

Classifications

EN ISO 14343-A	AWS A5.9 / SFA-5.9
W Z 20 16 3 Mn N L	ER316LMn

Characteristics and typical fields of application

TIG rod of W 20 16 3 Mn N L / ER316L (mod.) type for joining and surfacing applications with matching and similar austenitic CrNi(N) and CrNiMo(Mn,N)-steels and cast steel grades. Non-magnetic (relative magnetic permeability in field of 8000 A/m max. 1.01). Particularly suited for corrosion conditions in urea synthesis plants for welding work on steel X2CrNiMo18-13-3. Corrosion resistance similar to low carbon CrNiMo(Mn,N)-steels and cast steel grades. Seawater resistant and good resistance to nitric acid. Huey test in acc. to ASTM A 262-64: max. 3.3 µm / 48 h (0.54 g/m²h), selective attack max. 200 µm. Service temperature max. 350°C.

Base materials

1.3941(G-)X4CrNi18-3, 1.3945 X2CrNi18-13, 1.3948 X4CrNiMnMoN19-13 – 8, 1.3952(G-)X2CrNiMo18-14-3, 1.3953(G-)X2CrNiMo18-15, 1.3955 GX12Cr18-11, 1.3965 X8CrMnNi18-8, 1.4315 X5CrNi19-9, 1.4429 X2CrNiMoN17-13-3, 1.4561 X1CrNiMoTi18-13-2, 1.6903 10CrNiTi18-10
Cryogenic 3.5 – 5% Ni-steels
UNS S31653, AISI 316LN

Typical analysis

	C	Si	Mn	Cr	Ni	Mo	N
wt.-%	< 0.04	< 0.50	6.0	20	16.5	3.0	0.18

Mechanical properties of all-weld metal - typical values (min. values)

Condition	Yield strength R _{0.2}	Tensile strength R _m	Elongation A (L ₀ =5d ₀)	Impact energy ISO-V KV J
	MPa	MPa	%	-196°C
u	430 (≥ 320)	650 (≥ 510)	30 (≥ 25)	≥ 47

u untreated, as-welded – shielding gas Ar

Operating data

	Polarity	DC-	Dimension mm
	Shielding gas (EN ISO 14175)	I1 (Ar)	1.6 × 1000
	Rod marking	+ W 20 16 3 Mn N L / 19/15 H	2.0 × 1000
			2.4 × 1000
			3.2 × 1000

Suggested heat input max. 1.5 kJ/mm and interpass temperature max. 100°C.

When cladding high temperature and cast steel grades, preheating is according to the parent material (150°C). In case if excessive hardening of the parent material, stress relieving can be performed at 510°C for max. 20 h, annealing above 530°C only prior to the final pass.

Approvals

TÜV (01813), DB (30.132.12), Stamicarbon, Snamprogetti, CE