



PLATE MILL PLATES FROM SAIL

نوع
تعداد
مشخصات

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New Plate Mill - Rourkela Steel Plant



KEY FEATURES :

Capacity : 0.92 MTPA

Thickness Range : 6 mm - 100 mm

Width Range : 1500 mm - 4100 mm

Length Range : 6300 mm - 15000 mm

- 4300 mm wide Mill , roll force – 90000 KN
- Hydraulic Automatic Gauge Control (HAGC)
- On-line paint, punch & edge marking facility
- Normalised Rolled upto 63 mm
- Thermo-mechanical Controlled process (TMCP)
- On-line plate thickness measurement & On-line UST
- Control of process parameters through level 2 automation
- On-line Ultrasonic testing as per almost all international standards
- Inspection results at Cooling Bed fed into the Level 2 system for appropriate action at downstream stations
- Spray paint marking on top surface of all plates and on side surface of plates for identification and traceability
- Punch marking of identification numbers, grade & SAIL logo

Finished Plate thickness tolerances

8 mm to < 15 mm	± 0.27 mm
15 mm to < 25 mm	± 0.32 mm
25 mm to < 40 mm	± 0.36 mm
40 mm to < 80 mm	± 0.45 mm
80 mm to < 100 mm	± 0.50 mm

Thickness difference within a finished Plate

8 mm to < 15 mm	0.27 mm
15 mm to < 25 mm	0.30 mm
25 mm to < 40 mm	0.33 mm
40 mm to < 80 mm	0.37 mm
80 mm to < 100 mm	0.40 mm



Marking on Plate Mill Plates from New Plate Mill of RSP

**Plate Mill Plates (Rourkela Steel Plant)****Rationalised sizes of Plates w.r.t Width, Length & Thickness for New Plate Mill**

Thickness (mm)	Width / Length (mm)					
	1500	2000	2500	2800	3000	3200
8 mm			8000, 10000	-	-	-
10 mm	-	-	8000, 10000	-	-	-
12 mm	-	12000, 12500	12000, 12500	12000, 12500	12000, 12500	-
14 mm			12000, 12500			
15 mm	-	-	12000, 12500	12000, 12500	12000, 12500	-
16 mm	12000, 12500	6300, 12000, 12500	6300, 12000, 12500	12000, 12500	12000, 12500	12000, 12500
18 mm			12000, 12500			
20 mm	12000, 12500	6300, 12000, 12500	6300, 12000, 12500	12000, 12500	12000, 12500	12000, 12500
22 mm	-	-	6300, 12000, 12500	-	-	-
25 mm	6300, 12000, 12500	6300, 12000, 12500	6300, 12000, 12500	12000, 12500	12000, 12500	12000, 12500
28 mm	-	-	6300, 12000, 12500	12000		
30 mm	-	-	6300, 12000, 12500	12000		
32 mm	6300, 12000, 12500	6300, 12000, 12500	6300, 8000, 10000, 12000, 12500	12000, 12500	12000, 12500	12000, 12500
36 mm	-	6300, 12000, 12500	6300, 12000, 12500	12000, 12500	12000, 12500	12000, 12500
40 mm	-	6300, 12000, 12500	6300, 8000, 10000, 12000, 12500	12000, 12500	12000, 12500	12000, 12500
45 mm	-	6300, 12000, 12500	6300, 12000, 12500	12000, 12500	12000, 12500	12000, 12500
50 mm	-	6300, 12000, 12500	6300, 8000, 10000, 12000, 12500	12000, 12500	12000, 12500	12000
56 mm	-	6300, 12000, 12500	6300, 8000, 10000, 12000, 12500	12000	10000	-
60 mm	-	6300, 12000, 12500	6300, 8000, 10000, 12000, 12500	-	-	-
63 mm	-	6300, 12000, 12500	6300, 8000, 10000, 12000, 12500	10000	10000	-
70 mm	-	-	6300, 8000, 10000	8000	8000	-
75 mm	-	-	6300, 8000, 10000	-	-	-
80 mm	-	6300, 8000	6300, 8000	-	-	-
90 mm	-	-	6300, 8000	-	-	-
100 mm	-	6300, 8000	6300	-	-	-

