DAIKOWM 276

GMAW

NICKEL ALLOYS
C276

DESCRIPTION

Solid wire for Nickel based alloy C276

Wire rod formulated to match the composition and properties of alloy C276. It is also used for surfacing of steel. The weld metal has high resistance in a wide range of media and exceptional resistant to pitting and crevice corrosion. Applications include pumps, valves, pipework and vessels in chemical process plant, equipment for flue gas desulphurisation and for offshore in oil & gas field. Useful properties from -269°C to above 1000°C are achieved.

SPECIFICATIONS

ISO 18274	S Ni 6276	**AWS A5.14**	ERNiCrMo-4
DIN	-	**Werkstoff Number**	-
Certifications	-	**Shielding**	I1, I3
Positions	PA, PB, PC, PD, PE, PF, PG	**Current**	DC+

ASME QUALIFICATIONS

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

FERRITE

-

PREN

74.51

HARDNESS

-

CHEM. COMP. %

	DEFAULT
C	0.01
Mn	0.2
Ni	59
Cr	16.1
Nb	3.7
V	0.05
P	0.008
S	0.002
Mo	16
Si	0.2
Cu	0.01
Fe	5.2
W	3.4

MECHANICAL PROPERTIES

	MIN	VARIANT
Tensile strength R_m MPa	690*	720
Yield strength $R_{p0.2}$ MPa	0	450
Elongation A (L_0=5d_0) %	0	45
Impact Charpy ISO-V	-	80J @ -196°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS

	1 mm	1.2 mm
Ampere	140A - 200A	150A - 210A
Voltage	23V - 27V	25V - 29V
Packaging	Ø 0,8÷1,6mm	Ø 0,8÷1,6mm
Packaging Type	Drums, DIN 760 reel, B300, D200 and D100 spools.	Drums, DIN 760 reel, B300, D200 and D100 spools.

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APPLICATION

The deposited weld replicates the composition of parent alloy C276, comprising Ni-15%Cr-16%Mo-4%W-5%Fe. Precise control over C and Si levels is implemented to minimize carbide and intermetallic phase precipitates. While cast versions may have higher carbon and silicon content, repair welds typically undergo solution treatment for optimum corrosion resistance. Alloy C276 exhibits high resistance to corrosion in a broad range of acids and salts under oxidizing and reducing conditions, including hydrochloric and hydrofluoric acids, hypochlorites, chlorides, wet chlorine gas, sulphuric, phosphoric, and various organic acids. Noteworthy is its exceptional resistance to crevice corrosion, pitting in seawater (surpassing alloy 62), and chloride-induced stress corrosion cracking. With excellent properties extending to below -196°C, Alloy C276 finds applications in welding 5-9%Ni cryogenic installations. Its versatile use includes pumps, valves, pipework, and vessels in aggressive chemical plant environments, as well as equipment for flue gas desulphurization and critical offshore oil and gas production equipment. Importantly, preheating is unnecessary, and it is advisable to keep the interpass temperature below 100°C, with a restricted heat input to 1.5 kJ/mm.

ALLOY TYPE

Alloy C276 is a Ni-15%Cr-16%Mo-4%W-5%Fe nickel base alloy.

MICROSTRUCTURE

In the as-welded condition the weld metal consists of austenite with some carbides.

MATERIALS

EN W.Nr.: 2.4819 (NiMo16Cr15W), 2.4883 (G-NiMo16Cr).
ASTM: A494 CW-12MW, A743/A744 CW-12M.
UNS: N10276.
PROPRIETARY: Hastelloy® Alloy C-276 (Haynes International Inc), Inconel® Alloy C-276 (Special Metals), Nicrofer 5716hMoW (VDM).