DAIKOWT 622

GTAW

NICKEL ALLOYS
C22

DESCRIPTION

Nickel-based alloy rod C22

Rod designed to match the properties of alloy C22. The high Mo content, similar to C276 and C4, combines with increased resistance in oxidizing environments due to 22% Cr. The Nb-free deposit is optimal for dissimilar welds of superaustenitic, superduplex, or combinations with other Ni-based alloys, ensuring stable and lasting performance.

SPECIFICATIONS

EN ISO 18274	S Ni 6022	**AWS A5.14**	ERNiCrMo-10
Shielding	I1	**Positions**	PA, PB, PC, PD, PE, PF
Current	DC-	**Packaging Type**	5kg carton tube

ASME QUALIFICATIONS

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

PREN

73.15

CHEM. COMP. %	DEFAULT
C	0.005
Mn	0.2
Ni	56
Cr	22
V	0.01
P	0.005
S	0.001
Mo	14
Si	0.05
Fe	4.6
W	3

MECHANICAL PROPERTIES	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	690*	740
Yield strength $R_{p0.2}$ MPa	0	500
Elongation A (L_0=5d_0) %	0	44
Impact Charpy ISO-V	-	130J @ -196°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS	1.6 mm	2.4 mm
Ampere	80A - 120A	130A - 160A
Voltage	10V - 13V	14V - 18V
Packaging	Ø 1,0÷4,0mm	Ø 1,0÷4,0mm
Packaging Type	5kg carton tube	5kg carton tube

C22

DESCRIPTION

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.