

Classifications

EN ISO 17633-A	EN ISO 17633-B	AWS A5.9	AWS A5.22
T 13 4 M M12 2	TS 410NiMo-M M12 1	EC410NiMo (mod.)	EC410NiMo (mod.)

Characteristics and typical fields of application

Metal cored wire for the fabrication and repair welding of hydro turbine components made of soft martensitic 13 % Cr 4 % Ni alloyed steels and cast steels. BÖHLER CN 13/4-MC offers favourable spray arc or pulsarc characteristics, minimum spatter formation, flat and smooth bead profiles, excellent wetting behaviour and safe penetration. It is easy to operate in all welding positions. Additionally, precise alloy adjustment ensure very good impact test results of the heat treated weld metal. The hydrogen content is extra low (maximum 4 ml/100 g acc. to AWS conditions). Significant gains in productivity can be realized by higher deposition rates and reduced post weld grinding when compared to GMAW using solid wires.

Base materials

1.4317 GX4CrNi13-4, 1.4313 X3CrNiMo13-4, 1.4407 GX5CrNiMo13-4, 1.4414 GX4CrNiMo13-4
ACI Grade CA 6 NM

Typical analysis of all-weld metal (wt.-%)

	C	Si	Mn	Cr	Ni	Mo
wt.-%	≤ 0.025	0.7	0.9	12.0	4.6	0.6

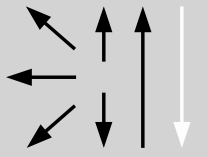
Mechanical properties of all-weld metal

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	-20 °C
a	760 (≥ 500)	900 (≥ 760)	16 (≥ 15)	65	60 (≥ 47)
a1	730	860	17	68	62 (≥ 47)

a annealed, 600°C / 2 h / furnace to 300 °C / air – shielding gas Argon + 2.5 % CO₂

a1 annealed, 580°C / 8 h / furnace to 300 °C / air – shielding gas Argon + 2.5 % CO₂

Operating data

	Polarity: DC (+)	Shielding gases: Argon + 2.5 % CO ₂	ø (mm)	Amps A	Voltage V
			1.2	130 – 370	16 – 38
			1.6	250 – 550	22 – 40

Welding with conventional or pulsed power sources (preferably slightly trailing torch position, angle appr. 80°). Recommended stick out 18 – 20 mm and length of arc 3 – 5 mm. Recommended preheating and interpass temperatures in case of heavy wall thicknesses are 100 – 160 °C. Maximum heat input 15 kJ / cm. Tempering at 580 – 620 °C.

Approvals

SEPROZ