Rationalised sizes for DSQ grade

Thickness (mm)	Width / Length (mm)		
	1600	2000	2500
40 mm	12000	10000, 12000	8000, 10000
50 mm	10000, 12000	8000, 10000	6300, 8000

Grade wise size mix produced at RSP New Plate Mill

Grade Designation	Thickness	Width
IS: 2062 E-250 A / BR / B0 / C	8 mm -120 mm	2000 mm – 4000 mm
IS: 2062 E-300 A / BR / B0 / C	12 mm - 63 mm	2000 mm – 3000 mm
IS: 2062 E-350 A / BR / B0 / C	12 mm -63 mm	2000 mm – 3000 mm
IS: 2062 E-410 A / BR / B0 / C	12 mm - 50 mm	2500 mm
IS: 2062 E-450 A / BR	12 mm -50 mm	2500 mm
ASTM-A-36	12 mm to 63 mm	2000 mm – 3000 mm
IS: 5986	12 mm - 40 mm	2500 mm – 3000 mm
IS 2002 Gr. 2	12 mm - 100 mm	2000 mm – 3000 mm
IS 2002 Gr. 3	12 mm - 40 mm	2000 mm – 3000 mm
IS 2041 R220 / ASTM-A-285 Gr. C	12 mm - 40 mm	2000 mm – 3000 mm
IS 2002 Gr. 1 / ASTM-A-515 Gr. 60	12 mm - 40 mm	2000 mm – 3000 mm
IS 2002 Gr. 2 / ASTM-A-515 Gr. 65	12 mm - 40 mm	2000 mm – 3000 mm
IS 2002 Gr. 3 / ASTM-A-515 Gr. 70	12 mm - 40 mm	2000 mm – 3000 mm
IS 2041 R220 / ASTM-A516 Gr. 55	12 mm - 40 mm	2000 mm – 3000 mm
IS 2041 R220 / ASTM-A516 Gr. 60	12 mm - 40 mm	2000 mm – 3000 mm
IS 2041 R260 / ASTM-A516 Gr. 65	12 mm - 40 mm	2000 mm – 3000 mm
IS 2041 R260 / ASTM-A516 Gr. 70	12 mm - 40 mm	2000 mm – 3000 mm
IS 2041 R355 / ASTM-A-537 Class 1	12 mm - 40 mm	2000 mm – 3000 mm
ASTM-A-537 Class 2		
ASTM-517 F Class 1	12 mm - 40 mm	2000 mm – 3000 mm
SAILHARD	8 mm – 10 mm	2500 mm
Dead Soft Quality (DSQ)	40 mm – 50 mm	1600 mm – 2500 mm

