

# Filler Metals for the LNG Industry



# Joining 1/2

	Process	Product name	AWS Classification	EN ISO Norm
low temperature steels down to -50°C	SMAW	BÖHLER FOX EV 50	A5.1 7018-1-H4R	2560-A E 42 5 B 42 H5
		Phoenix 120 K	A5.1 E7018-1	2560-A E 42 5 B 32 H5
		BÖHLER FOX EV 60	A5.5 E8018-C3 H4R	2560-A E 46 6 1 Ni B 42 H5
		Phoenix SH V 1	A5.5 E8018-G	2560-A E 50 6 1 Ni B 42 H5
		BÖHLER FOX EV 65	A5.5 E8018-GH4R	18275-A E 55 6 1 NiMo B 42 H5
		BÖHLER FOX EV 70	A5.5 E9018-GH4R	18275-A E 55 6 1 NiMo B 42 H5
		Phoenix SH Schwarz 3 K Ni	A 5.5 E9018-G	2560-A E 50 4 1 NiMo B 42 H5
	SAW	Union S3 Si / UV 418 TT	A5.17 F7A8-EH12K	14171 S 46 6 FB S3Si
		Union S3 Si / UV 421 TT	A5.17 F7A8-EH12K	14171 S 46 5 FB S3Si
		Union S 2 Ni 370 / UV 418 TT	A5.23 F7A8-EG-G	14171 S 42 6 FB S2Ni1,5
		Union S 2 Ni 370 / UV 421 TT	A5.23 F7A8-EG-G	14171 S 42 6 FB S2Ni1,5
		Union S2 NiMo 1 / UV 418 TT	A5.23 F8A10EG-G	14171 S 50 6 FB Sz
		Union S2 NiMo 1 / UV 421 TT	A5.23 F8A10EG-G	14171 S 50 6 FB Sz
		BÖHLER 3 NiMo 1-UP / BÖHLER BB 418 TT	A5.23 F9A8-EF3-F3	14171 S 55 6 FB S3Ni1Mo
		BÖHLER 3 NiMo 1-UP / BÖHLER BB 421 TT	A5.23 F9A8-EF3-F3	14171 S 55 6 FB S3Ni1Mo
		Union S 3 NiMo 1 / UV 418 TT	A5.23 F9A8-EG-F3	14171 S 50 6 FB S3Ni1Mo
	Union S 3 NiMo 1 / UV 421 TT	A5.23 F9A8-EG-F3	14171 S 50 6 FB S3Ni1Mo	
	GMAW	BÖHLER EMK 6	A5.18 ER 70S-6	14341-A G 42 4 M G3Si1/G42 4 C G3Si 1
		Union K 52	A5.18 ER 70S-6	14341-A G 42 4 M G3Si1/G42 4 C G3Si 1
		Union K 52 Ni	A5.28 ER80S-G	14341-A G 50 6 M Z3Ni1/G 46 4 C Z3Ni 1
		BÖHLER NiMo 1-IG	A5.28 ER 90S-G	16834 G 55 6 M Mn3Ni1Mo
		Union MoNi	A5.28 ER 90S-G	16834-A G 69A 5 M N2M2T
	FCAW Rutile	BÖHLER TI 60 FD	A5.29 E81T1-Ni1MJH4	17632-A T 50 6 1Ni P M 1 H5
		Union RV Ni 1	A5.29 E81T1-Ni1MJH4	17632-A T 50 6 1Ni P M 1 H5
	FCAW metal cored	Union MV Ni 1	A5.28 E80 C-Ni1 H4	17632 A T 50 6 1 Ni MM 1 H5
	GTAW	BÖHLER EMK 6	A5.18 ER 70S-6	636-A W 42 5 W3 Si 1
		Union I 52	A5.18 ER 70S-6	636-A W 42 5 W3 Si 1
BÖHLER Ni 1-IG		A5.28 ER80S-Ni1 (mod)	636-A W3Ni1	
Union I 1,2 Ni		A5.28 ER80S-G	636-A W 46 6 W3Ni1	
BÖHLER NiMo1-IG	A5.28 ER90S-G	16834 W 55 6 M Mn3Ni1Mo		
2,5% Ni steels down to -60°C to -80°C	SMAW	BÖHLER FOX 2,5 Ni	A5.5 E8018-C1 H4 R	2560-A E 46 8 2Ni B 42 H5
		Phoenix SH Ni 2 K 70	A5.5 E8018-C1	2560-A E 46 6 2Ni B 42 H5
