

Classifications

EN ISO 17633-A	EN ISO 17633-B	AWS A5.9	AWS A5.22
T 13 4 M M12 2	TS 410NiMo-MG1 (mod.)	EC410NiMo (mod.)	EC410NiMo (mod.)

Characteristics and typical fields of application

Metal cored wire for welding of hydro turbine components made of soft martensitic 13% Cr 4% Ni alloyed cast steels. BÖHLER CN 13/4-MC (F) 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. The hydrogen content is low (maximum 5 ml/100 g acc. to AWS A 4.3-93). 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 Gr. CA6NM

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


	C	Si	Mn	Cr	Ni	Mo
wt.-%	≤ 0.03	0.7	0.9	12.2	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	745 (≥ 500)	900 (≥ 760)	16 (≥ 15)	55 (≥ 50)	50 (≥ 47)

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

Operating data

	Polarity: DC (+)	Shielding gas: Argon + 2.5 % CO ₂	ø (mm) 1.2	Amps A 130 – 370	Voltage V 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.

Positional weld ability of metal cored wires is similar to solid wires.