DAIKOWT 2594Cu

GTAW

DUPLEX - SUPERDUPLEX

ZERON 100

DESCRIPTION

Solid superduplex stainless wire rod for welding Zeron® 100 alloy

Superduplex filler metal matching the proprietary Zeron® 100 alloy. The presence of Cu+W in this alloy provides superior resistance to sulphuric and hydrochloric acids when compared to similar alloys without these additions. Offshore applications exploit the high resistance to pitting and stress corrosion cracking in seawater. It is also highly resistant to caustic alkalis and phosphoric acid. Widely used in oil and gas production and process.

SPECIFICATIONS

ISO 14343-A	W 25 9 4 N L	**AWS A5.9**	ER2594
DIN	-	**Werkstoff Number**	-
Certifications	-	**Shielding**	I1
Positions	PA, PB, PC, PD, PE, PF	**Current**	DC-

ASME QUALIFICATIONS

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

FERRITE

% 30-60

PREN

40.56

HARDNESS

-

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	VARIANT
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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DESCRIPTION

APPLICATION

Zeron® 100 excels in strength and in corrosion and erosion resistance, proving effective in aggressive environments. The Cu+W addition enhances resistance to sulphuric and hydrochloric acids, surpassing alloys without these elements. Notable for its offshore use, it resists pitting and stress-corrosion cracking in seawater and withstands caustic alkalis and phosphoric acid. Its service temperature range is typically -50ºC to 280ºC, with factors like thermal instability (450ºC) and sigma embrittlement influencing the upper limit. Widely applied in oil and gas, it serves in pipework, risers, manifolds, pressure vessels, valves, pumps, desalination plants, and FGD systems. Versatile across mining, chemical, and pharmaceutical industries, Zeron® 100 wires are employed for joining supermartensitic stainless steels, showcasing adaptability across various industrial applications.

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

Preheating is typically unnecessary. Maintain interpass temperature below 150ºC. Acceptable heat input falls within the range of 1.0-2.0 kJ/mm, contingent on material thickness; however, many codes impose a maximum limit of 1.5 or 1.75 kJ/mm. While welds in wrought duplex stainless steels are typically preserved in the as-welded state, significant repairs to castings are commonly mandated in the solution-treated condition. Empirical evidence suggests favorable properties following treatment at 1120ºC for 3-6 hours, followed by water quenching.

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