NLMK

HOT ROLLED STEEL

PRODUCT CATALOGUE

CONTENTS

SECTION 1

REFERENCE STANDARDS

GOST 1577-93
Rolled sheets and wide strips of structural quality steel

GOST 4041-2017
Hot-rolled plates of nonalloyed structural quality steel for cold stamping.

GOST 14637-89
Rolled plate from carbon steel of general quality.

GOST 16523-97
Rolled sheets from quality and ordinary carbon steel for general purposes.

GOST 17066-94
Rolled sheet of high-strength steel.

GOST 19281-2014
High strength rolled steel.

GOST 27772-2021
Rolled products for structural steel constructions.

GOST P 52927-2023
Rolled products for shipbuilding made of normal, high and high strength steel.

EN 10025-2:2019
Hot rolled products of structural steels.

EN 10111-2008
Continuously hot rolled low carbon steel sheet and strip for cold forming.

EN 10149-2:2013
Standard for hot-rolled flat products made of high yield strength thermo-mechanically rolled steels for cold forming.

ASTM A 569
Standard Specification for Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip Commercial (Withdrawn 2000).

ASTM A 830
Standard Specification for Plates, Carbon Steel, Structural Quality, Furnished to Chemical Composition Requirements and supplied in the as-rolled (green) condition.

ASTM A 1011
Standard Specification for light gauge Hot-Rolled Sheet and Strip Carbon(CS and DS), Structural(SS), High-Strength Low-Alloy(HSLAS), High-Strength Low-Alloy with Improved Formability(HSLAS-F), and Ultra-High Strength(UHSS) steels in thicknesses up to 0.230"(6 mm) in coil form.

ASTM A 1018
Standard specification for hot-rolled, heavy-thickness coils of carbon steel, commercial steel, drawing steel, structural steel, high-strength low-alloy steel and ultra-high strength steel.

JIS G 3101
Rolled steels for general structure.

JIS G 3131
Hot-roll mild steel plates, aheet and strip.

JIS G 3132
Hot Rolled steel in the form of plates, sheets δ strips for pipes δ tubes making.

Options:
- 1.5–4.5 mm strip pickling
- 1.5–3.5 mm strip skin-passing
- Rolled steel customized against consumer additional requirements and corporate standards

Testing:
- strain-hardening ratio
- bending
- hardness (HRB)

Surface roughness of hot rolled pickled skin-passed steel Ra 0.6-1.9

Mechanical properties in accordance with EN 10051 and GOST 19904.

Advantages
- High yield strength to strength ratio
- Required level of strain hardening
- Thermal hardening effect
- High impact energy absorption
- High ductility
- Fit for complex elements that require deep drawing
- Sheets free from any residual stress (guaranteed)

Rolled steel size and shape tolerances

Standards for products, geometric dimensions and tolerances	GOST 19903	EN 10051
	GOST 19903	EN 10029

