DAIKOWM 2594

GMAW

DUPLEX - SUPERDUPLEX
2507

DESCRIPTION

Solid superduplex stainless wire rod for welding 25% Cr ferritic-austenitic stainless steel

The deposit of this rod wire, designed for welding ferritic-austenitic superduplex steels, possess, in addition to high tensile strength and toughness, also excellent resistance to stress corrosion cracking, pitting and to inter-crystalline corrosion. The operating temperature range is -50 °C up to 250 °C. To ensure particularly good weld metal properties care must be taken to achieve controlled dilution and thorough back purging. It offers very high quality standards for ease of operation and good mechanical properties.

SPECIFICATIONS

EN ISO 14343-A	G 25 9 4 N L	**AWS A5.9**	ER2594
Shielding	M12, M13	**Positions**	PA, PB, PC, PD, PE, PF, PG
Current	DC+	**Packaging Type**	Drums, B300, D200 and D100 spools.

ASME QUALIFICATIONS

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

PREN

42.2

HARDNESS

290HV - 310HV

CHEM. COMP. %	DEFAULT
C	0.01
Mn	0.55
Ni	9.3
Cr	25
N	0.25
P	0.02
S	0.015
Mo	4
Si	0.4
Cu	0.1

MECHANICAL PROPERTIES	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	620	860
Yield strength $R_{p0.2}$ MPa	550	650
Elongation A (L_0=5d_0) %	18	24
Impact Charpy ISO-V	-	60J @ -50°C
Impact Charpy ISO-V	-	-

WELDING PARAMETERS	1.0 mm	1.2 mm
Ampere	160A - 220A	200A - 270A
Voltage	25V - 29V	26V - 30V
Packaging	Ø 0,8÷1,6mm	Ø 0,8÷1,6mm
Packaging Type	Drums, B300, D200 and D100 spools.	Drums, B300, D200 and D100 spools.

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APPLICATION

Super duplex stainless steel pipes, plates, fittings, and forgings have a microstructure composed of approximately 50% austenite and 50% ferrite matrix. This combination, along with the alloy composition, offers several key benefits: - high strength compared to standard austenitic steels like type 316L; - excellent overall corrosion resistance in a wide range of environments; - high resistance to chloride-induced stress corrosion cracking (CSCC); - remarkable resistance to pitting attack in environments containing chlorides, such as seawater. These characteristics make super duplex alloys ideal for continuously evolving applications in the **offshore oil/gas, chemical, and petrochemical industry.** They are frequently used in piping systems, flow lines, risers, manifolds, and more.

ALLOY TYPE

25%Cr ferritic-austenitic superduplex stainless steels.

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.: 1.4410 (X2CrNiMoN25-7-4)
ASTM: A182 F53, A182 F55, A890 Gr5A, A890 Gr6A
UNS: S32750, S32760, J93404
PROPRIETARY: SAF 2507 (Sandvik), Uranus® 47N (Industeel)

WELDING & PWHT

Generally, preheating is not required. The interpass temperature is set to a maximum of 150 °C. A heat input range of 1.0-2.0 kJ/mm, depending on the thickness of the material, is acceptable, with many codes specifying a maximum limit of 1.5 or 1.75 kJ/mm. Although welds on duplex stainless steels are almost always left as-welded, major repairs on castings are generally carried out in a solution-treated condition. Industry practices suggest that excellent mechanical properties can be obtained through water quenching at 1120 °C, held for 3-6 hours.