

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
2205	1.4462	S32205	2377	318S13	Z3 CND 22-05 Az

* Obsolete national standards, replaced by EN 10088.

CHARACTERISTICS

AVESTA FCW E2209T0-1 is designed for the welding of ferritic-austenitic (duplex) stainless steels such as Outokumpu 2205 (ASTM S32205/S31803) and similar. It can also be used when welding type SAF 2304™.

AVESTA FCW E2209T0-1 provides a ferritic-austenitic weldment that combines many of the good properties of both ferritic and austenitic stainless steels. Due to the high content of both Cr and Mo with addition of N a very good resistance to general and pitting corrosion is obtained. The duplex microstructure gives high tensile strength and hereby also excellent resistance to stress corrosion cracking.

AVESTA FCW E2209T0-1 is over-alloyed with respect to nickel to ensure the right ferrite balance in the weld metal.

WELDING DIRECTIONS

AVESTA FCW E2209T0-1 is primarily designed for welding with ceramic backing in flat (PA) and horizontal-vertical (PB and PC) positions. However, it can also be used for two-side butt-welding.

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

Ø inch	Flat/Horizontal		Horizontal-vertical	
	A	V	A	V
0.045	170-280	25-31	150-210	23-29

The above parameters are intended for Ar+CO₂ shielding gas.

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 T 22 9 3 N L R M/C 3
AWS A5.22 E2209T0-4/-1

Chemical composition - Typical values, %

C	0.025	Cr	23.3
Si	0.6	Ni	9.2
Mn	0.8	Mo	3.3
N	0.14		
Ferrite	50 FN WRC-92		

Mechanical properties – Typical values, IIW

	Typ. values	
Yield strength, Rp _{0.2}	630 N/mm ²	91 ksi
Tensile strength, R _m	820 N/mm ²	119 ksi
Elongation, A ₅	25 %	25 %
Impact strength, KV	+20°C	49 J
	-20°C	44 J
Hardness	240 Brinell	-

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

Heat input: 12.7-63.5kJ/in (0,5-2,5 kJ/mm)

Heat treatment: Generally none. In special cases quench annealing at 2012-2102°F (1100-1150°C).

Structure: Austenite with 45-55 % ferrite.

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

Corrosion resistance: Very good resistance to pitting and stress corrosion cracking in chloride containing environments.

Approvals: