



# Filler Metals for Oil & Gas Upstream

voestalpine Böhler Welding  
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ONE STEP AHEAD.

# Strip Cladding

	Alloy	Welding Process	Layer	Strip	Flux
Low Alloy	1Ni-0,5Mo	SAW	1	SOU DOTAPE A	RECORD NiMo 5T
Stainless	316L	ESW	2	SOU DOTAPE 309 L+316 L	RECORD EST 122
		ESW Single Layer	1	SOU DOTAPE 21.13.3 L	RECORD EST 122
				SOU DOTAPE 316 L	RECORD EST 316-1
	ESW High Speed	2	SOU DOTAPE 309 L+316 L	RECORD EST 136	
	317L	ESW	2	SOU DOTAPE 316 L	RECORD EST 317-2
		ESW Single Layer	1	SOU DOTAPE 21.13.3 L	RECORD EST 317-1
		ESW High Speed	2	SOU DOTAPE 21.13.3 L	RECORD EST 136 Mo
	Duplex	ESW Single Layer	1	SOU DOTAPE 22.6.3 L	RECORD EST 4462-1
	Super Duplex	ESW	2	SOU DOTAPE 22.6.3 L	RECORD EST 2584
	254 SMO	ESW	2	SOU DOTAPE 254 SMO	RECORD EST 122
904 L	ESW	2	SOU DOTAPE 20.25.5 LCu	RECORD EST 122	
	ESW Single Layer	1	SOU DOTAPE 20.25.5 LCu	RECORD EST 385-1	
Nickel	825	ESW	1	SOU DOTAPE 825	RECORD EST 138
	625	ESW	2	SOU DOTAPE 625	RECORD EST 201
		ESW Single Layer	1	SOU DOTAPE 625	RECORD EST 237
				SOU DOTAPE 625	RECORD EST 625-1
	ESW High Speed	2	SOU DOTAPE 625	RECORD EST 236	
	400	SAW	2	SOU DOTAPE NiCu7	RECORD NiCuT
		ESW	2	SOU DOTAPE NiCu7	RECORD EST 400
	C22	ESW	2	SOU DOTAPE NiCrMo22	RECORD EST 259
	C276	ESW	2	SOU DOTAPE NiCrMo59 + SOU DOTAPE NiCrMo4	RECORD EST 259
	59	ESW	2	SOU DOTAPE NiCrMo59	RECORD EST 259
C4	ESW	2	SOU DOTAPE NiCrMo7	RECORD EST 259	
Copper Alloys	70Cu - 30Ni	SAW	2	SOU DOTAPE NiCu7 SOU DOTAPE CuNi30	RECORD NiCuT

