



DESCRIPTION

Basic coated electrode for nickel based C22 alloy

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. Applications in aggressively corrosive media include scrubbers for flue gas desulphurisation (FGD), digesters and papermaking equipment, chemical process plant, corrosion resistant overlays and in severe offshore and petrochemical environments.

SPECIFICATIONS

EN ISO 14172	E Ni 6022	AWS A5.11	ENiCrMo-10
Shielding	-	Positions	PA, PB, PC, PD, PE, PF
Current	DC+	Packaging Type	Carton box and tube.

ASME QUALIFICATIONS

		PREN
F-No (QW432)	43	72.195
A-No (QW442)	-	

CHEM. COMP. %	DEFAULT	MECHANICAL PROPERTIES	MIN. PER STANDARD			PRODUCT
C	0.005	Tensile strength R _m MPa	690			700
Mn	0.15	Yield strength R _{p0.2} MPa	350			410
Ni	58	Elongation A (L ₀ =5d ₀) %	22			25
Cr	22.2	Impact Charpy ISO-V	-			50J @ -196°C
V	0.05	Impact Charpy ISO-V	-			-
P	0.006					
S	0.002					
Mo	13.5					
Si	0.1					
Cu	0.05					
Fe	2.6					
W	3.3					

WELDING PARAMETERS	2.5 mm	3.2 mm	4.0 mm	4.8 mm
Ampere	50A - 70A	75A - 100A	80A - 140A	125A - 150A
Voltage	-	-	-	-
Packaging	60 pcs/kg	29 pcs/kg	19 pcs/kg	13 pcs/kg
Packaging Type	Carton box and tube.	Carton box and tube.	Carton box and tube.	Carton box and tube.

NOTES

Pcs/kg is indicative, actual number may vary ± 5%.



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C22

DESCRIPTION

NICKEL ALLOYS

C22

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.