SECTION 2

HOT-ROLLED STEEL APPLICATIONS

Construction and infrastructure

Group	Product	Application case	Grades as per GOST	Grades as per EN	Grades as per ASTM	Grades as per JIS	Section	Page
Construction of buildings and installations	Building frames	Welded beams, columns, shaped pipe	Ст2пс/сп, Ст3сп/пс, 20, 09Г2С, С345, С355	S235JR, S275JR, S355JR, S355MC	36, 45	SS400, SS490	2.1	6
	Floor slabs and formwork	Steel sheets and profiles for temporary formwork and gratings	Ст2пс/сп, Ст3сп/пс, 20, 09Г2С, С345, С355,	S235JR, S275JR, S355JR, S355MC	36, 45	SS400, SS490	2.2	9
	Scaffolding	Structure components	Ст2пс/сп, Ст3сп/пс, 20, 09Г2С, С345, С355	S235JR, S275JR, S355JR, S355MC	36, 45	SS400, SS490	2.3	12
	Shelving and storage systems	Frames, shelves, walls	Ст2пс/сп, Ст3сп/пс, 09Г2С	S235JR, S275JR, S355JR, S355MC, DD12, DD13	36, 45, CS type A	SS400, SS490, SPHC	2.4	15
Industrial and infrastructure construction	Bridges and overhead crossings	Elements of load-bearing structures: welded beams, formed channels and angles	Ст2пс/сп, Ст3сп/пс, 20, 09Г2С	S235JR, S275JR, S355JR, S355MC	36, 40, 45	SS400, SPHT3, SS490	2.5	18
	Road construction elements	Road barriers, lighting towers	Ст3сп/пс	S235JR	36	SS400	2.6	21
	Telecommunication infrastructure and overhead power lines	Tower elements	Ст2пс/сп, Ст3сп/пс, 20, 09Г2С	S235JR, S275JR, S355JR, S355MC	36, 45	SS400, SS490	2.7	23
		Elements of power line support	Ст2пс/сп, Ст3сп/пс, 20, 09Г2С	S235JR, S275JR, S355JR, S355MC	36, 45	SS400, SS490	2.7	23
	Elevators and escalators	Profile that forms the metal frame basis of an elevator shaft	Ст3сп/пс, 08пс	S235JR, DD12, DD13	36, CS type A	SS400, SPHC	2.8	26
Water and gas supply networks	Water pipelines, water supply systems	Elements of pumping stations and treatment facilities, main pipeline	Ст2пс, Ст3сп/пс, 09Г2С	S235JR, S275JR, S355JR, S355MC	36, 45	SS400, SS490	2.9	28
		Water and gas pipe	Ст2пс, Ст3сп/пс, 09Г2С	S235JR, S275JR, S355JR, S355MC	36, 45	SS400, SS490	2.9	28
Architectural and decorative elements	Decoration elements	Structural elements of facade art pieces (weather-resistant steel)	Ст2пс, Ст3сп/пс, 08пс, 09Г2С	S235JR, S275JR, S355JR, S355MC, , DD12, DD13	36, 45, CS type A	SS400, SS490, SPHC	2.10	31
	Doors, gates, fences	Load-bearing frame, framework, box	Ст2пс, Ст3сп/пс, 09Г2С	S235JR, S275JR, S355JR, S355MC	36, 45	SS400, SS490	2.11	34
		Frame, posts	Ст2пс, Ст3сп/пс, 09Г2С	S235JR, S275JR, S355JR, S355MC	36, 45	SS400, SS490	2.11	34
Steel furniture	Cabinets, beds, tables, chairs, workbenches	Tube frame, profile frame, painted panels	Ст2пс, Ст3сп/пс, 08пс	S235JR, DD12, DD13	36, CS type A	SS400, SPHC	2.12	37

Energy sector

Group	Product	Application case	Grades as per GOST	Grades as per EN	Grades as per ASTM	Grades as per JIS	Section	Page
Oil & Gas	Energy infrastructure	Structural elements: gas turbine foundation	Ст3сп/пс, 09Г2С,	S235JR, S275JR, S355JR, S355MC	36, 45	SS400, SS490	2.13	39
	Drilling well elements	OCTG pipes (casing, pump-compressor, coil tubing)	А606, К55, N80, 22ГЮ, 25ГЮ, КС				2.14	41
	Oil and gas pipelines	Oil and gas pipes	09Г2С	S355JR, S355MC	45	SS490	2.15	42
	Containers and vessels	Tanks	Ст3сп/пс, 09Г2С, С345, С355	S235JR, S275JR, S355JR, S355MC	36, 45	SS400, SS490	2.16	44

Automotive industry

Group	Product	Application case	Grades as per GOST	Grades as per EN	Grades as per ASTM	Grades as per JIS	Section	Page
Cargo and commercial vehicles	Vehicle internal body elements	Safety elements	Ст3сп/пс, 08пс, 10, 20, 09Г2С	S235JR, S355JR, S355MC, S420MC, S500MC	36, CS type A, 40, 45	SS400, SPHC, SPHT3, SS490	2.17	47
		Basic structures for chassis and frames	Ст3сп/пс, 08пс, 10, 20, 09Г2С	S235JR, S355JR, S355MC, S420MC, S500MC	36, CS type A, 40, 45	SS400, SPHC, SPHT3, SS490	2.17	47
		Suspension components: support elements and fastenings	Ст3сп/пс, 08пс, 10, 20, 09Г2С	S235JR, S355JR, S355MC, S420MC, S500MC	36, CS type A, 40, 45	SS400, SPHC, SPHT3, SS490	2.17	47
	Wheel discs	Disc, wheel rim	Ст3сп/пс, 08пс	S235JR, S235JRC, S355MC, DD11-DD14	36, DS type A	SS400, SPHD	2.18	51

