



Colmonoy® 4001-50 Wire:

Nickel-Based Metal
Cored Wire With Tungsten
Carbide for Improved Wear
Resistance

Description:

Colmonoy® 4001-50 wire is available in 1.6 mm (1/16") diameter wire for application by the GMAW (MIG) welding process. This is a metal cored wire. The wire deposits consist of a tough nickel base matrix and exhibit good crack resistance. For maximum wear resistance a two pass deposition technique should be used to minimize base metal dilution and solutioning of the tungsten carbide component.

Nominal Composition - % by Weight:

Alloy	B	C	Cr	Si	WC	Ni
4001-50	0.5	3.0	1.0	2.5	50.0	Bal

Matrix Hardness	HRC 40
Carbide Hardness	>2000 Vickers

Welding Parameters (Starting Point):

Voltage	20-23 volts
Amperage	210-250 amps
Shielding Gas	100% Ar or 75% Ar / 25% [CO ₂]
Welding Position	Horizontal
Weld Pattern	Slight weave, up to 1" (25mm) wide

Typical Uses:

Colmonoy® 4001-50 wire can be used to provide hard surfacing that is more resistant to abrasive wear than most non-carbide containing surfacing systems. It can be used in the plastics industry to protect screw flights, segments, and barrels. It can also be used for oil & gas industry components where typical spray and fuse or thermal processes are not practical.

Application Methods:

Colmonoy® wires are easily applied to all steels having less than 0.25% carbon, gray cast iron; Meehanite, malleable, ingot and wrought iron; nickel, Monela alloy 400, Inconel alloy 600, Nichrome, Chromelb. Most high-temperature alloys can be overlaid without special precautions.

Steel having more than 0.25% carbon can also be overlaid, but requires controlled slow cooling after fusion, in suitable insulation such as Sil-O-Cel, mica, etc. Generally, do not apply to ferrous metals that require subsequent hardening and tempering, because the dimensional change associated with the formation of martensite will crack the deposits.

Steels with high hardenability or ferritic stainless steels can be overlaid. They may need to be annealed isothermally after uniform austenitizing to prevent cracking of the deposits. (Consult [Technical Services](#) for further details).

Safety:

Danger: Follow your employer's safety procedures and the equipment manufacturers instructions when welding. Electric shock can kill. Properly install and ground electrical equipment prior to use. Infrared and ultraviolet radiation emitted from the hot metal or welding arc can injure eyes and burn skin. Use appropriate personal protective equipment.

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 injure the eyes and burn skin. Wear eye, ear, and body protection. Be aware of fumes and gases when welding. Keep your head out of the fumes. Your exposure to fumes and gases must be maintained below PEL and TLV exposure limits. If engineering controls for ventilation are not adequate wear the correct respirator to protect from welding fumes and gases.

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 SDS, which is on file with your employer, before using the product(s).

Storage Requirements:

Keep wire in a closed container and protect against dirt, oil, and grease. Metal cored wires are not shelf life limited.

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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