Avesta FCW 2205-PW

Flux-cored wire, high-alloyed, duplex stainless steel

Classifications

EN ISO 17633-A	EN ISO 17633-B	AWS A5.22
T 22 9 3 N L P M21/C1 1	TS 2209-F M21/C1 1	E2209T1-4/1

Characteristics and typical fields of application

Primarily designed for welding 22Cr duplex stainless steels used in offshore, shipyards, chemical tankers, chemical/petrochemical, pulp & paper, etc.

Avesta FCW 2205-PW has a stronger arc and a faster slag compared to the 2D type. It is designed for all-round welding and can be used in all positions without changing the parameter settings. The weldability is excellent in the vertical-up and overhead welding positions. Very good resistance to pitting and stress corrosion cracking in chloride containing environments. Meets the corrosion test requirements per ASTM G48 Methods A, B and E (25°C). Over-alloyed in nickel to promote austenite formation.

Duplex alloys have good weldability, but the welding procedure should be adapted to the base material considering fluidity, joint design, heat input, etc.

Base materials

EN 1.4462 X2CrNiMoN22-5-3, EN 1.4362 X2CrNiN23-4, EN 1.4162 X2CrNiMoN21-5-1

UNS S32205, S31803, S32304, S32101

Outokumpu 2205, 2304, LDX 2101®, SAF 2205, SAF 2304

Typical analysis of all-weld metal

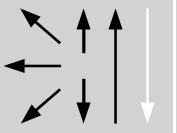
	C	Si	Mn	Cr	Ni	Mo	N	PREN	Ferrite WRC-92 FN
wt.-%	0.029	0.7	1.0	23.0	9.1	3.2	0.13	> 35	45 – 65

Mechanical properties of all-weld metal – typical values (minimum values)

Heat treatment	Yield strength $R_{p0.2}$	Tensile strength R_m	Elongation A (L_0=5d_0)	Impact work ISO-V KV J		Hardness
	MPa	MPa	%	20°C	–46°C	HB
u	**600** (≥ 450)	**800** (≥ 690)	**27** (≥ 20)	**58**	**45**	**240**

u untreated, as-welded – shielding gas Ar + 18 % CO_2

Operating data



Polarity	Wire feed m/min	Arc length mm	Current A	Voltage V	Ø (mm)
DC+	5.5 – 11.5	~ 3	130 – 230	23 – 30	1.2

DC+ polarity. Ar + 15 – 25 % CO_2 offers the best weldability. 100 % CO_2 can be also used, but the voltage should be increased by 2 V and the weld metal austenite content increases somewhat. Gas flow rate 20 – 25 l/min. Suggested heat input is 0.5 – 2.5 kJ/mm, interpass temperature max. 120°C and wire stick-out 15 – 20 mm. The scaling temperature is approx. 850°C in air. Post-weld heat treatment generally not needed. In special cases, solution annealing can be performed at 1100 – 1185°C followed by water quenching. Ferrite measured with Fischer Feritescope 35 – 41 FN.

Approvals

TÜV (10743.), BV (C1), CWB, DNV GL, LR, RINA (M21), ABS, CE