

## Carbon Steel

Pos.	Welding process	Jednostka egzaminująca i numer	Technical conditions/ Standards	Type of joint	Base material	Group acc ISO/TR 15608	Thickness range	The throat thickness "a"	Type of material; Plate/Pipe	Welding position
1	135 MAG	Tuv Nord VP1 (4048/2013-VP1)	PN-EN ISO 15614-1	FW (fillet) sl (single-pass)	S355 J2	1,1-1,2	5-20 a=3,4+6,7	3,4-6,7	Plate	PB
2		DNV CS/135/T02/BWS	PN-EN ISO 15614-1 DNV-OS-C401	BW (butt) sl (single-pass)	P355NH	1,1-1,2	1,82-3,38 D>25 mm	1,95-3,9	Pipe/Plate	PA,PB,PC,PD, PE
3		DNV CS/135/T01/BWM	PN EN ISO 15614-1 DNV-OS-C401	BW (butt) ml (multi-pass)	S355J2H	1,1-1,2	3-20 D>25.5 mm	no limits	Pipe/Plate	PA,PB,PC,PD, PE
4		BV 5608GDA2018	PN EN ISO 15614-1	HV-BW (butt) ml (multi-pass)	S355MC	1.1-1.2	3-16		Plate	PC
5		TUV NORD 9120/Z/50/18/V/000	PN EN 15614-1 2014/68/EU	FW (fillet) sl (single-pass)	S355J2+N	1.1-1.2	2.1-6.0	1,5-3.0	Pipe/Plate	PB
6		TUV NORD 9120/Z/50/18/V/000	PN EN 15614-1 2014/68/EU	FW (fillet) sl (single-pass)	S355J2+N	1.1-1.2	3-12	3-6,0	Plate	PB
7		TUV NORD 9120/Z/50/18/V/000	PN EN 15614-1 2014/68/EU	BW (butt) ml (multi-pass)	P355NH	1.1-1.2	2.2-4.4		Pipe/Plate	PA,PB,PC,PD, PE
8		TUV NORD 9120/Z/50/18/V/000	PN EN 15614-1 2014/68/EU	FW (fillet) ml (multi-pass)	S355 J2C+N	1.1-1.2	3-24	no limits	Plate	PB
9	136 MAG	DNV; H1/DNV/2009	DNV-OS-C401; ISO 15614-1	BW (butt) ml (multi-pass)	S355 NL	1.1 ÷ 1.2	20÷80	no limits	Plate	PA;PB
9		DNV H2/DNV/2009	DNV-OS-C401; ISO 15614-1	BW (butt) ml (multi-pass)	S355 NL	1.1 ÷ 1.2	20÷80	no limits	Plate	PA;PB
10	141 TIG	UDT; 3206/OZ/2011-001	PN-EN ISO 15614-1	BW (butt)	S355 J2G3	1.1 ÷ 1.2	2,1+6	no limits	Plate	PA, PB
11		0036/PL/VP-1158/15	PN-EN ISO 15614-1	BW (butt) sl (single-pass)	E235	1,1	0,7-1,3 a0,75-a1,5	0,68-1,35	Pipe/Plate	PA
12		0036/PL/VP-1159/15	PN-EN ISO 15614-1	FW (fillet) sl (single-pass)	E235	1,1	0,7-2,0 a0,68-a1,35	0,75-1,5	Pipe/Plate	PB
13		TUV NORD 9120/Z/18/V/0005	PN EN 15614-1 2014/68/EU	BW (butt) ml (multi-pass)	P355NH	1.1-1.2	1.45-5.8	2,2-4,4	Pipe/Plate	PA,PB,PC,PD, PE,PF
14		TUV NORD 9120/Z/18/V/0006	PN EN 15614-1 2014/68/EU	FW (fillet) sl (single-pass)	S355J2+N	1.1-1.2	2.1-6.0	1.5-3,0	Pipe/Plate	PB

