

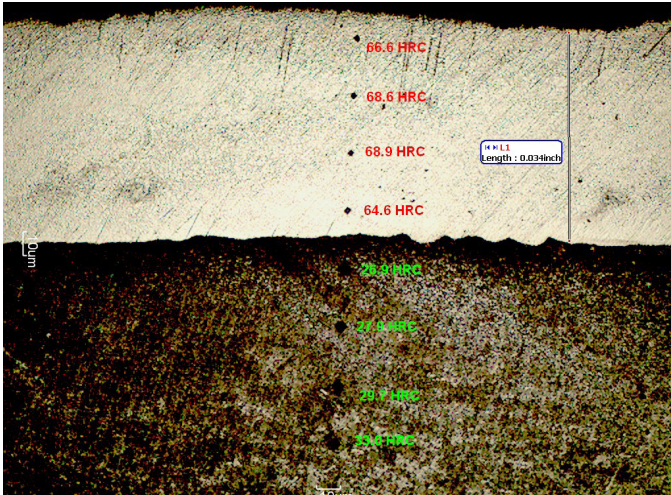


**WALLCOLMONOY**  
SURFACING ALLOYS

**WALLCOLMONOY CORP. (USA)**  
TECHNICAL DATA SHEET

# Colmonoy® Wallex™ Alloys for Laser Cladding

Surfacing Powders and Wire for  
the Protection and Renovation of  
Critical Industrial Components



Photomicrograph (30x) of Colmonoy 88 laser clad overlay hardness  
(photo courtesy of Joining Technologies)

## Description:

Wall Colmonoy's range of Colmonoy® and Wallex™ surfacing powders and wire alloys dedicated to laser cladding are used for the protection and renovation of critical industrial components.

Laser cladding offers an extremely precise method of applying a clad overlay with the lowest possible dilution of any conventional welding process. This means high first pass hardnesses are possible. Sound welds with virtually zero porosity can be made with precision control which minimizes the amount of finishing required.

The alloys are used within the Steel, Oil & Gas, Power Generation, Glass Container, Aerospace and many other industries. Some applications include:

### Steel Industry

- Continuous casting rolls
- Transporter rollers in hot mills, pickle lines and cold mills
- Edge trimming knives

### Oil & Gas

- Drill stabilizers, drill strings, drill Bits
- Gate valves and seats
- Reamers
- Riser pins
- Rods, couplings
- Stab pins, stab connectors

### Power Generation

- Boiler tubes and panels
- Industrial fan blades
- Coal nozzles

### Glass Container

- Plungers

### Aerospace

- Turbine blades and repair

## Forms Available:

Wall Colmonoy's Laser Clad alloys are supplied as 150µm-53µm (100-270 mesh size). Other sizes available upon request.

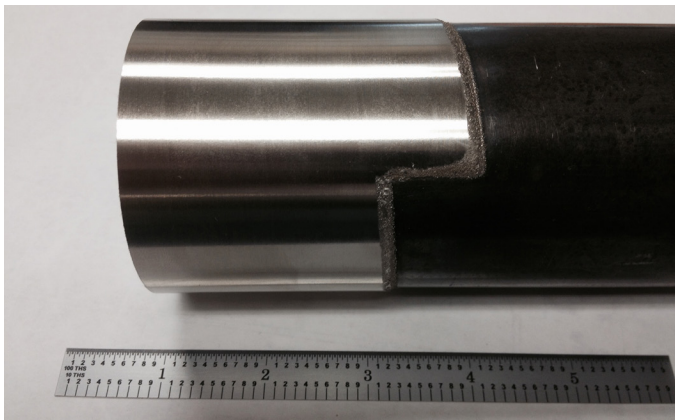


Wallex 40 being laser clad on a side trimmer knife in steel strip production

## Colmonoy 125L, 133L, 133L - W2C:

Colmonoy 125L and 133L are designed for use in the Steel Industry. Colmonoy 125L is used to prolong the lifetime of steel ingot transporter rollers in hot mills, pickle lines and cold mills. The alloy may be directly applied as a hard-surface protective coating or as a crack reducing "butter layer" between roller and a harder cladding alloy. Reduces requirement for pre-heat before welding.

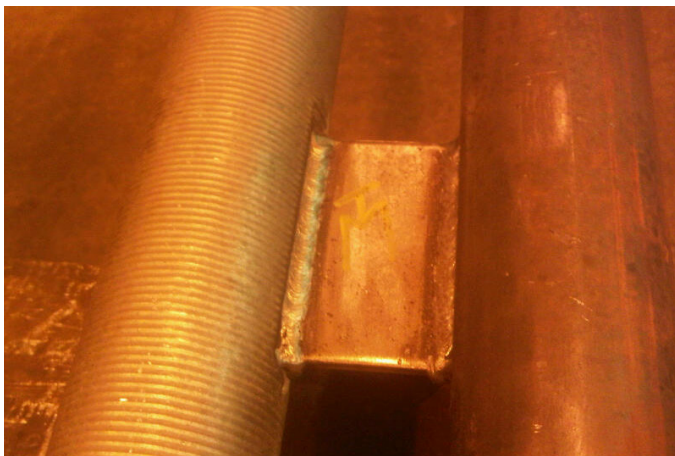
Colmonoy 133L is used to protect steel ingot transporter rollers in hot mills, pickle lines and cold mills. Colmonoy 133L is used to extend the lifetime of ST275 steel rollers. Colmonoy 133L-W2C includes tungsten carbide for increased abrasion resistance.