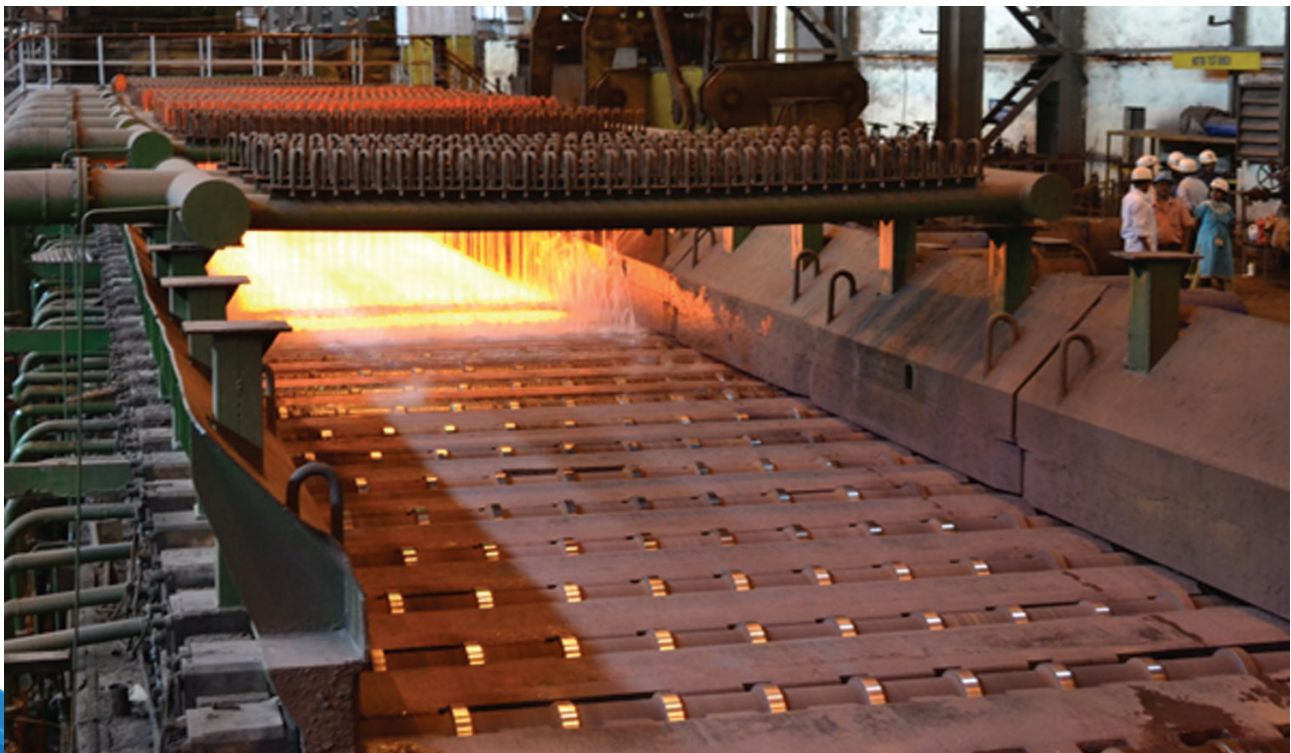
PM Plates can also be supplied in Dual Certifications also with mutual agreement

Rationalised sizes of Plates w.r.t. Width, Length & Thickness for Old Plate Mill

Thickness (mm)	Width / Length (mm)		
	1500	2000	2500
12	10000	6300, 10000	6300, 10000
14, 16, 18, 20, 22, 25	4500, 5600, 6300, 8000, 10000, 12000	4500, 5600, 6300, 8000, 10000, 12000	4500, 5600, 6300, 8000, 10000, 12000
28, 30, 32	4500, 5600, 6300, 8000, 10000, 12000	4500, 5600, 6300, 8000, 10000, 12000	4500, 5600, 6300, 8000, 10000
36, 40	4500, 5600, 6300, 8000, 10000, 12000	4500, 5600, 6300, 8000, 10000	4500, 5600, 6300, 8000
45	4500, 5600, 6300, 8000, 10000	4500, 5600, 6300, 8000	4500, 5600, 6300
50	4500, 5600, 6300, 8000, 10000	4500, 5600, 6300	4500, 5600, 6300
56	4500, 5600, 6300, 8000	4500, 5600, 6300	4500, 5600
63	4500, 5600, 6300, 8000	4500, 5600	4500

Grade wise size mix produced at RSP Old Plate Mill

Grade Designation	Thickness	Width
IS: 2062 E250 A / BR / B0 / C	12 mm – 63 mm	1500 mm – 2500 mm
IS: 2062 E350 A / BR	12 mm -32 mm	1500 mm – 2500 mm
Dead Soft Quality (DSQ)	40 mm -50	1600 mm -2500 mm