## Stainless Steel

Pos.	Welding process	Jednostka egzaminująca i numer	Technical conditions/ Standards	Type of joint	Base material	Group acc ISO/TR 15608	Thickness range	The throat thickness "a"	Type of material; Plate/Pipe	Welding position
1	135 MAG	DNV SS/135/P02/BWS	PN-EN ISO 15614-1; DNV-OS-C401	BW (butt) sl (single-pass)	1,4404 (316L)	8.1	3÷5,2	3-6	Plate	PA;PB;PC;PD;PE
2		DNV SS/135/P01/BWM	PN-EN ISO 15614-1; DNV-OS-C401	BW (butt) ml (multi-pass)	1,4404 (316L)	8.1	3÷20	no limits	Plate	PA;PB;PC;PD;PE
3		DNV SS/135/P03/FWS	PN-EN ISO 15614-1;	FW (fillet) sl (single-pass)	1,4404 (316L)	8.1	3÷6,6 a=3÷6	3-6	Plate	All except PG, PJ
4		DNV SS/135/P04/FWM	PN-EN ISO 15614-1;	FW (fillet) ml (multi-pass)	1,4404 (316L)	8.1	3÷20	no limits	Plate	All except PG, PJ
5		DNV SS/135/T01/BWS	PN-EN ISO 15614-1;	BW (butt) sl (single-pass)	1,4301 (304)	8.1	1,4-2,6 D>25 mm	1,5-3,0	Pipe/Plate	All except J-L045, PG,PJ
6		DNV SS/135/T02/BWM	PN-EN ISO 15614-1;	BW (butt) ml (multi-pass)	1,4404 (316L)	8.1	3-16 D>28 mm	no limits	Pipe/Plate	All except J-L045, PG,PJ
7		TUV SUD 0036/PL/VP-0815/16	PN-EN 15614-1, DNV GL-OS-C401, PED 97/23/EG	BW (butt) ml (multi-pass)	1,4404 (316L)	8.1	10-40	no limits	Plate	PC, PA, PB
8		BV 5640GDA2019	PN EN 15614-1	BW (butt) ml (multi-pass)	1,4404 (316L)	8.1	3-20	NA	Plate	PG+PA (Teowe)
9		BV 5641GDA2019	PN EN 15614-1	BW (butt) ml (multi-pass)	1,4404 (316L)	8.1	3-20	no limits	Plate	PG+PA (Narożne)
10		DNV SS/141/P01/BWS	PN-EN ISO 15614-1; DNV-OS-C401	BW (butt) sl (single-pass)	1,4404 (316L)	8.1	1,75÷3,25	1,8-3,75 sl	Plate	PA;PB;PC;PD;PE
11		UDT; HM/141 SS 10/2010 rev.01	PN-EN ISO 15614-1	BW (butt) ml (multi-pass)	1,4404	8.1	3÷20	no limits	Plate	PA;PB
12		DNV SS/141/T01/BWM	PN-EN ISO 15614-1; DNV-OS-C401	BW (butt) ml (multi-pass)	1,4404 (316L)	8.1	3÷10,16 D>25 mm	no limits	Pipe/Plate	All except J-L045, PG,PJ

13	141 TIG	DNV SS/141/PT01/FWS	PN-EN ISO 15614-1; DNV-OS-C401	FW (fillet) sl (single-pass)	1,4404 (316L)	8.1	3÷10,16 D>25 mm	2,25-4	Pipe/Plate	PA;PB;PD
14		TUV NORD VP/0089/16/V/0007	PN EN ISO 15614-1 PED 97/23/EG	BW (butt) ml (multi-pass)	1,4404 (316L)	8.1	1,82÷5,2 D>25 mm	no limits	Pipe/Plate	All except J-L045, PG,PJ
15		TUV NORD VP/0089/16/V/0008	PN EN ISO 15614-1 PED 97/23/EG	BW (butt) sl (single-pass)	1,4404 (316L)	8.1	0,98÷1,82 D>25 mm	1-2,1	Pipe/Plate	All except J-L045, PG,PJ
16		TUV NORD VP/0089/16/V/0001	PN EN ISO 15614-1 PED 97/23/EG	FW (fillet) sl (single-pass)	1,4404 (316L)	8.1	1,82÷5,2 D=12,5- 50,0 mm	1,5-3,0	Pipe/Plate	All except J-L045, PG,PJ
17		TUV NORD VP/0089/16/V/0002	PN EN ISO 15614-1 PED 97/23/EG	FW (fillet) sl (single-pass)	1,4404 (316L)	8.1	0,98÷2,8 D=12,5- 50,0 mm	1,13-2,25	Pipe/Plate	All except J-L045, PG,PJ
18		TUV NORD VP/0089/16/V/0003	PN EN ISO 15614-1 PED 97/23/EG	FW (fillet) sl (single-pass)	1,4404 (316L)	8.1	1,82÷5,2 D>25 mm	1,88-3,75	Pipe/Plate	All except J-L045, PG
19		TUV NORD VP/0089/16/V/0004	PN EN ISO 15614-1 PED 97/23/EG	FW (fillet) sl (single-pass)	1,4404 (316L)	8.1	0,98÷2,8 D>25 mm	1,125-2,25	Pipe/Plate	All except J-L045, PG
20		TUV NORD VP/0089/16/V/0005	PN EN ISO 15614-1 PED 97/23/EG	BW (butt) ml (multi-pass)	1,4404 (316L)	8.1	1,82÷5,2 D:12,5-50 mm	no limits	Pipe/Plate	All except J-L045, PG
21		TUV NORD VP/0089/16/V/0006	PN EN ISO 15614-1 PED 97/23/EG	BW (butt) sl (single-pass)	1,4404 (316L)	8.1	0,98÷1,82 D:10-40 mm	a=1,05-2,1	Pipe/Plate	All except J-L045, PG