Machine building

Group	Product	Application case	Grades as per GOST	Grades as per EN	Grades as per ASTM	Grades as per JIS	Section	Page
Railway industry	Locomotives, passenger and freight cars, tanks	Frames, bodies, walls, etc.	Ст3сп/пс, 09Г2С	S235JR, S355MC, S420MC	36, 45	SS400, SS490	2.19	54
Shipbuilding industry	Watercraft of various purposes	Ship hulls, deck superstructures	A, B, D, E, A32, D32, E32, D36, A40, D40				2.20	56
Construction machines	Excavators, loaders and cranes	Body elements: turntable with two-legged stand and chassis support frame, crane boom	Ст3сп/пс, 08пс, 10, 20, 09Г2С	S235JR, S355MC, S420MC, S500MC	36, CS type A, 40, 45	SS400, SPHC, SPHT3, SS490	2.21	58
Agricultural machinery	Tractors, combines and other machines	Body components	Ст3сп/пс, 08пс, 10, 20, 09Г2С	S235JR, S355MC, S420MC, S500MC	36, CS type A, 40, 45	SS400, SPHC, SPHT3, SS490	2.22	62
	Attachments and accessory equipment	Parts of buckets, chippers, ploughs, harrows, cultivators, seeders, sprayers, thinners, mowers, etc.	Ст3сп/пс, 08пс, 10, 20, 09Г2С	S235JR, S355MC, S420MC, S500MC	36, CS type A, 40, 45	SS400, SPHC, SPHT3, SS490	2.23	66
Exploration and mining	Mining equipment elements	Sieves, screens	Ст3сп/пс, 09Г2С	S235JR, S355MC, S420MC, S500MC	36, 45	SS400, SS490	2.24	70
	Other equipment elements	Elements of structures, load-bearing elements	Ст3сп/пс, 09Г2С	S235JR, S355MC, S420MC, S500MC	36, 45	SS400, SS490	2.25	72
		Structures of drilling rigs and platforms	Ст3сп/пс, 09Г2С	S235JR, S355MC, S420MC, S500MC	36, 45	SS400, SS490	2.25	72

Steelmaking industry

Group	Product	Application case	Grades as per GOST	Grades as per EN	Grades as per ASTM	Grades as per JIS	Section	Page
Downstream rerolling and processing	Cold rolled, galvanized, pre-painted steel and tin	Hot rolled semi-product	08пс	DD12, DD13	DS type A, B	SPHD	2.26	74

SECTION 2.1

Building frames

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст2сп	GOST 16523-97	1.50–3.90	900–1,600	300–480		≥23		1.0a
	GOST 14637-89	4.00–14.00	900–1,850	330–480	≥225	≥32		1.5a
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
20	GOST 16523-97	1.80–2.00	900–1,350	350–500		≥22		0a
		2.10–3.90	900–1,600	350–500		≥23		1.0a
	GOST 1577-93	4.00–14.00	900–1,850	≥370		≥28		1.0a
	GOST 4041-2017	4.00–12.00	900–1,850	340–490		≥28, 24		a
С345	GOST 27772-2021	4.00–10.00	900–1,850	≥490	≥345	≥21	Depending on categories	2.0a
		10.01–12.00	900–1,850	≥470	≥325	≥21		2.0a
С355	GOST 27772-2021	8.00–12.00	900–1,850	≥470	≥355	≥21		2.0a
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S275JR	EN 10149-2:2013	1.80–2.00	900–1,290	430–580	≥275	≥15		Depending on thickness
		2.01–2.50	900–1,320	430–580	≥275	≥16		
		2.51–2.99	900–1,400	430–580	≥275	≥17		
		3.00–9.99	900–1,850	410–560	≥275	≥21	Depending on thickness	
		10.00–14.00	900–1,850	410–560	≥275	≥21		
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a

Recommended by NLMK

BUILDING FRAMES

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ2СП

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
2.00–2.49							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 20

Thickness, mm	Width, mm					
	900	1,300	1,350	1,400	1,500	1,600
1.45–1.99						
2.00–2.49						
2.50–2.99						
3.00–3.49						
3.50–3.99						

• С345

Thickness, mm	Width, mm		
	900	1,650	1,700
4.00–4.99			
5.00–12.00			

• С355

Thickness, mm	Width, mm	
	900	1,700
8.00–12.00		

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S275JR

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

BUILDING FRAMES

S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.2

Floor slabs and formwork

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст2сп	GOST 16523-97	1.50–3.90	900–1,600	300–480		≥23		1.0a
	GOST 14637-89	4.00–14.00	900–1,850	330–480	≥225	≥32		1.5a
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
20	GOST 16523-97	1.80–2.00	900–1,350	350–500		≥22		0a
		2.10–3.90	900–1,600	350–500		≥23		1.0a
	GOST 1577-93	4.00–14.00	900–1,850	≥370		≥28		1.0a
	GOST 4041-2017	4.00–12.00	900–1,850	340–490		≥28, 24		a
C345	GOST 27772-2021	4.00–10.00	900–1,850	≥490	≥345	≥21	Depending on categories	2.0a
		10.01–12.00	900–1,850	≥470	≥325	≥21		2.0a
C355	GOST 27772-2021	8.00–12.00	900–1,850	≥470	≥355	≥21		2.0a
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S275JR	EN 10149-2:2013	1.80–2.00	900–1,290	430–580	≥275	≥15		Depending on thickness
		2.01–2.50	900–1,320	430–580	≥275	≥16		
		2.51–2.99	900–1,400	430–580	≥275	≥17		
		3.00–9.99	900–1,850	410–560	≥275	≥21	Depending on thickness	
		10.00–14.00	900–1,850	410–560	≥275	≥21		
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a