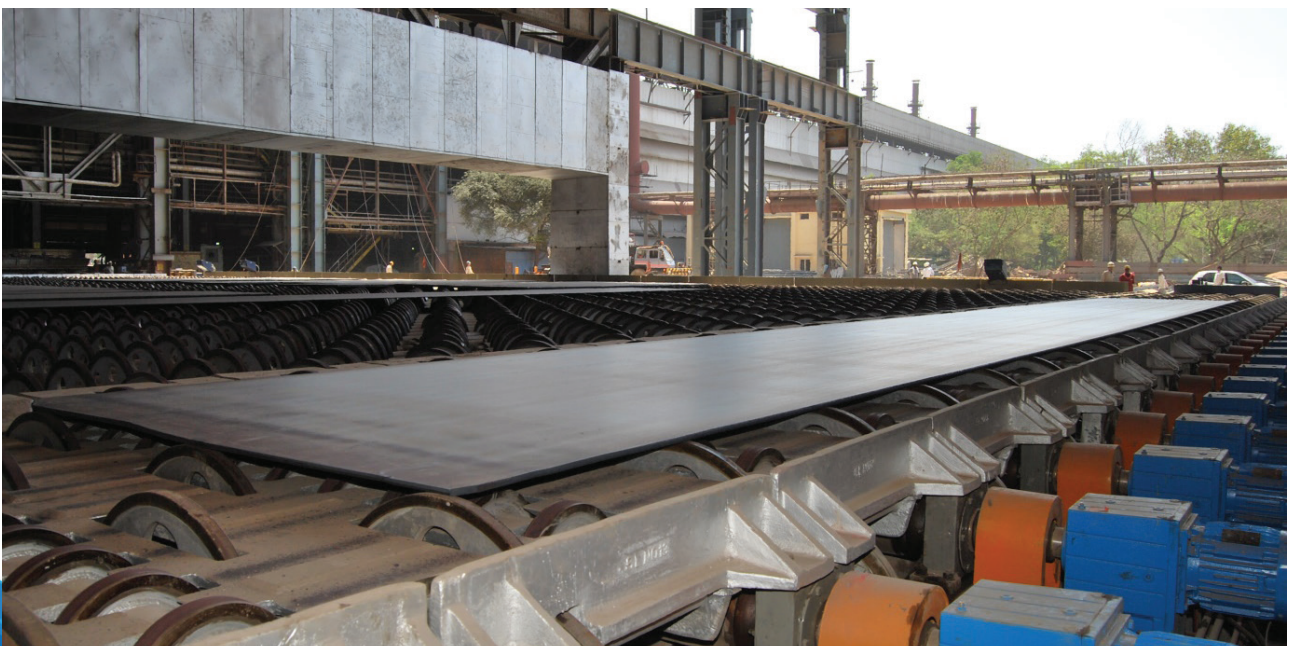
**Plate Mill Plates (Bhilai Steel Plant)****Rationalised sizes of Plates w.r.t Width, Length & Thickness**

Thickness (mm)	Width / Length (mm)								
	1600	1800	2000	2200	2500	2600	2800	3000	3200
8					12500				
10					12000, 12500				
12					12000, 12500	12000, 12500	10000		
14			12500	9000, 12500	9000, 12000, 12500	9000, 12000, 12500	9000, 10000	10000	
16			9000, 12000, 12500	9000, 12000, 12500	9000, 12000, 12500	9000, 12500	9000, 10000	10000	
18		9300, 12500	8000, 12000, 12500	8000, 9300, 12000, 12500	8000, 9300, 12000, 12500	10000, 12500	10000, 12500	10000	
20	12000, 12500	9000, 12000, 12500	9000, 12500	9000, 10000	9000, 9300, 12000, 12500	9000, 9300, 10000, 12500	9000, 9300, 10000	9000, 10000	
22	12000, 12500	9000, 12000, 12500	9300, 10000, 11000	9300, 10000	8000, 9000, 9300, 10000, 12500	8000, 9000, 10000, 12500	8000, 12500	7100, 12500	
25	8000, 12500	8000, 10000, 11000	9000, 9300, 10000	8000, 9000, 9300, 12500	8000, 12000, 12500	8000, 12000, 12500	7100, 12500	12500	12500
28	7100, 10000, 11000	8000, 9000, 9300, 10000	8000, 9000	7100, 8000, 12500	6300, 7100, 12000, 12500	6300, 7100, 12500	6300, 12500	10000, 12000	10000, 11000
32	9000, 9300, 10000	8000, 12500	7100, 8000, 12500	6300, 7100, 12500	6300, 12000, 12500	6300, 12500	9300, 10000, 12500	9000, 9300, 10000	8000, 9000, 9300, 10000
36	8000, 12500	7100, 12500	7100, 12500	11000, 12500	9300, 10000, 12000, 12500	9300, 10000, 12500	8000, 9000, 9300, 10000, 12000	8000, 9000, 9300	7100, 8000, 9000

