DAIKOFCW 312

FCAW

AUSTENITIC STAINLESS STEELS
312

DESCRIPTION

Rutile flux cored wire for flat and horizontal position

Austenitic rutile flux cored wire for welding and cladding in flat and horizontal position. The easy handling and the high deposition rate result in high productivity, excellent welding performance and very low spatter formation. The wire shows good wetting behaviour and a finely rippled surface pattern. This consumable is used to weld similar steels, medium and high carbon hardenable steels. This product has extreme tolerance to dilution and it is useful to weld unknown specification steels.

SPECIFICATIONS

EN ISO 17633-A	T 29 9 R M21 3	**AWS A5.22**	E312T0-4
Shielding	M21	**Positions**	PA, PB, PC
Current	DC+	**Packaging Type**	BS300 spool

ASME QUALIFICATIONS

F-No (QW432)	6
A-No (QW442)	8

FERRITE

% 40

PREN

28.4

HARDNESS

300HV

CHEM. COMP. %

	DEFAULT
C	0.12
Mn	1.2
Ni	10.2
Cr	28.4
P	0.02
S	0.008
Si	0.6

MECHANICAL PROPERTIES

	MIN. PER STANDARD	PRODUCT
Tensile strength R_m MPa	650	740
Yield strength $R_{p0.2}$ MPa	450	580
Elongation A (L_0=5d_0) %	15	22
Impact Charpy ISO-V	-	-
Impact Charpy ISO-V	-	-

WELDING PARAMETERS

	1.2 mm	1.6 mm
Ampere	120A - 280A	200A - 350A
Voltage	22V - 30V	26V - 30V
Packaging	Ø 1,2÷1,6mm	Ø 1,2÷1,6mm
Packaging Type	BS300 spool	BS300 spool

NOTES

D200 spool and Ø 1,0 mm available upon request.

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DESCRIPTION

APPLICATION

Designed for welding hardenable steels with medium and high carbon content, with or without specific requirements, such as tool steels, shafts, gears, free-cutting steels, dissimilar alloys, bearing layers, overlays, and other similar applications. The combination of high alloy content and ferrite (40-50 FN) ensures exceptional tolerance to dilution across a wide range of hardenable steels and alloys, even with minimal or no preheat. It is particularly effective for welding free-cutting steels or steels with a low Mn:S ratio (especially if <20), where other welding solutions may not prevent hot cracking due to boundary liquation in the fusion zone. The weld deposit is prone to work hardening, providing excellent wear and friction resistance. It is also effective against corrosion and high temperatures up to about 1000 °C. However, it is not recommended for structural applications above 300 °C or for welds requiring post-weld heat treatment due to the risk of embrittlement. Not indicated for heavy joint filling, nor for sub-zero applications where high notch toughness is required.

ALLOY TYPE

Austenite-ferrite weld metal composition of nominally 29%Cr-9%Ni for dissimilar joints and difficult to weld steels.

MICROSTRUCTURE

Duplex austenite-ferrite microstructure with about 40% ferrite.

MATERIALS

Medium and high carbon hardenable steels, tool steels and free-cutting steels.

WELDING & PWHT

The procedure varies based on the base material. Preheat is generally not necessary for small components and bearing layers, but is recommended for thicker high carbon steels to prevent quench cracking in the HAZ and to control maximum hardness, between 100-250 °C. Although 29.9 alloys offer good high-temperature oxidation resistance, the high ferrite content weld metal is susceptible to 475 °C embrittlement at temperatures above 300 °C and sigma phase embrittlement at high temperatures. Therefore, this alloy is not suitable for high-temperature structural applications or where PWHT is expected.