

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
SAF 2304®	1.4362	S32304	2327	–	Z3 CN 23-04 Az

* Obsolete national standards, replaced by EN 10088.

Characteristics

AVESTA FCW-2D 2304 is designed for welding the ferritic-austenitic (duplex) stainless steels Outokumpu SAF 2304 with excellent strength and good corrosion resistance. The steel is mainly intended for applications such as chemical industry, civil engineering, storage tanks, containers etc.

AVESTA FCW-2D 2304 provides a ferritic-austenitic weldment that combines many of the good properties of both ferritic and austenitic stainless steels. The duplex microstructure gives high tensile strength and hereby also good resistance to stress corrosion cracking.

AVESTA FCW-2D 2304 is over-alloyed with respect to nickel to ensure the right ferrite balance in the weld metal.

Welding directions

AVESTA FCW-2D 2304 provides excellent weldability in horizontal as well as horizontal-vertical (PC) position.

Welding should be performed using direct current positive polarity (DC+). Compared to the MIG method, the range of welding current and voltage is considerably wider.

Welding data

Diam.	Horizontal		Horizontal-vertical	
	A	V	A	V
0.045	150–280	24–32	140–200	23–28

For further recommendations, please contact Avesta Welding.

Shielding gas recommendations

Welding is preferably done using an Ar-based shielding gas with addition of 15–25 % CO₂, which will give the best result with respect to arc stability, melt pool control and with a minimum of spatter. However, 100 % CO₂ can also be used. If 100 % CO₂ is used, the welding voltage should be increased by 2–3 V to ensure the right arc length.

Gas flow rate is typically 20–25 l/min.

Standard designations

EN 12073	–
AWS A5.22	–

Chemical composition - Typical values, %

C	0.03	Cr	24.0
Si	0.7	Ni	9.0
Mn	1.5	Mo	0.7
N	0.14		
Ferrite	30 FN WRC-92		

Mechanical properties – Typical values, IIW

	Typ. values	
Yield strength, Rp _{0.2}	580 N/mm ²	84 ksi
Tensile strength, R _m	760 N/mm ²	110 ksi
Elongation, A ₅	25 %	25 %
Impact strength, KV	+20°C	50 J
	–20°C	40 J
Hardness	240 Brinell	30 ft-lb

Interpass temperature: Max. 300°F (150°C)

Heat input: 12.7–50.8kJ/in (0.5–2.0 kJ/mm)

Heat treatment: Generally none. In special cases quench annealing at 1868–1976°F (1020–1080°C).

Structure: Austenite with 30–70 % ferrite.

Scaling temperature: Approx. 1562°F (850°C) (air).

Corrosion resistance: Very good resistance to pitting and stress corrosion cracking in nitric acid environments.

Approvals: –