Thickness (mm)	Width / Length (mm)								
	1600	1800	2000	2200	2500	2600	2800	3000	3200
40	7100, 8000, 12500	6300, 7100, 12500	6300, 12500	10000, 11000	9000, 9300, 10000	9000, 9300, 10000,	8000, 9000, 9300	7100, 8000, 9000	7100 8000
45	11000, 12500	10000, 12500	9000, 10000, 11000	9300, 10000	8000, 9000, 9300	8000, 9000	7100, 8000	6300 7100	
50	10000, 12500	9300, 10000	9000, 9300, 10000	7100, 8000, 9000	7100, 8000	7100, 8000	6300, 7100	6300	
56	9300, 10000	9300, 10000	8000, 9000, 9300,	7100, 8000	6300, 7100	6300, 7100	6300		
63	8000, 9000, 9300, 10000	8000, 9300	7100, 8000	6300, 7100	6300, 7100	6300, 7100	5600, 6300		
75	7100, 8000	6300, 7100	6300	5600	5000				
80	6300, 7100	6300, 8000	6300, 7100	5600					
90	6300	6300, 7100	6300						
100	5600	5600, 6300							
110	5000								
120	4500								

Note : i. Plates above 40mm shall be gas / flame cut.

ii. The sectional weight of Plates requiring Furnace Normalizing, shall not exceed 1.5 Ton / metre



**Grade wise size mix produced at BSP Plate Mill**

Grade / Designation	Quality	Thickness
IS: 2062 E-250	A / BR / B0 / C	8 mm - 120 mm
IS: 2062 E-300	A / BR / B0 / C	8 mm - 100 mm
IS: 2062 E-350	A / BR / B0 / C	8 mm - 100 mm
IS: 2062 E-410	A / BR / B0 / C	8 mm - 90 mm
IS: 2062 E-450	A / BR	8 mm - 63 mm
IS: 2062 E-550	A / BR	8 mm - 32 mm
IS: 2041	R 220 / 260 / 275 / 355	8 mm - 80 mm
ASTM - A - 204 M	A	8 mm - 63 mm
	B	8 mm - 63 mm
DNV	NV A / NV B / NV D, NV A32 / NVD32 / NV E32, NV A36 / NV D36 / NV E36	8 mm - 50 mm
Lloyds	A / B / D, AH - 32 / 36, DH - 32 / 36, EH - 32 / 36	8 mm - 75 mm
IRS	A / B / D	8 mm - 45 mm
SAILHARD		8 mm - 40 mm
SAIL HITEN		8 mm - 12.7 mm
GOST 19282	09G2S / 10G2S1	8 mm - 100 mm
ASTM-A36		8 mm to 63 mm
IS: 5986		8 mm - 100 mm
SAILCOR		8 mm - 20 mm
IRS M -41		8 mm - 12.5 mm
IS 2002	1 / 2 / 3	8 mm - 100 mm
IS 2041 / ASTM-A-285	C	8 mm - 80 mm
IS 2041 / ASTM-A-515	60 / 65 / 70	8 mm - 80 mm
IS 2041 / ASTM-A516	55 / 60 / 65 / 70	8 mm - 80 mm
IS 2041 / ASTM-A-537	Class 1	8 mm - 80 mm

