

SAW (Submerged arc welding) wires for mild and low alloyed steels

Quality	Classification DIN EN / DIN EN ISO	Ma- terial- No.	Classification AWS	Appro- vals	Characteristics and application	Base materials	Typical analysis %
UP-99 (S1)	756 S1	1.0351	A5.17 / A5.23 ~EL12	TÜV, DB, GL	For submerged arc welding of mild steels.	S185, P235GH, P265GH, P235G1TH - 255G1TH, Ship construction grades A - D, Fine grain steels up-to P355N	C 0,08 Si 0,10 Mn 0,50
UP-100 (S2)	756 S2	1.0494	A5.17 / A5.23 EM12	TÜV, DB, GL	For submerged arc welding of mild steels.	S275JR - S355JO, P235GH, P265GH, P285NH, P310GH, P255G1TH, Ship construction grades A - E, Fine grain steels up-to S380N	C 0,09 Si 0,08 Mn 1,05
UP-101 (S3)	756 S3	1.0496	A5.17 / A5.23 EH10K	TÜV, DB, GL	For submerged arc welding of mild steels.	S275JR - S355JO, E335, P265GH, P285NH, P310GH, P255G1TH - S355JOCu, Ship construction grades A - E, S420N	C 0,12 Si 0,08 Mn 1,55
UP-102 (S4)	756 S4	1.5086	A5.17 / A5.23 ~EH14	TÜV, DB, GL	For submerged arc welding of mild steels.	S275JR - S355JO, E335, P285NH, P310GH, S355JOCu, Ship construction grades A - E, Fine grain steels up-to P460N	C 0,12 Si 0,08 Mn 1,90
UP-100 Si (S2Si)	756 S2Si	1.0492	A5.17 / A5.23 EM12K	TÜV, DB, GL	For submerged arc welding of mild steels.	S275JR - S355JO, P235GH, P265GH, P285NH, P310GH, P235G1TH - P255G1TH, Ship construction grades A - E	C 0,11 Si 0,28 Mn 1,00
UP-101 Spezial (S3Si)	756 S3Si	~1.0479	A5.17 / A5.23 EH12K	TÜV, GL	For submerged arc welding of fine grain structural steels in OFFSHORE-constructions.	S255N - S500N, P255NH - P500NH, S255NL - S500NL	C 0,11 Si 0,30 Mn 1,72
UP-100 NiMo 1 (S2NiMo1)	756 S2Ni1Mo	-	A5.23 ~EF1	TÜV, GL	For submerged arc welding of HSLA structural steels.	P460N - S500N, P460NH - P500NH, P460NL1 - S500NL, S550QL1 - S620QL1	C 0,12 Mo 0,55 Si 0,15 Ni 1,00 Mn 1,00
UP-101 NiMo 1 (S3NiMo1)	14295 S3Ni1Mo 756 S3Ni1Mo	-	A5.23 EF3N	TÜV, GL	For submerged arc welding of HSLA structural steels.	S550QL1	C 0,12 Mo 0,55 Si 0,20 Ni 0,90 Mn 1,75
UP-101 NiMo Sonder (S3NiMo Sonder)	14295 SZ	-	A5.23 ~EF1	-	For submerged arc welding of high strength quenched and tempered structural steels.	S 460, X65	C 0,10 Mo 0,25 Si 0,22 Ni 0,90 Mn 1,45
UP-100 CrNiMo1 (S2 CrNiMo1)	14295 SZ	-	A5.23 EG	-	For submerged arc welding of high strength quenched and tempered structural steels.	A 302 Grade B, A335 Grade F30, A 487 Class 1 N	C 0,10 Cr 1,00 Si 0,25 Mo 0,55 Mn 1,10 Ni 0,95
UP-101 NiMoCr (S3 NiMoCr)	14295 SZ	-	A5.23 ~EF6	-	For submerged arc welding of high strength quenched and tempered structural steels.	S690QL1, 10CrMo9-10, 16NiCrMo12-6	C 0,13 Cr 0,27 Si 0,10 Mo 0,60 Mn 1,60 Ni 2,10
UP-101 NiCrMo 2,5 (S3 NiCrMo 2,5)	14295 S3Ni2,5CrMo	-	A5.23 ~EM4	-	For submerged arc welding of high strength quenched and tempered structural steels.	S690QL1	C 0,11 Cr 0,70 Si 0,17 Mo 0,55 Mn 1,40 Ni 2,40

Delivery conditions: copper or bronze coated, bright drawn, diameter between 1,60 – 5,00 mm.
Special qualities and special diameters on request. (For more information see page 12).