## Joining and Cladding 1/2

	Typical Base Material Examples	Welding Process	Product Name	Classification AWS
Unalloyed	DIN StE355 (StE36) DIN T StE420 (TT StE43) API 2Y Gr 50&60	SMAW	<b>BÖHLER FOX EV 47</b>	A5.1 E7016-1
			<b>BÖHLER FOX EV PIPE</b>	A5.1 E7016-1
			<b>BÖHLER FOX EV 50</b>	A5.1 E7018-1
		GTAW	<b>BÖHLER EML 5</b>	A5.18 ER70S-3
			<b>BÖHLER EMK 6</b>	A5.18 ER70S-6
		GMAW	<b>BÖHLER EMK 6 D</b>	A5.18 ER70S-6
			<b>Union K 52</b>	A5.18 ER70S-6
		FCAW	<b>BÖHLER Ti 52-FD</b>	A5.20 E71T-1
			<b>Union RV 71</b>	A5.20 E71T-1CH4
		SAW Flux	<b>UV 306</b>	EN 760 SA AR1 77 AC H5
			<b>UV 400</b>	EN 760 SA AB 1 67 AC H5
			<b>UV 418 TT</b>	EN 760 SA FB 1 55 AC H5
		SAW	<b>Union S 2 Si</b>	A5.17 F7A2-EM12K
			<b>Union S 2</b>	A5.17 F7A6-EM12
<b>Union S 3 Si</b>	A5.17 F7A8-EH12K			
Medium-alloyed	DIN StE355 (StE36) DIN T StE420 (TT StE43) API 2Y Gr 50&60 DIN StE355 (StE36) DIN T StE420 (TT StE43) DIN StE355 (StE36) DIN T StE420 (TT StE43) ALDUR 700QL1 A514grade Q A517grF SUPERELSO 690SR API x65 DIN StE355 (StE36) DIN T StE420 (TT StE43) APIx65/70 pipe EN 10208-2 Grades L210 – L555MB 4130/F22 AISI 8620 Mod	SMAW	<b>BÖHLER FOX 2,5 Ni</b>	A5.5 E8018-C1
			<b>BÖHLER FOX EV 60</b>	A5.5 E8018-C3
			<b>Phoenix SH V1</b>	A5.5 E8018-C3
			<b>BÖHLER FOX EV 65</b>	A5.5 E8018-G
			<b>BÖHLER FOX EV 70</b>	A5.5 E9018-D1
			<b>Thermanit NiMo 100</b>	A5.5 E10018-D2
			<b>Phoenix NiMo 100</b>	A5.5 E10018-D2
			<b>Phoenix SH Ni 2 K 100</b>	A5.5 E11018-M
			<b>Thermanit SH Ni 2 K 100</b>	A5.5 E11018-M
			<b>Phoenix SH Ni 2 K 130</b>	A5.5 E12018-G
			GTAW	<b>Union I CrMo 910</b>
		<b>BÖHLER DMO-IG</b>		A5.28 ER80S-G
		<b>BÖHLER Ni 1-IG</b>		A5.28 ER80S-Ni1
		<b>BÖHLER 2,5 Ni-IG</b>		A5.28 ER80S-Ni2
		<b>Union I Ni 1 MoCr</b>		A5.28 ER100S-G
		GMAW	<b>Union K 52 Ni</b>	A5.28 ER80S-G
			<b>Union MoNi</b>	A5.28 ER90S-G
			<b>BÖHLER NiMo1-IG</b>	A5.28 ER90S-G
		FCAW	<b>BÖHLER Ti 60-FD</b>	A5.29 E81 T1-Ni1
			<b>Union RV Ni 1</b>	A5.29 E81 T1-Ni1
			<b>Union MV NiMoCr</b>	A5.28 E110C-K4MH4
			<b>Union RV NiMoCr</b>	A5.29 E111T1-GJ H4
		SAW Flux	<b>Union MV Ni 1</b>	A5.28 E80C-Ni1 H4
			<b>UV 420 TTR</b>	EN 760 SA FB 1 65 DC
			<b>UV 420 TTR-W</b>	EN 760 SA FB 1 65 AC
			<b>UV 420 TT</b>	EN 760 SA FB 1 65 DC
			<b>UV 418 TT</b>	EN 760 SA FB 1 55 AC H5
			<b>UV 420 TTR-C H4</b>	EN 760 SA FB 1 65 DC H5
			<b>UV 420 TTR-C</b>	EN 760 SA FB 1 65 DC
		SAW	<b>UV 421 TT</b>	EN 760 SA FB 1 65 DC H5
			<b>Union S 2 Ni 370</b>	A5.23 F7A8-EG-G
			<b>Union S 2 CrMo</b>	A5.23 F8P2-EB2R-B2
			<b>Union S 2 Mo</b>	A5.23 F8P4-EA2-A2
			<b>Union S 3 Mo</b>	A5.23 F8A5-EA4-A4
<b>Union S 3 NiMo 1</b>	A5.23 F10P8-EF-F3			
<b>Union S 3 NiMoCr</b>	A5.23 F11A8-EG-F6			
<b>Union X 85 T</b>	A5.23 F12A6-EG-G			
Stainless	UNS S31603 N08904 S41500 S31803/32205 S32760	SMAW	<b>BÖHLER FOX EAS 2</b>	A5.4 E308L-15
			<b>BÖHLER FOX EAS 2-A</b>	A5.4 E308L-17
			<b>BÖHLER CN 23/12 Mo-FD</b>	A5.4 E309L-17
			<b>BÖHLER FOX EAS 4 M-A</b>	A5.4 E316L-17
			<b>BÖHLER FOX SAS 2-A</b>	A5.4 E347-17



