DAIKOWT 2594Cu

GTAW

DUPLEX - SUPERDUPLEX
ZERON 100

DESCRIPTION

Superduplex stainless steel rod for welding Zeron® 100 alloy

Superduplex rod corresponding to Zeron® 100 alloy, enriched with copper and tungsten that enhance resistance to sulfuric and hydrochloric acids compared to conventional alloys. It is ideal for offshore applications due to its high resistance to pitting and stress corrosion cracking in seawater, as well as caustic alkalis and phosphoric acid. It is widely used in the oil and gas industry.

SPECIFICATIONS

EN ISO 14343-A	W 25 9 4 N L	**AWS A5.9**	ER2594
Shielding	I1	**Positions**	PA, PB, PC, PD, PE, PF
Current	DC-	**Packaging Type**	5kg carton tube

ASME QUALIFICATIONS

F-No (QW432)	6
A-No (QW442)	-

FERRITE

% 30-60

PREN

40.56

CHEM. COMP. %

	DEFAULT
C	0.02
Mn	0.6
Ni	9.1
Cr	25
N	0.23
P	0.02
S	0.015
Mo	3.6
Si	0.3
Cu	0.6
W	0.65

MECHANICAL PROPERTIES

	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	620	870
Yield strength $R_{p0.2}$ MPa	550	670
Elongation A (L_0=5d_0) %	18	24
Impact Charpy ISO-V	-	60J @ -50°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS

	1.6 mm	2.4 mm
Ampere	80A - 100A	110A - 160A
Voltage	-	-
Packaging	Ø 1,0÷4,0mm	Ø 1,0÷4,0mm
Packaging Type	5kg carton tube	5kg carton tube

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ZERON 100

DESCRIPTION

APPLICATION

Zeron® 100 stands out for its extraordinary ability to resist corrosion and erosion in a wide range of aggressive environments. The special Cu+W combination significantly improves resistance to sulfuric and hydrochloric acids, compared to similar alloys without such additives. Thanks to its high resistance to pitting and stress corrosion cracking, Zeron® 100 is widely used in offshore applications, especially in seawater contexts. This material also offers excellent resistance to caustic alkalis and phosphoric acid. Its service temperature range generally varies between -50 °C and 280 °C, with the upper limit due to thermal instability (450 °C and sigma phase embrittlement). Zeron® 100 is highly valued in the oil and gas production sector and is used in a wide range of applications, including process piping, risers, manifolds, pressure vessels, valves, pumps, desalination plants, flue gas desulfurization (FGD) systems, and in the mining, chemical, and pharmaceutical industries. Furthermore, Zeron® 100 wires are ideal for joining supermartensitic stainless steels.

ALLOY TYPE

25%Cr ferritic-austenitic superduplex stainless steels matching the proprietary Zeron® 100 alloy.

MICROSTRUCTURE

Austenite-ferrite duplex microstructure in AW or solution annealed condition with an approximate 30- 60% ferrite level, depending on heat cycle conditions.

MATERIALS

EN W.Nr.: 1.4508, 1.4501, 1.4469
ASTM: A890 6A, A182 F55, A890 5A
UNS: S32760, J93380, S32750, S32550, S32520, S39274, S32950, J93404
PROPRIETARY: Zeron 100 (Rolled Alloys) DP3W (Nippon Steel Corporation), 7-Mo Plus (Carpenter), SAF 2507 (Sandvik)

WELDING & PWHT

For welding Zeron® 100, preheating is generally not required. The interpass temperature should not exceed 150 °C. A heat input between 1.0 and 2.0 kJ/mm (based on the material thickness) is considered optimal, though many industrial codes set a maximum limit of 1.5 or 1.75 kJ/mm. While welds in wrought duplex stainless steels are usually left as is, major repairs on castings often require a solution treatment. Field tests confirm that good properties are obtained by following a water quench treatment at 1120 °C for a period between 3 and 6 hours.

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