resistance.
52SA	45-50	1065 (1950)	
6001	56-62	1065 (1950)	
62SA	56-63	1025 (1875)	
6200	57-63	1060 (1940)	Composite Alloys Uniquely formulated nickel-based composites containing tungsten carbide for resistance to sliding abrasion.
635	57-63	1055 (1930)	
730	57-63	1060 (1940)	
75	57-63	1065 (1950)	
750	57-63	1070 (1960)	
64	58 min	1065 (1950)	

WALLEX™ (cobalt-based)

40	41-46	1140 (2080)	Cobalt Alloys Cobalt-based nickel-chromium alloys for good metal-to-metal wear resistance under corrosive and high-heat conditions.
45	45-50	1075 (1965)	
50	56-61	1095 (2000)	
55	58 min	1110 (2030)	Composite Alloy 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



WALLCOLMONOY

Wall Colmonoy. 80 Years of Making Metals Work Harder.

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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 Corporation 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.