



DAIKOFCW 1010



COBALT ALLOYS
Gr. 1

DESCRIPTION

Cobalt based cored wire for hardfacing

Grade 1 flux cored wire has the highest hardness of the cobalt alloys and is used to elevate temperature wear applications. Machine with carbide tools or grinding. It bonds well with stainless and other weldable grades of steel.

SPECIFICATIONS

AWS A5.21	ERCCoCr-C	DIN 8555	MF 20-MF-55-CTZ
Shielding	I1, I3	Positions	PA, PB, PC
Current	DC+	Packaging Type	B5300 spool

ASME QUALIFICATIONS

F-No (QW432)	72
A-No (QW442)	-

HARDNESS

52HRC - 54HRC

CHEM. COMP. %	DEFAULT	MECHANICAL PROPERTIES	MIN. PER STANDARD	PRODUCT
C	0.24	Tensile strength R _m MPa	-	240
Mn	0.1	Yield strength R _{p0.2} MPa	0	170
Cr	29	Elongation A (L ₀ =5d ₀) %	0	24
Si	0.7	Impact Charpy ISO-V	-	-
Fe	3.6	Impact Charpy ISO-V	-	-
W	11			

WELDING PARAMETERS

	1.2 mm	1.6 mm
Ampere	100A - 250A	140A - 350A
Voltage	16V - 29V	26V - 30V
Packaging	Ø 1,2÷1,6mm	Ø 1,2÷1,6mm
Packaging Type	B5300 spool	B5300 spool

ANTI-WEAR CHARACTERISTICS

Adhesive wear	▲ ▲ ▲ ▲ ▲
Abrasive wear	▲ ▲ ▲ ▲ ▲
Corrosion	▲ ▲ ▲ ▲ ▲
Heat	▲ ▲ ▲ ▲ ▲





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APPLICATION

The alloy, characterized by a high percentage of carbides, offers exceptional wear resistance, although this results in reduced impact and corrosion resistance. Due to the increased hardness, there is a tendency to crack during cooling, which can be minimized by carefully controlling preheating, interpass temperature, and post-heating techniques. Even though cobalt-chromium deposits soften slightly at high temperatures, they are generally considered immune to tempering. The welding metal deposited by the ERCoCr-C electrodes and rods is ideal for components like mixers and rotors, where extreme abrasion and limited impacts occur. Additionally, it is also suitable for pump sleeves, rotary seal rings, wear pads, extrusion screws, and bearing sleeves. The inclusion of tungsten improves high-temperature hardness and matrix toughness, ensuring excellent resistance to solid particle and adhesive erosion wear. It maintains a hardness of 43-58 HRC at temperatures up to 760 °C. Preheating to 300 °C and beyond is generally recommended.

ALLOY TYPE

Cobalt alloy for hardfacing with excellent corrosion and abrasion resistance with low impact.

MICROSTRUCTURE

Primary hypereutectic carbides (approximately 19%) are found in an austenitic type matrix.

MATERIALS

It bonds well with all steels including stainless.

WELDING & PWHT

Prior to welding, it is essential to meticulously clean the joint surface and adjacent area, removing grease, oil, markings, sulfur compounds, and other impurities. It is advisable to avoid contact with copper or copper-based materials in the joint area. While not mandatory, the alloy yields better results when welded in the solution annealed state. As a rule, preheating is not necessary, provided the base metal is above 0 °C. Interpass temperatures should be kept low. It is effective to delay post-welding to 600 °C and slow down cooling to prevent cracking.

