



Colmonoy® Bare Rods

Colmonoy® Bare Rods:

Nickel-Based Sintered and Continuous Cast Rods

Description:

Colmonoy® 6, 56, 5, 4, 88, 22, 24, 227 and ColTung™ 1 are offered in rod forms. Two types of rods are available – sintered and continuous cast. Sintered rods are square and are somewhat porous. They are generally preferred for application with oxy-acetylene torches. Colmonoy® 88 and ColTung™ 1 are made as sintered. Also 1/8" rods of Colmonoy® 5, 56, and 6 are sintered.

Continuous cast rods are cast from molten hard surfacing alloy through dies and therefore retain their circular cross-section throughout. These rods are also fully dense and are preferred in GTAW (TIG) welding application. They can be gas welded as well.

Dimensions:

The rods are manufactured in two different lengths: 18" for the sintered and 30-39" for continuous cast. Minimum order size is 5 kg. See table on page 3 for available sizes.

Typical Uses:

Rods have proven successful in many different applications within a vast number of industries. In the automotive industry, rods are successful on camshaft lobes in combustion engines, camshafts, on motorcycles and engine valves and seats. They are also used in many high performance racing applications. In the paper & pulp industry, rods have been successful on hammers, pulp beater blades, and log haul chutes and chains. In the plastics

industry, rods have been successfully used on Banbury mixers and extrusion screws to increase abrasion resistance.

Advantages:

Rods have many advantages over other forms of nickel-based alloys. First, rods do not need any special equipment. You can apply them with an oxyacetylene torch or TIG.

This allows you to use the entire rod for coating and have more control while applying it.

Third, there is an isolated heating condition since you only have to heat the part that is being coated. This is preferred for some applications.

Application with the Oxyacetylene Torch (OAW):

The surface to be overlaid must be clean; this is achieved most effectively by grinding. Use a torch flame adjusted to the appropriate level for the specific alloy (refer to table on back). To prevent shrink cracks on heavy sections, preheat to at least 600°F (315°C). Apply alloy using a brazing technique (tinning the overlay to the surface). Do not puddle with base metal. Use Colmonoy® Flux 6-20 on all cast irons, and on any metals containing more than 2% chromium, or any aluminum or titanium. This is recommended for use to enhance the wettability of the alloys to the base metal.

Application with the GTAW (TIG):

Bare rod can be applied by GTAW (TIG) welding (DCEN, electrode negative). Use pure, dry (4°C (40°F) dew point) argon shielding gas and 1% thoriated tungsten electrodes. The surface to be overlaid must be clean. Preheat steels as necessary to maintain adequate weld crater. Always preheat when carbon content of base metal is more than 0.25%, however, do not exceed 370°C (700°F). Move rod in an elliptical pattern, depositing beads 1-1/2 to 2 times the rod diameter and overlapping them. Two layers should be made. The part must be slow-cooled, or even postheated, to prevent the overlay from cracking. For best results, use continuous-cast rod.

Base Metals that can be Overlaid:

Rods can be applied over many base metals including mild / medium carbon steels, low alloy steels, stainless steels and nickel- and cobalt-based alloys.

Safety:

Welders must wear clothing to protect them from being burned. Welding arcs are very intense and can cause burns to skin and eyes with just a few minutes of exposure. Wool clothing is suggested over synthetics (which should never be worn because it melts when exposed to extreme heat) or cotton, unless it is specially treated for fire protection.

Other protective wear for heavy work or especially hazardous situations includes: flame-resistant suits, aprons, leggings, leather sleeves/shoulder capes, and caps worn under your helmet.

Heavy, flame-resistant gloves, such as leather, should always be worn to protect your hands from burns, cuts, and scratches. In addition, as long as they are dry and in good condition, they will offer some insulation against electric shock.

ARC RAYS can burn.

Wear eye, ear and body protection. Be aware of fumes and gases when welding. Keep your head out of the fumes. You need to minimize your exposure. Work in as ventilated an area as possible.

Read: AWS ANSI Z49.1, Safety in Welding, Cutting and Allied Processes. OSHA Safety & Health Standards are available at all government printing offices. Read and understand the manufacturer's Safety Data Sheet (SDS), which is on file with your employer, before using the product(s).

Warning: Gas torches used for application of this product utilize compressed gases including oxygen and a flammable fuel gas. Follow your employer's safety procedures when using and handling these gases and equipment. Infrared and Ultraviolet radiation (light) emitted from flame and hot metal can injure eyes and burn skin. Electric shock can kill. Use appropriate personal protective equipment.

Storage Requirements:

Keep rods in a closed container and protect against dirt, oil, and grease. Store in a rod oven using the manufacturer's recommendations.

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 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.

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Colmonoy® Rod	Nominal Composition - % By Weight									Hardness HRC
	C	Cr	B	Si	Fe	Ni	Mo	W	Others	
6	0.6	14.0	3.0	4.2	4.0	Bal	-	-	-	56-63
56	0.5	13.0	2.6	3.8	4.0	Bal	-	-	-	50-55
5	0.5	13.8	2.3	3.4	4.0	Bal	-	-	-	45-50
4	0.4	10.0	2.2	2.3	2.5	Bal	-	-	-	35-40
88	0.6	15.0	3.0	4.0	3.5	Bal	-	15.5	-	59-64
22	-	-	1.0	3.7	-	Bal	-	-	-	28-33
24	-	-	1.5	2.5	-	Bal	-	-	-	16-23
227	-	-	0.9	2.7	-	Bal	-	-	P: 2.1	22-27
ColTung™ 1	1.8	7.0	1.9	2.7	2.2	Bal	-	38.5	Co: 0.1	59-64

Available Types and Sizes

Rod	Size	Type
Colmonoy® 6	1/8 in (3.2 mm)	Nickel Sintered Rod
	3/16 in (4.8 mm)	
	1/4 in (6.4 mm)	Nickel Continuous Cast Rod
	3/16 in (4.8 mm)	
	5/16 in (8.0 mm)	
	5/32 in (4.0 mm)	
Colmonoy® 56	1/4 in (6.4 mm)	Nickel Continuous Cast Rod
	3/16 in (4.8 mm)	
	5/16 in (8.0 mm)	
	5/32 in (4.0 mm)	
Colmonoy® 5	1/8 in (3.2 mm)	Nickel Sintered Rod
	3/16 in (4.8 mm)	Nickel Continuous Cast Rod
	1/4 in (6.4 mm)	
	3/16 in (4.8 mm)	
	5/16 in (8.0 mm)	
	5/32 in (4.0 mm)	
Colmonoy® 4	1/8 in (3.2 mm)	Nickel Sintered Rod
	1/8 in (3.2 mm)	Nickel Continuous Cast Rod
	3/16 in (4.8 mm)	
	5/16 in (8.0 mm)	
	5/32 in (4.0 mm)	
Colmonoy® 88	1/4 in (6.4 mm)	Nickel Sintered Rod
	1/8 in (3.2 mm)	
	3/16 in (4.8 mm)	
	5/32 in (4.0 mm)	
Colmonoy® 22	1/8 in (3.2 mm)	Nickel Sintered Rod
	3/16 in (4.8 mm)	
Colmonoy® 24	1/8 in (3.2 mm)	Nickel Sintered Rod
Colmonoy® 227	1/8 in (3.2 mm)	Nickel Sintered Rod
	3/16 in (4.8 mm)	
ColTung™ 1	1/4 in (6.4 mm)	Nickel Sintered Rod
	1/8 in (3.2 mm)	
	3/16 in (4.8 mm)	
	5/16 in (8.0 mm)	
	5/32 in (4.0 mm)	