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UP-S3 TiB	756 SZ	-	A5.23 EG	-	For submerged arc welding of pipeline steels. Optimized for multi-arc welding using DSAW (two-run)-technique. For applications in sour gas service.	X52, X56, X60, X65, X70, X80	C 0,08 Ti 0,15 Si 0,25 B 0,012 Mn 1,55
UP-S3 MoTiB	756 SZ	-	A5.23 ~EA2TiB	-	For submerged arc welding of pipeline steels. Optimized for multi-arc welding using DSAW (two-run)-technique. For applications with high toughness requirements.	X52, X56, X60, X65, X70, X80	C 0,08 Mo 0,52 Si 0,25 Ti 0,14 Mn 1,20 B 0,011
UP-S1 Mo 1,2	756 SZ	-	A5.23 EG	-	For submerged arc welding of pipeline steels. Optimized for multi-wire welding in spiral pipe mills.	X52, X56, X60, X65	C 0,08 Si 0,22 Mn 0,50 Mo 1,20
UP-100 Mo (S2Mo)	756 S2Mo 24598-A SMO	1.5425	A5.23 EA2	TÜV, DB, GL	For submerged arc welding of fine grain and creep resistant steels. Service temperature up to 500 °C.	S355JO, E335, P285NH, P310GH, S355JOCu, 16Mo3, P315N - S420N, P315NH - P420NH	C 0,09 Si 0,15 Mn 1,05 Mo 0,52
UP-101 Mo (S3Mo)	756 S3Mo 24598-A SMnMo	1.5426	A5.23 EA4	TÜV, DB, GL	For submerged arc welding of fine grain and creep resistant steels. Service temperature up to 500 °C.	S550GD, S355JO, E335, P285NH, P310GH, S355JOCu, 16Mo3, P355N - P460N, P355NH - P460NH	C 0,12 Si 0,15 Mn 1,52 Mo 0,52
UP-100 CrMo 1 (S2CrMo1)	24598-A SCrMo1	1.7346	A5.23 EB2R	TÜV, DB, GL	For submerged arc welding of creep resistant steels. Service temperature up to 550 °C. Bruscato Factor max. 12 ppm.	13CrMo4-5, 16CrMo4, 24CrMo5, 25CrMo4	C 0,10 Cr 1,20 Si 0,17 Mo 0,52 Mn 0,95
UP-99 CrMo 2 (S1CrMo2)	24598-A SCrMo2	1.7305	A5.23 EB3R	TÜV, GL	For submerged arc welding of creep resistant steels. Service temperature 500 - 600 °C. Bruscato factor max. 12 ppm.	10CrMo9-10, 12CrMo9-10	C 0,11 Cr 2,60 Si 0,15 Mo 1,00 Mn 0,55
UP-100 CrMo 2 (S2 CrMo 2)	24598-A SZCrMo2Mn	-	A5.23 EG	-	For submerged arc welding of creep resistant steels. Service temperature up to 600 °C.	10CrMo9-10, 10CrSiMoV7	C 0,10 Cr 2,45 Si 0,20 Mo 1,00 Mn 0,95
UP-P24 (S1CrMo2V)	24598-A SZCrMo2V	-	A5.23 EG	-	For creep resistant 2,25% Cr - 1% Mo - 0,25% V steels (P24 / T24).	7CrMoVTiB 10-10	C 0,09 Mo 1,00 Si 0,25 V 0,26 Mn 0,55 Nb 0,04 Cr 2,35
UP-99 CrMo 5 (S1CrMo5)	24598-A SCrMo5	1.7374	A5.23 ~EB6	-	For submerged arc welding of creep resistant steels. Service temperature 500 - 600 °C.	X12CrMo5	C 0,08 Cr 6,00 Si 0,30 Mo 0,60 Mn 0,50
UP-99 CrMo 91 (S1CrMo91)	24598-A SCrMo91	-	A5.23 EB9	-	For creep resistant 9% Cr steel.	A 213 T91 A 335 P91 X10CrMoVNb91	C 0,10 Mo 1,00 Si 0,25 Ni 0,60 Mn 0,50 V 0,20 Cr 8,70