*Colmonoy 133L Laser Cladding a steel pipe*

## Colmonoy 88L:

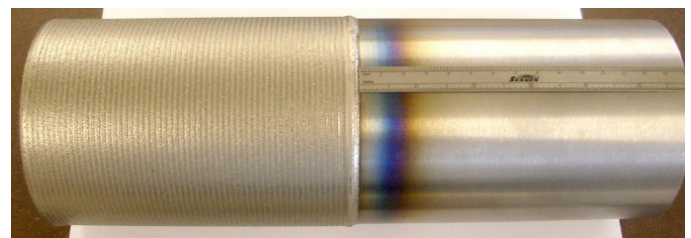
Colmonoy 88L is used within the Power Generation industry on waste incineration equipment including boiler tubes and panels. Colmonoy 88 is available as powder and cored wire. See Colmonoy 88 Alloys TDS for more information.



*Close-up of Colmonoy 88 Laser clad on boiler tube*

## Spherical Cast Carbide:

Colmonoy Type 9.175 B is a spherical cast tungsten carbide particulate used to blend with a variety of other Wall Colmonoy powders to create a two part hard facing powder consisting of ultra hard particles evenly distributed in a ductile matrix. Wall Colmonoy can offer a number of variations of matrix hardness values from 20Rc to 60Rc plus a variety of tungsten carbide ratios from 30% to 60%. These products are ideally suited for the protection of industrial tools and equipment subject to severe fine to large particle abrasion. Typical applications can include: drilling tools for the off shore industry; augers; ground engaging tools; mixers and paddles for brickmaking. Other grades of tungsten carbide such as cast and crushed are available upon request.



*Colmonoy 133P2 Single Laser Clad Layer on Steel Roll*



*Colmonoy 133P2 Double Laser Clad Layer on Steel Roll*

## Safety:

When handling powders do so in such a way to avoid creating a dust cloud; avoid inhalation or contact with skin or eyes. Conduct coating operations in a properly ventilated area. For more information, consult 11.8 (Ventilation), *AWS Thermal Spraying: Practice, Theory, and Application* available from American Welding Society, OSHA Safety and Health Standards available from U.S. Government Printing Office, and the manufacturer's Material Safety Data Sheet (MSDS).

**Warning:** Laser cladding processes may use high power levels when applying this product. Follow your employers safety procedures and the equipment manufacturers instructions when laser cladding. Refer to AISI Z136.1 "Safe use of Lasers" and consult your employers Laser Safety Officer regarding the proper use of personal protective equipment.

## Storage Requirements:

Keep Laser Cladding powders in a closed container and protect against moisture pick-up. The containers should be tumbled before using the powder. If moisture is absorbed from the atmosphere, it can be removed and flowability can be restored by drying the powder, with the seal removed and lid loosened, at 150 - 200°F (66 - 93°C) for two hours prior to use.

*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 (USA) assumes no responsibility for failure due to misuse or improper application of this product, or for any incidental damages arising out of the use of this material.*

updated January 2015

# Wall Colmonoy Alloys for Laser Cladding

## Colmonoy®

(nickel-based)

Alloy	Nominal Composition - % By Weight									Hardness	Industry / Application
	C	Cr	B	Si	Fe	Ni	Mo	W	Others	HRC	
276	0.12	15	-	0.5	3.5	Bal	16	4.2	Mn: 1.2 V: 0.6	25	Marine, Aerospace, processing, nuclear reactors, control equipment
125L	-	-	1.8	2.5	0.4	Bal	-	-	-	30	Steel Industry - Ingot transporter rollers in hot mills, pickle lines and cold mills
133L	0.3	5.8	1.0	4.1	1.5	Bal	-	-	<0.5	36	
133L-W2C	2.5	2.5	0.6	1.8	0.8	Bal	-	57.4	-	36 (Matrix)	Same as above with the addition of tungsten carbide where higher abrasion resistance is required
52M	0.4	13	2.5	3.2	4.5	Bal	-	-	-	47	Oil & Gas, Petroleum - pump shafts, drill stabilisers, Power Generation - super heaters, boiler tubes and panels
88L	0.7	15.0	3.0	4.0	3.5	Bal	-	15.5	-	59-64	Power Generation - superheaters, boiler tubes and panels

## Wallex™

(cobalt-based)

40	0.6	16.2	2.0	1.9	-	23.5	-	7.6	Co: Bal	40 - 47	Sprayable alternative to Wallex 6, having the self-fluxing attribute which enables coatings to be fused, even in air. Good hard-surfacing choice where chemical or atmospheric corrosion is accompanied by metal on metal wear and/or impact.
45	0.65	17.0	2.4	2.1	2.0	22.0	-	8.2	Co: Bal	45 - 50	Wallex 45 is softer than Wallex 50, therefore giving it better impact resistance. Wallex 45 is a good hard surfacing choice in situations where the hazard of chemical or atmospheric corrosion is accompanied by metal-to-metal wear and/or impact.
50	0.8	19.0	3.4	2.8	-	18.0	-	10.0	Co: Bal	56 - 61	Wallex 50 is a self-fluxing, sprayable cobalt alloy powder with excellent corrosion and abrasion resistance. It is considered a suitable alternative to Wallex 1.