

ER316MnNF

Non-magnetic solid wire for TIG and MIG

Product description	Solid wire for TIG and MIG.											
Specifications	BS EN 12072		20 16 3 Mn L									
	DIN 8556		SG-X2CrNiMnMoN 20 16 (1.4455)									
ASME IX Qualification	QW432 F-No - QW442 A-No -											
Composition (weld metal wt %)		C	Mn	Si	S	P	Cr	Ni	Mo	Cu	N	
	min	--	6.0	0.30	--	--	19.0	15.0	2.5	--	0.12	
	max	0.025	8.0	0.65	0.02	0.030	21.0	18.0	3.5	0.3	0.20	
	typ	0.02	7	0.5	0.01	0.02	20	16	3	0.15	0.15	
	Maximum magnetic permeability 1.01.											
All-weld mechanical properties	Typical values as welded						TIG					
	Tensile strength						MPa	732				
	0.2% Proof stress						MPa	527				
	Elongation on 4d						%	39				
	Elongation on 5d						%	34				
	Reduction of area						%	68				
	Impact energy						- 100°C	J	140			
	Impact energy						- 196°C *	J	95			
	Lateral expansion						- 196°C *	mm (mils)	1.0	(40)		
	Hardness cap/mid						HV	175/220				
* Useful impact properties are maintained down to 4°K (-269°C) and exceeds proposed ASME Code recommendation.												
Typical operating parameters			TIG				MIG					
	Shielding		Argon				Ar+2%O ₂ *					
	Current		DC-				DC+					
	Diameter		2.4mm				1.2mm					
	Parameters		100A, 12V				260A, 26V					
* Proprietary Ar and Ar-He gas mixtures with <3%CO ₂ , also suitable.												
Packaging data	ø mm	TIG				MIG						
	1.2	--				15kg spool						
	1.6	2.5kg tube				--						
	2.4	2.5kg tube				--						
Fume data	MIG fume composition (wt %) (TIG fume negligible)											
		Fe	Mn	Cr ³	Ni	Mo	Cu	OES (mg/m ³)				
		26	22	15	13	1.5	<0.5	3.3				



ULTRAMET B316NF

Basic all-positional MMA pipe welding electrode

Product description	Basic carbonate-fluoride flux on high purity 304L core wire. Special control of residuals coupled with a high manganese to ensure freedom from microfissuring. Recovery is about 120% with respect to core wire, 65% with respect to whole electrode.										
Specifications	BS EN 1600	E 18 15 3 L B 4 2									
	BS 2926	18.15.3.LMnB									
	DIN 8556	E 18 15 3 L B 20+									
ASME IX Qualification	QW432 F-No -, QW442 A-No -										
Composition (weld metal wt %)		C	Mn	Si	S	P	Cr	Ni	Mo	Cu	N
	min	--	2.5	--	--	--	16.5	14.0	2.5	--	0.1
	max	0.04	4.0	0.9	0.025	0.030	19.5	17.0	3.5	0.5	0.2
	typ	< 0.03	3.5	0.4	0.01	0.02	18	16	2.8	< 0.1	0.15
	Maximum magnetic permeability 1.01.										
All-weld mechanical properties	As welded										
	Tensile strength					MPa	560	610			
	0.2% Proof stress					MPa	300	440			
	Elongation on 4d					%	--	38			
	Elongation on 5d					%	30	35			
	Reduction of area					%	--	50			
	Impact energy					J	--	50			
	Lateral expansion					mm (mils)	--	0.6 (24mils)			
	* Useful impact properties are maintained down to 4°K (-269°C) and exceeds proposed ASME Code recommendation.										
Operating parameters	DC +ve										
	ø mm		2.5		3.2		4.0				
	min A		60		75		100				
	max A		90		120		155				
Packaging data	ø mm		2.5		3.2		4.0				
	length mm		300		350		350				
	kg/carton		12.0		13.5		13.5				
	pieces/carton		678		393		252				

Classification

EN 12072-99 : W 20 16 3 Mn L/G 20 16 3 Mn L

General description

Solid wire for welding fully austenitic CrNiMnMo stainless steels and low temperature steels
Not susceptible for hot cracking

Shielding gases (acc. EN 439)

GTAW	I1	Inert gas Ar (100%)
GMAW	M12	Mixed gas Ar+ >0-5% CO ₂
GMAW	M13	Mixed gas Ar+ >0-3% O ₂

Approvals

	TÜV	UDT
GTAW	+	+
GMAW	+	+

Chemical composition (w%) typical wire / rod

C	Mn	Si	Cr	Ni	Mo	N
0.015	7	0.35	20	16	2.8	0.15

Mechanical properties, typical, all weld metal

Condition	0.2% Proof strength (N/mm ²)	Tensile strength (N/mm ²)	Elongation (%)	Impact ISO-V(J) -196°C
As welded				
Typical values GTAW (I1)	430	650	35	75
GMAW (M12)	400	600	30	50

Materials to be welded

	Steel grades	W.Nr.	ASTM/ACI	UNS	
EN 10088-1/-2	N-alloyed stainless	X2 CrNiN 18-10	1.4311	(TP)304LN	S30453
	CrNi-and	X2 CrNiMoN 17-11-2	1.4406	(TP)316LN	S31653
		X2 CrNiMoN 17-13-3	1.4429		
	CrNiMo-steels	X2 CrNiMoN 17-13-5	1.4439	317LN	S31726
SEW 390	Austenitic anti-magnetic steels	X2 CrNiMoN 22-15	1.3951		
		X2 CrNiMoN18-14-3	1.3952		
		X2 CrNiMo 18-15	1.3953		
		X8 CrMnNi 18-8	1.3965		
SEW 685	Low temperature steels	GX6 CrNi 18-10	1.6902		
		GX5 CrNiNb 18-10	1.6905		
EN 10028-4		12 Ni 14	1.5637		
		X12 Ni 5	1.5680		

Packaging

Process	Unit sizes (mm)	1.2	1.6	2.0	2.4
GTAW	2 and 10 kg tube			X	X
GMAW	15 kg spool BS300	X	X		

other sizes and packaging on request

Liability: All information in this data sheet is based on the best available knowledge, is subject to change without notice and can only be considered as suitable for general guidance.

MDE LNT/LNM 4455 5