

AVESTA FCW-2D AND FCW-3D FLUX CORED WIRES


maximum performance and flexibility



High productivity in all welding positions!


Flux cored arc welding, FCAW, is a flexible welding method that gives high deposition rates. It can be used in all welding positions and is extremely welder-friendly. Thanks to Avesta Welding's new FCW-2D and FCW-3D wires, these positive characteristics can be exploited to the full. Furthermore, selection of consumables is easy.

Avesta FCW-2D

 excellent slag removal, superb finishes and high deposition rates.

FCW-2D has been specially developed for rapid, cost-efficient welding in the horizontal, horizontal-vertical and vertical-down positions. FCW-2D is particularly recommended for: horizontal-vertical and flat fillet welds; flat butt welds; and, various types of overlay welding. Suitable metal thicknesses are 2.5 mm upwards.

Avesta FCW-3D

 maximum flexibility, flat and vertical welding from a single wire.

FCW-3D is an all-round wire with exceptionally good weldability in all positions (even flat). Its "wide parameter box" ensures smooth transi-

tions between various welding positions. Suitable metal thicknesses are 5 mm upwards.

The two wires have many characteristics in common. Arc stability is very good. Both the arc and the weld pool are very easy to control. The slag is self-releasing and leaves an even, beautiful weld finish.

There are FCW-2D and FCW-3D wires for welding most common austenitic and duplex stainless steels. The ranges also include special wires for joints between stainless and carbon steels.

Avesta FCW-2D and FCW-3D are suitable for most stainless steel applications, e.g. plant in the pulp and paper industry, storage tanks, process vessels, marine chemical tankers and bridges.

Avesta
Welding

Weld metal composition

Standard designations

Avesta FCW	Chemical composition, typical values, %							Typical ferrite*	EN 12073	AWS A5.22
	C	Si	Mn	Cr	Ni	Mo	Other			
FCW-2D 308L/MVR	0.02	0.6	1.5	19.0	10.0	–	–	9	T 19 9 L R M/C 3	E308LT0-4/-1
FCW-3D 308L/MVR	0.03	0.7	1.7	19.0	10.0	–	–	9	T 19 9 L P M/C 2	E308LT1-4/-1
FCW-2D 316L/SKR	0.02	0.6	1.5	18.5	12.5	2.6	–	10	T 19 12 3 L R M/C 3	E316LT0-4/-1
FCW-3D 316L/SKR	0.03	0.7	1.2	18.5	13.0	2.7	–	10	T 19 12 3 L P M/C 2	E316LT1-4/-1
FCW-3D 317L/SNR	0.03	0.6	1.3	18.5	13.0	3.3	–	11	–	E317LT1-4/-1
FCW-2D LDX 2101	0.03	0.7	1.5	24.0	9.0	–	N 0.14	30	–	–
FCW-2D 2304	0.02	0.7	0.8	24.5	9.0	–	N 0.12	30	–	–
FCW-2D 2205	0.03	0.7	0.7	23.0	9.0	3.2	N 0.13	32	T 22 9 3 N L R M/C 3	E2209T0-4/-1
FCW-2D 309L	0.03	0.6	1.4	23.5	13.0	–	–	18	T 23 12 L R M/C 3	E309LT0-4/-1
FCW-3D 309L	0.03	0.7	1.4	23.5	13.0	–	–	18	T 23 12 L P M/C 2	E309LT1-4/-1
FCW-2D P5	0.03	0.6	1.5	23.0	13.0	2.4	–	24	T 23 12 2 L R M/C 3	E309LMoT0-4/-1
FCW-3D P5	0.03	0.7	1.4	23.5	13.0	2.4	–	25	T 23 12 2 L P M/C 2	E309LMoT1-4/-1

* The ferrite content of pure weld metal. FN 0–18 as per Schaeffler-DeLong, ferrite content >18 as per WRC-92.

Mechanical properties, typical values

Approvals

Avesta FCW	R _{p0.2}	R _m	A ₅	Impact strength, KV, J		Hardness Brinell	TÜV	CWB
	N/mm ²	N/mm ²	%	+20°C	Low temp.			
FCW-2D 308L/MVR	380	550	36	50	28 (–196°C)	200	X	
FCW-3D 308L/MVR	340	540	37	60	29 (–196°C)	200	X	X
FCW-2D 316L/SKR	410	560	33	55	45 (–60°C)	210	X	
FCW-3D 316L/SKR	410	560	33	55	45 (–60°C)	210	X	X
FCW-3D 317L/SNR	400	560	29	49	49 (0°C)	210		
FCW-2D LDX 2101	580	760	30	63	45 (–40°C)	240		
FCW-2D 2304	550	750	30	60	45 (–40°C)	240		
FCW-2D 2205	630	820	23	49	40 (–20°C)	240		X
FCW-2D 309L	410	560	31	50	40 (–60°C)	200	X	
FCW-3D 309L	380	550	32	45	40 (–60°C)	210	X	X
FCW-2D P5	460	650	29	50	45 (–10°C)	200	X	
FCW-3D P5	470	660	29	50	45 (–10°C)	220	X	X

Choice of filler metals

EN	ASTM	Outokumpu steel designation	Recommended Avesta FCW
1.4301	304	4301	FCW-2D 308L/MVR FCW-3D 308L/MVR
1.4307	304L	4307	
1.4311	304LN	4311	
1.4541	321	4541	
1.4436	316	4436	FCW-2D 316L/SKR FCW-3D 316L/SKR
1.4432	316L	4432	
1.4429	S31653	4429	
1.4571	316Ti	4571	
1.4438	317L	4438	FCW-3D 317L/SNR
1.4439	317LMN	4439	
1.4162	S32101	LDX 2101®	FCW-2D LDX 2101 FCW-2D 2304 FCW-2D 2205
1.4362	S32304	SAF 2304®	
1.4462	S32205	2205	
Joints between molybdenum free stainless steels and carbon or low-alloy steels. Overlay welding of carbon or low-alloy steels.			FCW-2D 309L FCW-3D 309L
Joints between molybdenum alloyed stainless steels and carbon or low-alloy steels. Overlay welding of carbon or low-alloy steels.			FCW-2D P5 FCW-3D P5

Packaging data

Diameter: 1.20 mm
 Layer wound on wire basket spools
 OD: 300 mm
 ID: 51 mm
 Width: 100 mm
 Weight: 15 kg

Welding parameters

Welding position	Current, A	Voltage, V
Flat	150–290	24–32
Horizontal-vertical	160–200	26–29
Vertical-up	140–180	23–28
Vertical-down	150–180	23–26
Overhead	150–200	24–29

FCAW always uses a positive, direct current (DC+). Welding speed is usually 20 – 60 cm a minute in flat welding and 10 – 20 cm a minute in other positions.

Avesta Welding AB
 P.O. Box 501, Koppardalen
 SE-774 27 Avesta, Sweden
 Tel: +46 (0)226 815 00
 Fax: +46 (0)226 815 75
 info@avestawelding.com
 www.avestawelding.com

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