## DUPLEX

Pos.	Welding process	Jednostka egzaminująca i numer	Technical conditions/ Standards	Type of joint	Base material	Group acc ISO/TR 15608	Thickness range	The throat thickness "a"	Type of material; Plate/Pipe	Welding position
1	135 MAG	TUV NORD VP/0090/17/V/0001	PN EN ISO 15614-1 2014/68/EU	BW (butt) ml (multi-pass)	1.4462 Duplex	10.1	3-24		Plate	All except J-L045, PG
2		TUV NORD VP/0090/17/V/0002	PN EN ISO 15614-1 2014/68/EU	BW (butt) sl (single-pass)	1.4462 Duplex	10.1	3-5,2		Plate	All except J-L045, PG
3		TUV NORD VP/0090/17/V/0003	PN EN ISO 15614-1 2014/68/EU	FW (fillet) sl (single-pass)	1.4462 Duplex	10.1	3-12	3,98-7,95	Plate	All except J-L045, PG
4		TUV NORD VP/0090/17/V/0004	PN EN ISO 15614-1 2014/68/EU	FW (fillet) ml (multi-pass)	1.4462 Duplex	10.1	6-24	no limits	Plate	All except J-L045, PG
5	141 TIG	TUV NORD VP/0090/17/V/0005	PN EN ISO 15614-1 2014/68/EU	BW (butt) ml (multi-pass)	1.4462 Duplex	10.1	3-8		Plate	All except J-L045, PG
6		TUV NORD VP/0090/17/V/0006	PN EN ISO 15614-1 2014/68/EU	FW (fillet) sl (single-pass)	1.4462 Duplex	10.1	3-8	2,2-4,4	Plate	All except J-L045, PG
7		TUV NORD VP/0090/17/V/0007	PN EN ISO 15614-1 2014/68/EU	FW (fillet) ml (multi-pass)	1.4462 Duplex	10.1	3-8	no limits	Plate	All except J-L045, PG

## MIX/Stainless Steel+Carbon Steel

Pos.	Welding process	Jednostka egzaminująca i numer	Technical conditions/ Standards	Type of joint	Base material	Group acc ISO/TR 15608	Thickness range	The throat thickness "a"	Type of material; Plate/Pipe	Welding position
1	141 TIG	TUV SUD 0036/PL/VP-0310/16	PN EN ISO 15614-1	BW (butt) ml (multi-pass)	1,4404 (316L)+ S355J2H	8.1+1.2	3÷10	no limits	Pipe >=25	HL045
2		TUV SUD 0036/PL/VP-0311/16	PN EN ISO 15614-1	BW (butt) ml (multi-pass)	1,4404 (316L)+ S355J2H	8.1+1,2	3÷10	no limits	Pipe+Plate >=25	PB
3	135 MAG	TUV NORD VP/0090/17/V/0008	PN EN ISO 15614-1 2014/68/EU	FW (fillet) sl (single-pass)	1.4404+S3 55J2+N	8,1+1,2	3,0-12	3,75-7,5	Plate	All except PG i J-L045
4		TUV NORD VP/0090/17/V/0009	PN EN ISO 15614-1 2014/68/EU	BW (butt) ml (multi-pass)	1.4404+S3 55J2+N	8,1+1,2	3,0-20		Plate	PA

