



DAIKOFCW 622



NICKEL ALLOYS
C22

DESCRIPTION

Rutile flux cored wire for flat and horizontal position for Nickel based C22 alloy

Rutile flux cored wire for welding and cladding in flat and horizontal position. It is designed to match the nickel base alloy commonly known as C22. The high level of Mo is similar to alloys C276 and C4 but performance in a wide range of more oxidising media is significantly enhanced in alloy C22 by increasing Cr to 22%. This alloy also provides a tough Nb-free weld metal for dissimilar welds in superaustenitic and superduplex stainless steel or combinations of these with Ni base alloys.

SPECIFICATIONS

AWS A5.34	ENiCrMo10T1-1/4	Shielding	M21, C1
Positions	PA, PB, PC, PD, PE, PF, PG	Current	DC+
Packaging Type	BS300 spool		

ASME QUALIFICATIONS

		PREN
F-No (QW432)	43	72.385
A-No (QW442)	-	

CHEM. COMP. %	DEFAULT	MECHANICAL PROPERTIES	PRODUCT
C	0.02	Tensile strength R _m MPa	740
Mn	0.4	Yield strength R _{p0.2} MPa	500
Ni	56	Elongation A (L ₀ =5d ₀) %	44
Cr	21.4	Impact Charpy ISO-V	130J @ -196°C
P	0.007		
S	0.004		
Mo	13.8		
Si	0.2		
Cu	0.01		
Fe	5.2		
W	3.3		

WELDING PARAMETERS	1.2 mm	1.6 mm
Ampere	130A - 280A	200A - 350A
Voltage	22V - 30V	28V - 32V
Packaging	Ø 1,2÷1,6mm	Ø 1,2÷1,6mm
Packaging Type	BS300 spool	BS300 spool



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APPLICATION

The composition of the weld deposit, Ni-22Cr-13.5Mo-3W, has been developed to be compatible with the nickel-based alloy more commonly known as alloy C22. The high molybdenum content is comparable to that of alloys C276 and C4; however, performance in a wide range of more oxidizing environments is significantly improved by increasing chromium to 22% in alloy C22. Alloy C22 also offers a robust, niobium-free (Nb) metal deposit for dissimilar welds between superaustenitic and superduplex stainless steels or between these and nickel-based alloys. Some regulations have prohibited or limited the use of alloy 625 consumables for such applications, as harmful Nb-rich precipitates can form in the diluted or partially mixed regions near the edges of the fusion zone. Applications of alloy C22 in highly corrosive environments include scrubbers for flue gas desulfurization (FGD), digesters and equipment for paper production, chemical process plants, corrosion-resistant overlays, as well as offshore environments and the petrochemical sectors. Typically, preheating is not required; it is preferable to maintain an interpass temperature below 100 °C and heat inputs below 1 kJ/mm.

ALLOY TYPE

Nickel base 22%Cr-13.5%Mo-3%W, alloy C22.

MICROSTRUCTURE

Solid solution strengthened high nickel austenite, with some microsegregation typical of as deposited weld metal.

MATERIALS

EN W.Nr.: 2.4602 (NiCr21Mo14W), 2.4811, 2.4836 (NiCr20Mo15), 2.4697 (G-NiCr20Mo15), 2.4610 (NiMo16Cr16Ti), 1.4529, 1.4565, 1.4575, 1.4652

ASTM: A494 CX2MW (cast)

UNS: N06022, N06455, S31254, S31266, S32654, S34565, N08367, N08925, N08926

PROPRIETARY: Hastelloy® Alloy C-22, C-4 (Haynes International Inc), Nicrofer 5621hMoW (VDM), Inconel® 622 (Special Metals), 254SMO, 654SMO (Outokumpu), Uranus B66 (Usinor Industeel)

WELDING & PWHT

The welding process for this subfamily involves techniques that ensure high corrosion resistance and reliability in demanding environments. The low heat input method is crucial to avoiding material degradation and maintaining the integrity of the welds, especially in applications involving dissimilar materials.