Dimensional Tolerance for BSP Plates**Width (mm) :**

Length (mm)	Width (mm)	Thickness (mm)	Tolerance on Width
Up to and including 8000	Upto and including 2000	Upto and including 20	-0, +10mm
		Over 20	-0, +15mm
Up to and including 8000	Over 2000	Upto and including 20	- 0, +0.5% of width
		Over 20	-0, +20 mm
Over 8000	All widths	Upto and including 20	- 0, +0.2% of length
		Over 20	-0, +0.3% of length

Note : Width tolerance for Untrimmed plates shall be (+)100mm, (-)0mm.

Thickness:

Thickness (mm)	Tolerance in percentage of nominal thickness
Less than 8 mm	+12.5, - 5.0
From 8mm upto & including 12mm	+7.5, - 5.0
Over 12 mm	+5.0, -5.0

Length:

Length (mm)		Thickness (mm)	Tolerance on length in mm / % of nominal length
Over	Upto and including		
—	2200	Upto and including 20	-0, +10 mm
		Over20	-0, +15 mm
2200	3000	Upto and including 20	- 0, +0.5%
		Over20	- 0, +15 mm
3000	6300	Upto and including 20	-0, +0.5%
		Over20	-0, +0.5%
6300	8000	Upto and including 20	- 0, +35 mm
		Over20	- 0, +0.5%
8000	—	Upto and including 20	-0, +35 mm
		Over20	-0, +40 mm

PL Plates with closer tolerances can be supplied with mutual agreement

Mechanical Properties of PM Plates as per IS: 2041

(Steel Plates for pressure vessels used at moderate and low temperature)

Grade	Yield Stress (MPa) Min				Tensile Strength (MPa)	Elongation percent on Gauge Length $5.65 \sqrt{S_0}$ Min.	Impact Energy (J) (min) at a temperature in deg. C			
	≤ 16	>16 to 40 mm	>40 to 60 mm	>60 to 100 mm			20	0	-20	-40
R 220	220	220	220	220	415-540	21	50	40	27	20
R 260	260	260	260	260	490-620	21	50	40	27	20
R 275	275	265	255	235	390-510	23	80	70	50	40
R 355	355	345	335	315	490-640	21	80	70	50	40

NOTES: Impact test shall be at any one temperature as mutually agreed.

Impact test is optional for Grades R220 and R 260.

Stringent impact test temperature and values can be mutually agreed.

IS: 2002	YS (MPa) Min			UTS (MPa)	Elongation (%) Min	Int. Dia. of Bend
	<16 mm	16-40 mm	40-60 mm			
IS 2002 Gr. 1	235	225	215	360-480	24	2t
IS 2002 Gr. 2	265	255	245	410-530	22	2t
IS 2002 Gr. 3	290	285	280	460-580	21	3t

Specification / Grade	Yield Strength, (MPa) Min	UTS (MPa)	Elongation (%) Min	
			200 mm GL	50 mm GL
ASTM-A-285 C	205	385-515	23	27
ASTM-A-515 Gr. 60	220	415-550	21	25
ASTM-A-515 Gr. 65	240	450-585	19	23
ASTM-A-515 Gr. 70	260	485-620	17	21
ASTM-A516 Gr. 55	205	380-515	23	27
ASTM-A516 Gr. 60	220	415-550	21	25
ASTM-A516 Gr. 65	240	450-585	19	23
ASTM-A516 Gr. 70	260	485-620	17	21
ASTM-A-537 Class I	345	485-620	18	22