## Joining and Cladding 2/2

	Typical Base Material Examples	Welding Process	Product Name	Classification AWS
Stainless	UNS S31603 N08904 S41500 S31803/32205 S32760	GTAW	<b>BÖHLER EAS 2-IG</b>	A5.9 ER308L
			<b>BÖHLER EAS 4 M-IG</b>	A5.9 ER316L
			<b>BÖHLER SAS 2-IG</b>	A5.9 ER347
		FCAW	<b>BÖHLER EAS 2-FD</b>	A5.22 ER308LT0-4
			<b>BÖHLER EAS 2 PW-FD</b>	A5.22 ER308LT1-4
			<b>BÖHLER CN 23/12-FD</b>	A5.22 ER309LT0-4
			<b>BÖHLER CN 23/12 PW-FD</b>	A5.22 ER309LT1-4
			<b>BÖHLER EAS 4 M-FD</b>	A5.22 ER316LT0-4
			<b>BÖHLER EAS 4 PW-FD</b>	A5.22 ER316LT1-4
			<b>BÖHLER SAS 2 PW-FD</b>	A5.22 ER347T-1
		SAW Flux	<b>Marathon 431</b>	EN 760 SA FB 64 DC
			<b>Avesta Flux 805</b>	EN 760 SA AF 2 Cr DC
			<b>BÖHLER BB 202</b>	EN 760 SA FB 2 DC
			<b>Avesta Flux 801</b>	EN 760 SA CS 2 Cr DC
		SAW	<b>Thermanit JE-308L</b>	A5.9 ER308L
			<b>Thermanit 25/14 E-309L</b>	A5.9 ER309L
<b>Thermanit GE-316L</b>	A5.9 ER316L			
Duplex	UNS S31603 N08904 S41500 S31803/32205 S32760 UNSS31803/32205	SMAW	<b>Avesta 2205 basic</b>	A5.4 E2209-15
			<b>Avesta 2205</b>	A5.4 E2209-17
			<b>Avesta 2205-PW AC/DC</b>	A5.4 E2209-17
		GTAW	<b>Avesta 2205</b>	A5.9 ER 2209
		FCAW	<b>Avesta FCW-2D 2205</b>	A5.22 E2209T0 - 4 /-1
			<b>Avesta FCW 2205-PW</b>	A5.22 E2209T1 - 4 -1
		SAW Flux	<b>Avesta Flux 805</b>	EN 760 SA AF 2 Cr DC
		SAW	<b>Avesta 2205</b>	A5.9 ER 2209
Super Duplex	UNS S31603 N08904 S41500 S31803/32205 S32760	SMAW	<b>Thermanit 25/09 CuT</b>	A5.4 E2595-15
			<b>Avesta 2507/P100 rutile</b>	A5.4 E2594-16 *M*
		GTAW	<b>Thermanit 25/09 CuT</b>	A5.9 ER 2594
		FCAW	<b>Avesta FCW 2507/P100-PW</b>	A5.22 E2594T1-4/-1
		SAW Flux	<b>Marathon 431</b>	EN 760 SA FB 64 DC
			<b>Avesta Flux 805</b>	EN 760 SA AF 2 Cr DC
		SAW	<b>Thermanit 25/09 CuT</b>	A5.9 ER 2594
Nickel - Base	ALLOYS UNS N0 6625 N08825 N06059 N10276 ALLOY 400 UNS N04400 W.Nr. 2.4360 & 2.4361  These consumables are also used for joining of CRA clad and/or dissimilar materials	SMAW	<b>UTP 759 Kb</b>	A5.11 ENiCrMo13
			<b>UTP 6222 Mo</b>	A5.11 ENiCrMo3
			<b>UTP 776 Kb</b>	A5.11 ENiCrMo4
			<b>UTP 7015</b>	A5.11 ENiCrFe-3
			<b>UTP 068 HH</b>	A5.11 ENiCrFe-3 (Mod)
			<b>UTP 80 M</b>	A5.11 ENiCu-7
		GTAW	<b>UTP A 6222 Mo</b>	A5.14 ERNiCrMo3
			<b>UTP A 759</b>	A5.14 ERNiCrMo13
			<b>UTP A 786</b>	A5.14 ERNiCrMo14
			<b>UTP A 068 HH</b>	A5.14 ERNiCr-3
		<b>UTP A 80 M</b>	A5.14 ERNiCu-7	
		GMAW	<b>UTP A 6222 Mo-3</b>	A5.14 ERNiCrMo3
		FCAW	<b>UTP AF 6222 Mo PW</b>	A5.34 ENiCrMo3Ti-4
SAW Flux	<b>UTP FX 504</b>	EN ISO 14174 SA AB 2 AC		
SAW	<b>UTP A 6222 Mo-3</b>	A5.14 ERNiCrMo3		
Non Ferrous	90:10 CuNi UNS C70600 & 70:30 CuNi UNS C70500 Alloys ASTM B861 & B862 Grade 2 Pipe	SMAW	<b>UTP 387</b>	A5.6 ECuNi
		GTAW	<b>UTP A 387</b> <b>UTP A 902</b>	A5.7 ERCuNi A5.6 ER Ti-2
Cladding	A wide variety of base materials including those above are routinely weld clad	GTAW/GMAW	<b>UTP A 6222 Mo-3</b>	A5.14 ERNiCrMo-3
		SAW	<b>UTP A 6222 Mo + UTP FX 504</b>	A5.14 ERNiCrMo-3
		FCAW	<b>SK STELKAY 6 T-G</b>	DIN8555 MF20GF40CTZ



# voestalpine Böhler Welding

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