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UP-100 Ni 1 (S2Ni1)	756 S2Ni1	1.6222	5.23 ENi1	TÜV, DB, GL	For submerged arc welding of fine grain structural steels where high impact values are required.	S380N - S500N P380NH - P500NH, S380NL - S500NL	C 0,10 Si 0,10 Mn 1,00 Ni 0,90
UP-100 Ni 2 (S2Ni2)	756 S2Ni2	1.6223	5.23 ENi2	TÜV, DB, GL	For submerged arc welding of fine grain structural steels where high impact values are required.	P460N - S500N, P460NL - S500NL, 14Ni6, 12Ni14, 16 Ni 14	C 0,08 Si 0,12 Mn 1,05 Ni 2,25
UP-100 Ni 3 (S2Ni3)	756 S2Ni3	-	5.23 ENi3	TÜV, GL	For submerged arc welding of fine grain structural steels where high impact values are required.	12Ni14	C 0,09 Si 0,17 Mn 1,05 Ni 3,20
UP-100 NiCu (S2NiCu1)	756 S2Ni1Cu	-	5.23 EG	TÜV	For submerged arc welding of weather resistant structural steels.	S235JRW - S355J2G1W, 9CrNiCuP3-2-4	C 0,10 Si 0,25 Mn 1,00 Cu 0,47 Ni 0,85

Delivery conditions: copper or bronze coated, bright drawn, diameter between 1,60 – 5,00 mm.
Special qualities and special diameters on request.

Chemical analysis and properties of pure weld metal:

In submerged arc welding the chemical analysis and the technological properties of the pure weld metal are strongly influenced by the welding flux.

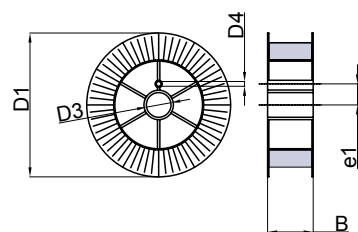
The wire-flux-combination has to fit to the base material to be welded.

Approvals: Approvals have to be performed for the wire-flux-combination.

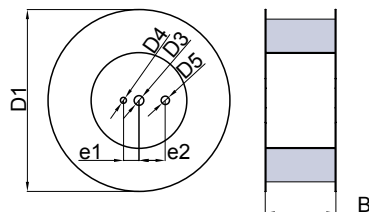
Wire electrodes conforming to EN or ISO standards are exchangeable if the producer has a certified quality management system.

Dimensions of spools, rims and coils

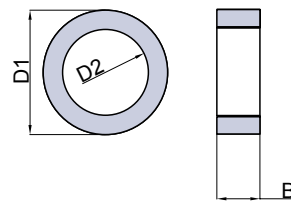
Denomination	DIN EN ISO 544	Type	Outer diameter D_1 mm	Inner diameter D_2 mm	Outer width B mm	Bore diameter D_3 mm	Diameter driver pin hole		Distance from axis		Weight ca. kg
							D_4 mm	D_5 mm	e_1 mm	e_2 mm	
Spool (Sigmette)	S 100	Spool (S)	$100^{\pm 2}$	-	45_{-2}	$16,5^{+1}$	-	-	-	-	0,5-1,0
Spool (D/117)	~S 117	Spool (S)	117	-	71	48^{+1}	-	-	-	-	2,7
Portawirespool	S 200	Spool (S)	$200^{\pm 3}$	-	55_{-3}	$50,5^{+2,5}$	10^{+1}	-	$44,5^{\pm 5}$	-	5
Spool	S 300	Spool (S)	$300^{\pm 5}$	-	103_{-30}	$50,5^{+2,5}$	10^{+1}	-	$44,5^{\pm 5}$	-	15
Mid Size Reel	~S 500	Reel (S)	500^{+2}_{-5}	-	$350^{\pm 1}$	$40,5^{+1}$	25^{+1}	-	$65^{\pm 1}$	-	150
Reel Steel/Wood	S 760	Reel (S)	760_{-10}	-	290^{+10}_{-1}	$40,5^{+1}$	25^{+1}	$35^{\pm 1}$	$65^{\pm 1}$	$110^{\pm 1}$	300
C	-	Coil (C)	295	220^{+5}	50^{+5}_{-3}	-	-	-	-	-	10
B	-	Coil (C)	375	280^{+15}	70^{+10}_{-5}	-	-	-	-	-	20
CC	-	Coil (C)	380-395	300^{+5}	70_{-5}	-	-	-	-	-	20-25
F	C 450	Coil (C)	380	300^{+15}	100^{+10}_{-5}	-	-	-	-	-	25
L	C 450	Coil (C)	400-430	300^{+15}	100^{+10}_{-5}	-	-	-	-	-	30-50
A/90	-	Coil (C)	660-740	570^{+20}	90_{-10}	-	-	-	-	-	50-100
A/100	-	Coil (C)	720-750	610^{+10}	102_{-10}	-	-	-	-	-	75-100
Basket Spool	B300	Basket Rim (B)	$300^{\pm 5}$	$180^{\pm 2}$	$100^{\pm 3}$	-	-	-	-	-	15-20
K/435/70	-	Basket Rim (B)	435	308	70	-	-	-	-	-	20-25
K/415/100	B 450	Basket Rim (B)	415	308	100	-	-	-	-	-	20-30
K/570	-	Basket Rim (B)	760	570	115	-	-	-	-	-	90-100
Basket Spool	BS 300	Basket Spool (BS)	$300^{\pm 5}$	-	103_{-30}	$50,5^{+2,5}$	-	-	-	-	15-20