	SAW	BÖHLER Ni 2-UP / BÖHLER BB 24	A5.23 F8A8 ENi2-Ni2	14171 S 46 6 FB S2Ni2
		BÖHLER Ni 2-UP / BÖHLER BB 421 TT	A5.23 F8A10 ENi2-Ni2	14171 S 46 6 FB S2Ni2
		Union S 2 Ni 2,5 / UV 418 TT	A5.23 F8A10-ENi2- Ni2	14171 S 42 8 FB S2Ni2
	Union S 2 Ni 2,5 / UV 421 TT	A5.23 F8A10-ENi2- Ni2	14171 S 42 8 FB S2Ni2	
	GMAW	BÖHLER 2,5 Ni-IG	A5.28 ER80S-Ni2	14341-A G 46 8 M G2Ni2
Union Ni 2,5		A5.28 ER80S-Ni2	14341-A G 50 6 M G2Ni2	
GTAW	BÖHLER 2,5 Ni-IG	A5.28 ER80S-Ni2	636-A W 46 8 W2Ni2	
	Union I Ni 2,5	A5.28 ER80S-Ni2	636-A W 46 8 W2Ni2	
3,5% Ni steels down to -101°C	SMAW	Phoenix SH Ni 2 K 80	A5.5 E7018-C2L	757 E 42 6 3 Ni B 32 H5
	SAW	Union S 2 Ni 3,5 / UV 418 TT	A5.23 F8A15-ENi3-Ni3	14171 S 46 8 FB S2Ni3
		Union S 2 Ni 3,5 / UV 421 TT	A5.23F8A15-ENi3-Ni3	14171 S 46 8 FB S2Ni3
GTAW	Union I 3,5Ni	A5.28 ENi3	636 WZ 42 10 W2Ni3	
5% Ni-steel down to -120°C	SMAW	Thermanit 19/15 H	A5.4 E316L-15 (Mod)	3581 E 20 16 3 Mn N L B 2 2
	GMAW	Thermanit 19/15	A5.9 ER 316LMn	14343-A G 20 16 3 Mn N L
		Thermanit 17/15 TT	--	14343-A G Z17 15 Mn W
	GTAW	Thermanit 19/15	A5.9 ER 316LMn	14343-A WZ 20 16 3 Mn N L
	SAW	Thermanit 19/15 / Marathon 104	A5.9 ER 316LMn	12072 S 20 16 3 Mn N L
		Thermanit 17/15 TT / Marathon 104	--	12072 S Z 17 15 Mn W
FCAW	BÖHLER EAS 4 PW-FD (LF)	A5.22 E316LT1-4, E316LT1-1	17633-A T Z19 12 3 L P M/C1	
	Thermanit 316L-PW	A5.22 E316LT1-4, E316LT1-1	17633-A T Z19 12 3 L P M/C1	
9% Ni steel down to -196°C	SMAW	UTP 7013 Mo	A5.11 ENiCrMo-6	14172 E Ni 6620 (NiCr14Mo7Fe)
		Thermanit 13/65TT	A5.11 ENiCrMo-6	14172 E Ni 6620 (NiCr14Mo7Fe)
		UTP Soudonel D	A5.11 ENiCrMo-6	14172 E Ni 6620 (NiCr14Mo7Fe)
		Thermanit 13/65 TTW-150	A5.11 ENiCrMo-6	14172 E Ni 6620 (NiCr14Mo7Fe)
		BÖHLER FOX Nibas 625	A5.11 E NiCrMo-3	14172 E Ni 6625 (NiCr22Mo9Nb)
		Thermanit 625	A5.11 E NiCrMo-3	14172 E Ni 6625 (NiCr22Mo9Nb)
		UTP 6222 Mo	A5.11 E NiCrMo-3	14172 E Ni 6625 (NiCr22Mo9Nb)
		UTP 776 Kb	A5.11 E NiCrMo-4	14172/ENi6276 (NiCr15Mo15Fe6W4)
		UTP 7017 Mo	A5.11 E NiCrFe-4	14172 E Ni 6095 (NiCr15Fe8NbMoW)
UTP 5020 Mo	A5.11 ENiCrMo-18	14172 E Ni 6650 (NiCr20Fe14Mo11WN)		

# Joining 2/2

	Process	Product name	AWS Classification	EN ISO Norm	
9% Ni steel down to -196°C	SAW	BÖHLER NIBAS 625-UP/ BÖHLER BB 444	A5.14 ER NiCrMo-3	18274 S Ni 6625 (NiCr22Mo9Nb)	
