Thermanit 25/09 CuT

Solid wire, high-alloyed, superduplex stainless steel

Classifications	
EN ISO 14343-A	AWS A5.9
W 25 9 4 N L	ER2594

Characteristics and typical fields of application

Solid wire of W 25 9 4 L N / ER2594 type designed for TIG welding ferritic-austenitic superduplex stainless steel such as EN 1.4410 / UNS S2750 and EN 1.4501 / UNS S32760. Can also be used for joints between superduplex and austenitic alloys or carbon steels and for welding duplex type EN 1.4462 / UNS S32205 if extra high corrosion resistance is required, e.g. in root runs in tubes and pipe. Superduplex grades are particularly popular for desalination, pulp & paper, flue gas desulphurization and sea water systems. The properties of the weld metal match those of the parent metal, offering high tensile strength and toughness as well as an excellent resistance to stress corrosion cracking and localized corrosion in chloride containing environments. Meets the corrosion test requirements per ASTM G48 Methods A, B and E (40°C). Over-alloyed in nickel to promote austenite formation. The operating temperature range is –40°C to 220°C. 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.

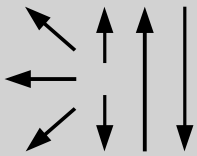
Base materials

25Cr superduplex ferritic-austenitic stainless steel and castings
EN 1.4410 X2CrNiMoN25-7-4, 1.4467 X2CrMnNiMoN 26-5-4, 1.4468, GX2 CrNiMoN 25-6-3, 1.4501 X2CrNiMoCuWN25-7-4, 1.4507 X2CrNiMoCuN 25-6-3, 1.4515 GX2CrNiMoCuN 26-6-3, 1.4517 GX2CrNiMoCuN 25-6-3-3 UNS S32750, S32760, J93380, S32520, S32550, S39274, S32950

Typical analysis of the solid wire												Ferrite WRC-92
	C	Si	Mn	Cr	Ni	Mo	N	Cu	W	PRE_N	PRE_W	FN
wt.%	0.02	0.35	0.9	25.5	9.5	3.8	0.22	0.6	0.6	42	43	50

Typical mechanical properties of all-weld metal – typical values (minimum values)						
Heat treatment	Yield strength $R_{p0.2}$	Tensile strength R_m	Elongation (L_0=5d_0)	Impact work ISO-V KV J		Hardness
	MPa	MPa	%	20°C	–60°C	HB
u	**690** (≥ 550)	**850** (≥ 620)	**25** (≥ 18)	**170**	**150** (≥ 32)	**280**
u	untreated, as welded – Shielding gas Ar					

Operating data



Polarity	Shielding gas	Current A	Voltage V	Ø mm
DC-	Ar	50 – 70	8 – 11	1.0
	Ar + 2 % N_2	60 – 80	9 – 11	1.2
	Gas flow: 4 – 8 l / min	80 – 110	10 – 12	1.6
		100 – 130	14 – 16	2.0
		130 – 160	16 – 18	2.4
		160 – 200	17 – 19	3.2

Suggested heat input is 0.5 – 1.5 kJ/mm and interpass temperature max. 100°C . Weld the cold pass(es) with 70 – 80% of the heat input used for the root pass. The root side corrosion resistance may be improved by use of nitrogen-based backing gas. The scaling temperature is approx. 850°C in air. Post-weld heat treatment generally not needed. In special cases, solution annealing can be performed at 1100 – 1185°C followed by water quenching. Ferrite measured with Fischer Feritescope 45 – 51 FN.

Approvals

TÜV (18929), CE

All information provided is based upon careful investigation and intensive research.
However, we do not assume any liability for correctness and information is subject to change without notice.