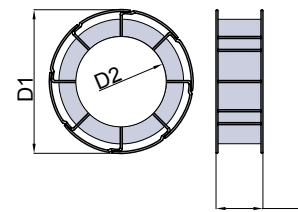
Spool (S)



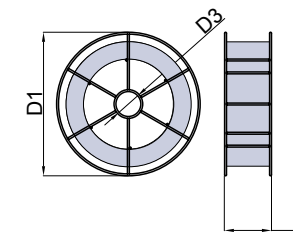
Reel (S)



Coil (C)



Basket Spool (B)



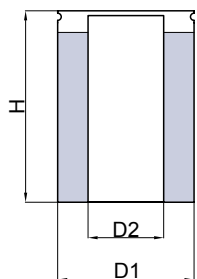
Basket Spool (BS)

Dimensions of Pay-Off-Packs, Spiders and Coils

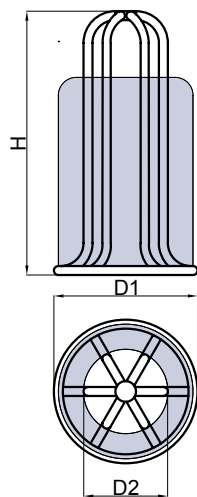
Denomination	Outer diameter D ₁ mm	Inner diameter D ₂ mm	Inner tube / inner core D ₂ mm	Height H mm	Weight ca. kg
MIG-Drum	588	-	300*	870	max. 330
MIG-Drum	650	-	-	875	max. 400
Pay-Off-Pack	570	-	315	1000	max. 400
Pay-Off-Pack	570	-	315	800	max. 300
Pay-Off-Pack	630	-	400	1000	max. 500
Spider	800	480	-	1500	max. 1000
Spider	800	480	-	1200	max. 400
One-Way-Spider	950	500	-	1400	max. 1000
Fliess-Coil**	800	500	-	1000	max. 1000

* Inner core for MIG-Drum only on request.

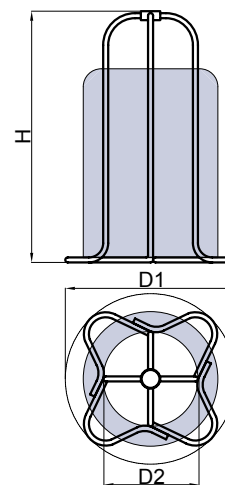
** Random wound spool with two lifting slings and cardboard former. Decoiling stand with empty spider needed.



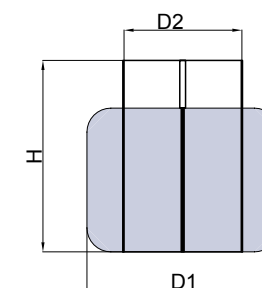
Pay-Off-Pack /
Drum



Spider



One-Way-Spider



Fliess-Coil