		Thermanit 625 / Marathon 444	A5.14 ER NiCrMo-3	18274 S Ni 6625 (NiCr22Mo9Nb)	
		UTP UP 6222 Mo / UTP UP FX 6222 Mo	A5.14 ER NiCrMo-3	18274 S Ni 6625 (NiCr22Mo9Nb)	
		UTP UP 776 / UTP UP Flux 776	A5.14 ER NiCrMo-4	18274 S Ni 6276 (NiCr15Mo16Fe6W4)	
		Thermanit NiMo C 276 / Marathon 104	A5.14 ER NiCrMo-4	18274 S Ni 6276 (NiCr15Mo16Fe6W4)	
	GMAW	BÖHLER NIBAS 625 IG	A5.14 ER NiCrMo-3	18274 S Ni 6625 (NiCr22Mo9Nb)	
		UTP A 6222 Mo-3	A5.14 ER NiCrMo-3	18274 S Ni 6625 (NiCr22Mo9Nb)	
		Thermanit 625	A5.14 ER NiCrMo-3	18274 S Ni 6625 (NiCr22Mo9Nb)	
		UTP A 776	A5.14 ER NiCrMo-4	18274 S Ni 6276 (NiCr15Mo16Fe6W4)	
		UTP A 5020 Mo	A5.14 ERNiCrMo-18	18274 S Ni 6650 (NiCr20Fe14Mo11WN)	
	GTAW	BÖHLER NIBAS 625-IG	A5.14 ER NiCrMo-3	18274 S Ni 6625 (NiCr22Mo9Nb)	
		Thermanit 625	A5.14 ER NiCrMo-3	18274 S Ni 6625 (NiCr22Mo9Nb)	
		UTP A 6222 Mo	A5.14 ER NiCrMo-3	18274 S Ni 6625 (NiCr22Mo9Nb)	
		UTP A 776	A5.14 ER NiCrMo-4	18274 S Ni 6276 (NiCr15Mo16Fe6W4)	
	FCAW	BÖHLER NIBAS 625 PW-FD	A5.34 ENiCrMo-3T1-4	12153 T Ni 6625 P M 2	
		Thermaniti 625 PW	A5.34 ENiCrMo-3T1-4	12153 T Ni 6625 P M 2	
UTP AF 6222 Mo PW		A5.34 ENiCrMo-3T1-4	12153 T Ni 6625 P M 2		
Stainless steel type 304L, 316L, 347	SMAW	BÖHLER FOX EAS 2	A5.4 E308L-15	3851 E 19 9 L B 2 2	
		BÖHLER FOX EAS 2 (LF)	A5.4 E308L-15	3851 E 19 9 L B 2 2	
		Thermanit JE Spezial	A5.4 E308L-15	3851 E 19 9 L B 2 2	
		BÖHLER FOX EAS 2 A	A5.4 E308L-17	3851 E 19 9 L R 3 2	
		Thermanit JEW 308L-17	A5.4 E308L-17	3851 E 19 9 L R 3 2	
		BÖHLER FOX SAS 2	A5.4 E347-15	3851 E 19 9 Nb B 2 2	
		Thermanit HE Spezial	A5.4 E347-15	3851 E 19 9 Nb B 2 2	
		BÖHLER FOX SAS2-A	A5.4 E347-17	3851 E 19 9 Nb R 3 2	
		Thermanit HW	A5.4 E347-17	3851 E 19 9 Nb R 3 2	
		BÖHLER FOX EAS 4 M	A5.4 E316L-15	3851 E 19 12 3 L B 2 2	
		BÖHLER FOX EAS 4 M (LF)	A5.4 E316L-15	3851 E 19 12 3 L B 2 2	
		Thermanit GE Spezial	A5.4 E316L-15	3851 E 19 12 3 L B 2 2	
		BÖHLER FOX EAS 4 M-A	A5.4 E316L-17	3851 E 19 12 3 L R 3 2	
		Thermanit GEW 316L-17	A5.4 E316L-17	3851 E 19 12 3 L R 3 2	
	SAW	BÖHLER EAS 2 -UP / BÖHLER BB 202	A5.9 ER308L	14343-A S 19 9 L	
		Thermanit JE-308L / Marathon 431	A5.9 ER308L	14343-A S 19 9 L	
		Thermanit JE-308L / Marathon 104	A5.9 ER308L	14343-A S 19 9 L	
