Thermanit 23/07

TIG rod, high-alloyed, duplex stainless

Classifications

EN ISO 14343-A	AWS A5.9
W 23 7 N L	ER2307

Characteristics and typical fields of application

TIG rod of W 23 7 N L / ER2307 type for welding the lean duplex grade 2304 (1.4362 / UNS S32304) and similar materials. Provides a ferritic-austenitic weldment that combines many of the good properties of both ferritic and austenitic stainless steels. The weld metal has a low content of molybdenum, which makes it well suited for nitric acid environments. Welding without filler metal (i.e. TIG-dressing) is not allowed since the ferrite content will increase drastically and both mechanical and corrosion properties will be negatively affected. Over-alloyed with nickel to promote weld metal austenite formation and designed to result in weld metal ferrite levels of 35 – 65%. Very good resistance to pitting corrosion and stress corrosion cracking in nitric acid environments.

Base materials

1.4362 X2CrNiN23-4, 1.4162 X2CrMnNiN21-5-1, 1.4482 X2CrMnNiMoN21-5-3
UNS S32304, S32101, S32001
SAF 2304, LDX 2101®, 2001
ASME SA 240, ASME SA 790, ASME Code Case 2418 and similar alloys.

Typical analysis

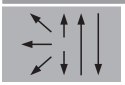
	C	Si	Mn	Cr	Ni	Mo	N	PRE_N	FN
wt.-%	0.02	0.4	0.5	23.5	7.0	< 0.5	0.14	> 26	45

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

Condition	Yield strength $R_{p0.2}$	Tensile strength R_m	Elongation A (L_0=5d_0)	Impact energy ISO-V KV J	
	MPa	MPa	%	20°C	–40°C
u	550 (≥ 450)	730 (≥ 570)	30 (≥ 20)	180 (≥ 47)	180

u untreated, as-welded – shielding gas Ar

Operating data



Polarity	DC-
Shielding gas (EN ISO 14175)	Ar Ar + 2% N2 Ar + 30% He + 2% N2

Dimension mm
1.6 x 1000
2.0 x 1000
2.4 x 1000
3.2 x 1000

Suggested heat input is 0.5 – 2.0 kJ/mm and interpass temperature max. 150ºC. Post-weld heat treatment generally not needed. In special cases, solution annealing can be performed at 1020 – 1080ºC followed by water quenching.
The root side corrosion resistance may be improved by use of nitrogen-based backing gas.

Approvals

TÜV (19716), CE