## MIX/SMO+Carbon Steel

Pos.	Welding process	Jednostka egzaminująca i numer	Technical conditions/ Standards	Type of joint	Base material	Group acc ISO/TR 15608	Thickness range	The throat thickness "a"	Type of material; Plate/Pipe	Welding position
1	141 TIG	TUV NORD 0149/18/V/0001	PN EN ISO 15614-1	FW (fillet) ml (multi-pass)	1.4547+ S355MC	8.2+1.2	3÷12	no limits	Pipe >=30	PB

## Aluminium

Pos.	Welding process	Jednostka egzaminująca i numer	Technical conditions/ Standards	Type of joint	Base material	Group acc ISO/TR 15608	Thickness range	The throat thickness "a"	Type of material; Plate/Pipe	Welding position
1	131 MIG	DNV AL/131/F01/FWS	DNV-OS-C401	FW (fillet) sl (single-pass)	6082	22-23	1,5-4		Plate	PA;PB;PF
2		DNV AL/131/F02/FWM	PN-EN ISO 15614-2; DNV-OS-C401; Norsok M 102	FW (fillet) ml (multi-pass)	6082	22-23	3÷20		Plate	PA;PB;PF
3		TUV-Nord VP3_3	PN-EN ISO 15614-2;	BW (butt) ml (multi-pass)	6082	22-23	3÷20		Plate	PA
4		TUV-Nord VP5_15	PN-EN ISO 15614-2;	BW (butt) ml (multi-pass)	6082	22-23	3÷20		Plate	PF
5	141 TIG	VP1_15	PN-EN ISO 15614-2;	BW (butt) ml (multi-pass)	6082	22-23	3÷10	3-10	Pipe+Plate >=25	All except J-L045, PG
6			PN-EN ISO 15614-2;	FW (fillet) sl (single-pass)	6082	22-23	3÷10	3,75-7,5	Pipe+Plate >=25	PB
7		VP2_15	PN-EN ISO 15614-2;	BW (butt) ml (multi-pass)	6082	22-23	3÷10	3-10	Plate	All except J-L045, PG
8			PN-EN ISO 15614-2;	FW (fillet) sl (single-pass)	6082	22-23	3÷10	3,75-7,5	Plate	PB, PF
9		VP4_15	PN-EN ISO 15614-2;	FW (fillet) sl (single-pass)	6082	22-23	3÷20	2,25-4,5	Plate	PB, PF PD
10		VP4_15	PN-EN ISO 15614-2;	FW (fillet) sl (single-pass)	6082	22-23	3÷20	2,25-4,5	Plate	PB, PF PD
11		BV 5594GDA2019	PN-EN ISO 15614-2;	BW (butt) ml (multi-pass)	6082	22-23	1,5-6	NA	Plate	PA (4043)
12		BV 5593GDA2019	PN-EN ISO 15614-2;	FW (fillet) sl (single-pass)	6082	22-23	3-20	3-6	Plate	PA, PB (4043)
13		BV 5592GDA2019	PN-EN ISO 15614-2;	BW (butt) ml (multi-pass)	6082	22-23	3-20	NA	Plate	PA (HV 4043)
14		BV5591GDA2019	PN-EN ISO 15614-2;	FW (fillet) sl (single-pass)	6082	22-23	1,5-6	2,25-4,5	Plate	PA, PB (4043)

## Robot welding

Pos.	Welding process	Jednostka egzaminująca i numer	Technical conditions/ Standards	Type of joint	Base material	Group acc ISO/TR 15608	Thickness range	The throat thickness "a"	Type of material; Plate/Pipe	Welding position
1	135 MAG	TUV NORD VP/0022/18/V001	PN EN ISO 15614-1	FW (fillet) ml (multi-pass)	S355J2+N	1.2	5-20	no limits	Plate	PB (FM1)
2		TUV NORD VP/0022/18/V002	PN EN ISO 15614-1	FW (fillet) ml (multi-pass)	S355J2+N	1.2	5-20	no limits	Plate	PB (FM1)
3		TUV NORD VP/0022/18/V003	PN EN ISO 15614-1	FW (fillet) sl (jednościgowa)	S355MC	1.2	3-12		Plate	PB (FM1)
4		BV5595GDA2019	PN EN ISO 15614-1	FW (fillet) ml (multi-pass)	1.4404	8,1	3-20	no limits	Plate	PA,PB (FM5)