		BÖHLER EAS 4 M-UP / BÖHLER BB 202	A5.9 ER 316L	14343-A S 19 12 3 L	
		Thermanit GE 316 L / Marathon 431	A5.9 ER 316L	14343-A S 19 12 3 L	
		Thermanit GE 316 L / Marathon 104	A5.9 ER 316L	14343-A S 19 12 3 L	
		BÖHLER EAS 2-IG	A5.9 ER 308L	14343-A W 19 9 L	
	GTAW	Thermanit JE-308L	A5.9 ER 308L	14343-A W 19 9 L	
		Thermanit JE-308L Si	A5.9 ER 308LSi	14343-A W 19 9 L Si	
		Thermanit GE-316L	A5.9 ER 316L	14343-A W 19 12 3 L	
		BÖHLER EAS 4 M-IG	A5.9 ER 316L	14343-A W 19 12 3 L	
		Thermanit GE-316LSi	A5.9 ER 316LSi	14343-A W 19 12 3 L Si	
		Thermanit H-347	A5.9 ER 347	14343-A W 19 9 Nb	
		BÖHLER SAS 2-IG	A5.9 ER347	14343-A W 19 9 Nb	
	GMAW	BÖHLER EAS 2-IG (Si)	A5.9 ER 308LSi	14343-A G 19 9 L Si	
		Thermanit JE-308L Si	A5.9 ER 308LSi	14343-A G 19 9 L Si	
		BÖHLER SAS 2-IG (Si)	A5.9 ER 347 Si	14343-A G 19 9 Nb Si	
		Thermanit H Si	A5.9 ER 347 Si	14343-A G 19 9 Nb Si	
		BÖHLER EAS 4 M-IG (Si)	A5.9 ER 316LSi	14343-A G 19 12 3 L Si	
		Thermanit GE-316LSi	A5.9 ER 316LSi	14343-A G 19 12 3 L Si	
	FCAW	BÖHLER EAS 2 FD	A5.22 E308LT0-4, E308LT0-1	17633-A T 19 9 L R M/C 3	
		Thermanit TG 308 L	A5.22 E308LT0-4, E308LT0-1	17633-A T 19 9 L R M/C 3	
		BÖHLER EAS 2 PW-FD	A5.22 E308LT1-4, E308LT1-1	17633-A T 19 9 L P M/C 1	
		Thermanit 308L-PW	A5.22 E308LT1-4, E308LT1-1	17633-A T 19 9 L P M/C 1	
		BÖHLER EAS 2 PW-FD (LF)	A5.22 E308LT1-4, E308LT1-1	17633-A T 19 9 L P M/C 1	
		BÖHLER EAS 4 M-FD	A5.22 E316LT0-4, E316LT0-1	17633-A T 19 12 3 L R M/C 3	
		Thermanit TG 316L	A5.22 E316LT0-4, E316LT0-1	17633-A T 19 12 3 L R M/C 3	
		BÖHLER EAS 4 PW-FD	A5.22 E316LT1-4, E316LT1-1	17633-A T 19 12 3 L P M/C 1	
		Thermanit 316L-PW	A5.22 E316LT1-4, E316LT1-1	17633-A T 19 12 3 L P M/C 1	
		BÖHLER EAS 4 PW-FD (LF)	A5.22 E316LT1-4, E316LT1-1	17633-A T 19 12 3 L P M/C 1	
		BÖHLER SAS 2-FD	A5.22 E347T0-4, E347T0-1	17633-A T 19 9 Nb R M/C 3	
		Thermanit TG 347	A5.22 E347T0-4, E347T0-1	17633-A T 19 9 Nb R M/C 3	
		BÖHLER SAS 2 PW-FD	A5.22 E347T1-4, E347T1-1	17633-A T 19 9 Nb P M/C 1	
BÖHLER SAS 2 PW-FD (LF)		A5.22 E347T1-4, E347T1-1	17633-A T 19 9 Nb P M/C 1		
Aluminum Alloy 5083		GTAW/GMAW	BÖHLER S AlMg 4.5 Mn	A5.10 ER5183	18273 S Al 5183 (AlMg4,5Mn0,7(A))
			Union AlMg 4,5 Mn	A5.10 ER5183	18273 S Al 5183 (AlMg4,5Mn0,7(A))

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