BÖHLER CN 23/12-FD

Flux-cored wire, high-alloyed, austenitic stainless, special applications

Classifications		
EN ISO 17633-A	**EN ISO 17633-B**	**AWS A5.22**
T 23 12 L R M21/C1 3	TS 309L-F M21/C1 0	E309LT0-4/-1

Characteristics and typical fields of application

Rutile flux-cored wire of T 23 12 L R / E309LT0 type for welding of dissimilar joints of Cr and CrNi(Mo) steels and unalloyed or low-alloyed steels, as well as weld cladding of unalloyed or low-alloyed base metals preferably in flat or horizontal position. Ferrite measured with Fischer Feritescope 14 – 22 FN. Easy handling and high deposition rate result in high productivity with excellent welding performance and very low spatter formation. Increased travel speeds as well as self-releasing slag with little demand for cleaning and pickling provide considerable savings in time and money. The wire shows good wetting behavior and results in a finely rippled surface pattern. The wide arc ensures even penetration and side-wall fusion to prevent lack of fusion. Suitable for service temperatures from –60°C to 300°C.

BÖHLER CN 23/12-FD Ø 0.9 mm is well suitable for welding of sheet metal from 1.5 mm and BÖHLER CN 23/12-FD Ø 1.2 mm can be used for a wall thickness ≥ 3 mm. For welding in vertical-up and overhead positions, BÖHLER CN 23/12 PW-FD should be preferred.

Base materials

Primarily used for surfacing (buffer layer) unalloyed or low-alloyed steels and when joining non-molybdenum-alloyed stainless and carbon steels.

Joints and mixed joints between austenitic steels such as

EN 1.4301 X5CrNi18-10, 1.4306 X2CrNi19-11, 1.4308 GX5CrNi19-10, 1.4401 X5CrNiMo17-12-2, 1.4404 X2CrNiMo17-12-2, 1.4408 GX5CrNiMo19-11-2, 1.4435 X2CrNiMo18-14-3, 1.4436 X3CrNiMo17-12-3, 1.4541 X6CrNiTi18-10, 1.4550 X6CrNiNb18-10, 1.4552 GX5CrNiNb19-11, 1.4571 X6CrNiMoTi17-12-2, 1.4580 X6CrNiMoNb17-12-2, 1.4581 GX5CrNiMoNb19-11-2, 1.4583 X10CrNiMoNb18-12, 1.4948 X6CrNi18-10

UNS S30400, S30403, S30809, S31600, S31603, S31635, S32100, S34700, S31640

AISI 304, 304L, 316, 316L, 316Ti, 321, 347

or mixed joints between austenitic and heat resistant steels such as

1.4713 X10CrAlSi7, 1.4724 X10CrAlSi13, 1.4742 X10CrAlSi18, 1.4826 GX40CrNiSi22-10, 1.4828 X15CrNiSi20-12, 1.4832 GX25CrNiSi20-14, 1.4837 GX40CrNiSi25-12

with ferritic steels to pressure boiler steels P295GH and fine grained structural steels to P355N, ship building steel grades A – E, AH 32 – EH 36, A40 – F40, etc.

Typical analysis of all-weld metal						Ferrite WRC-92
	C	Si	Mn	Cr	Ni	FN
wt.-%	0.03	0.7	1.4	23.0	12.5	12 – 23

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

Condition	Yield strength $R_{p0.2}$	Tensile strength R_m	Elongation A (L_0=5d_0)	Impact work ISO-V KV J	
	MPa	MPa	%	20°C	–60°C
u	**400** (≥ 320)	**540** (≥ 520)	**33** (≥ 30)	**55**	**45** (≥ 32)

u untreated, as welded – Ar + 18 % CO_2

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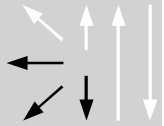
Operating data

	Ø (mm)	Wire feed m/min	Arc length mm	Current A	Voltage V
	1.2	5.0 – 15.0	~ 3	130 – 280	22 – 30
	1.6	4.5 – 9.5	~ 3	200 – 350	25 – 30

Welding with standard GMAW power source with DC+ polarity. No pulsing needed. Backhand (drag) technique preferred with a work angle of appr. 80°. Ar + 15 – 25 % CO_2 as shielding gas offers the best weldability. 100 % CO_2 can be also used, but the voltage should be increased by 2 V. The gas flow should be 15 – 18 l/min. The wire stick-out should be 15 – 20 mm and the heat input not exceed 2.0 kJ/mm. For dissimilar welding, slight weaving is recommended for all welding positions. The scaling temperature is approx. 1000°C in air. Post-weld heat treatment generally not needed. Preheat and interpass temperatures as required by the base material.

Approvals

TÜV (05350.), DB (43.014.16), CWB, DNV GL, LR, CE, RINA, BV (C1+Ø1.2), CE