Mechanical Properties of PM Plates as per IS: 2062

Grade		Tensile Strength (MPa) Min	Yield Strength (MPa) Min			Percentage Elongation A, at Gauge Length, $L=5.65* \sqrt{S}$ (Min)	Internal Bend Diameter Min		Charpy Impact Test	
			<20 mm	20-40 mm	>40 mm		<25 mm	>25 mm	Temp °C	Min J
E-250	A	410	250	240	230	23	2t	3t	-	-
	BR								RT	27
	B0								0	27
	C								(-20)	27
E-300	A	440	300	290	280	22	2t	-	-	
	BR							RT	27	
	B0							0	27	
	C							(-20)	27	
E-350	A	490	350	330	320	22	2t	-	-	
	BR							RT	27	
	B0							0	27	
	C							(-20)	27	
E-410	A	540	410	390	380	20	2t	-	-	
	BR							RT	25	
	B0							0	25	
	C							(-20)	25	
E-450	A	570	450	430	420	20	2.5t	-	-	
	BR							RT	20	
E-550	A	650	550	530	520	12	3t	-	-	
	BR							RT	15	





Mechanical Properties of other major Plate Mill Plate Grades

Specification	Yield Strength, (MPa) Min	Ultimate Tensile Strength (MPa) Min	Elongation (%) Min		Internal diameter of bend		
ASTM-A-36	250	400-550	18	21			
IS: 5986	165	290-400	30			1t	
	205	330-440	28		1t	2t	
	235	360-470	26		1t	2t	
	255	410-520	24		1t	2t	
	325	420-530	19		2t	3t	
	355	420-530	18		2t	3t	
	420	480-590	15		2t	3t	
	490	540-650	12		2t	3t	
ASTM-A-588	345	485 min	16	19	</-20 1t	<20	>25
						<25	<40
Charpy Impact energy 27J at -20 deg. C							
SAILCOR (IRSM-41)	340	480		22		1t	

SAILHARD	Hardness : 200 BHN
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Grade	YS (MPa) Min	UTS (MPa)	EI (%) Min	Int. Dia. of Bend
SAIL HITEN	550	690	15	3.5T

Specification	Grade	Yield Strength, (MPa) Min	UTS (MPa)	Elongation (%) Min	
				200 mm GL	50 mm GL
ASTM-A-204 M	A	255	485 - 620	19	23
	B	275	485 - 620	17	21



Specification	Grade	Yield Strength, (MPa) Min	UTS (MPa)	EI (%) Min	Int. Dia. of Bend	Impact
DNV	NV A	235 MPa	400 - 520 MPa	22	---	---
	NV B					27 J at 0°C for >25 mm
	NV D					27J at -20°C for upto 50mm
	NV A32	315 MPa	440-570 MPa	21	---	31 J at 0°C
	NV D32					31 J at -20°C
	NV E32					31 J at -40°C
	NV A36	355 MPa	470-620 MPa	21	---	34 J at 0°C
	NV D36					34 J at -20°C
NV E36	34 J at -40°C					
Lloyds	A	235 MPa	400-520	22	---	---
	B	235 MPa	400-520	22		27 J at 0°C for >25 mm
	D	235 MPa	400-520	22		27J at -20°C for upto 50mm
GOST 19282	09G2S	345(t:8-10) 325(t:10-20) 305(t:20-32) 285(t:32-40)	490(t:8-10) 470(t:10-20) 460(t:20-32) 450(t:32-40)	21	2T	< 10mm / => 10mm + 20 °C – 64J / 59J
	10G2S1	345(t:8-10) 335(t:10-20) 325(t:20-32) 325(t:32-40)	490(t:8-10) 480(t:10-20) 470(t:20-32) 450(t:32-40)	21	2T	< 10mm / => 10mm + 20 °C – 64J / 59J
ABS	A	235 MPa	400-520 MPa	22	---	---
	B					27 J at 0°C for >25 mm
	D					27J at -20°C
	AH32	315 MPa	440-590 MPa	22	---	31 J at 0°C
	DH32					31 J at -20°C
	EH32					31 J at -40°C
	AH36	355 MPa	490-620 MPa	21	---	34 J at 0°C
	DH36					34 J at -20°C
EH36	34 J at -40°C					
IRS	A	235 MPa	400-520	22	---	---
	B	235 MPa	400-520	22		27 J at 0°C for >25 mm
	D	235 MPa	400-520	22		27J at -20°C for upto 50 mm



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