Recommended by NLMK

FLOOR SLABS AND FORMWORK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ2СП

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
2.00–2.49							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 20

Thickness, mm	Width, mm					
	900	1,300	1,350	1,400	1,500	1,600
1.45–1.99						
2.00–2.49						
2.50–2.99						
3.00–3.49						
3.50–3.99						

• С345

Thickness, mm	Width, mm		
	900	1,650	1,700
4.00–4.99			
5.00–12.00			

• С355

Thickness, mm	Width, mm	
	900	1,700
8.00–12.00		

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S275JR

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

FLOOR SLABS AND FORMWORK

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.3

Scaffolding

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст2сп	GOST 16523-97	1.50–3.90	900–1,600	300–480		≥23		1.0a
	GOST 14637-89	4.00–14.00	900–1,850	330–480	≥225	≥32		1.5a
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
20	GOST 16523-97	1.80–2.00	900–1,350	350–500		≥22		0a
		2.10–3.90	900–1,600	350–500		≥23		1.0a
	GOST 1577-93	4.00–14.00	900–1,850	≥370		≥28		1.0a
	GOST 4041-2017	4.00–12.00	900–1,850	340–490		≥28, 24		a
C345	GOST 27772-2021	4.00–10.00	900–1,850	≥490	≥345	≥21	Depending on categories	2.0a
		10.01–12.00	900–1,850	≥470	≥325	≥21		2.0a
C355	GOST 27772-2021	8.00–12.00	900–1,850	≥470	≥355	≥21		2.0a
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S275JR	EN 10149-2:2013	1.80–2.00	900–1,290	430–580	≥275	≥15		Depending on thickness
		2.01–2.50	900–1,320	430–580	≥275	≥16		
		2.51–2.99	900–1,400	430–580	≥275	≥17		
		3.00–9.99	900–1,850	410–560	≥275	≥21	Depending on thickness	
		10.00–14.00	900–1,850	410–560	≥275	≥21		
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a

Recommended by NLMK

SCAFFOLDING

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ2СП

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
2.00–2.49							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 20

Thickness, mm	Width, mm					
	900	1,300	1,350	1,400	1,500	1,600
1.45–1.99						
2.00–2.49						
2.50–2.99						
3.00–3.49						
3.50–3.99						

• С345

Thickness, mm	Width, mm		
	900	1,650	1,700
4.00–4.99			
5.00–12.00			

• С355

Thickness, mm	Width, mm	
	900	1,700
8.00–12.00		

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S275JR

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SCAFFOLDING

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.4

Shelving and storage systems

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст2сп	GOST 16523-97	1.50–3.90	900–1,600	300–480		≥23		1.0a
	GOST 14637-89	4.00–14.00	900–1,850	330–480	≥225	≥32		1.5a
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
20	GOST 16523-97	1.80–2.00	900–1,350	350–500		≥22		0a
		2.10–3.90	900–1,600	350–500		≥23		1.0a
	GOST 1577-93	4.00–14.00	900–1,850	≥370		≥28		1.0a
	GOST 4041-2017	4.00–12.00	900–1,850	340–490		≥28, 24		a
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S275JR	EN 10149-2:2013	1.80–2.00	900–1,290	430–580	≥275	≥15		Depending on thickness
		2.01–2.50	900–1,320	430–580	≥275	≥16		
		2.51–2.99	900–1,400	430–580	≥275	≥17		
		3.00–9.99	900–1,850	410–560	≥275	≥21	Depending on thickness	
		10.00–14.00	900–1,850	410–560	≥275	≥21		
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a

Recommended by NLMK

SHELVING AND STORAGE SYSTEMS

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
DD12	EN 10111-2008	1.45–1.99	900–1,550	≤420	170–340	≥25		
		2.00–2.99	900–1,600	≤420	170–320	≥26		
		3.00–8.00	900–1,800	≤420	170–320	≥30		
DD13	EN 10111-2008	1.45–1.99	900–1,550	≤400	170–330	≥28		
		2.00–2.99	900–1,600	≤400	170–310	≥29		
		3.00–8.00	900–1,800	≤400	170–310	≥33		
CS type A	ASTM A 1011	1.50–5.99	900–1,550	/				
	ASTM A 569	1.50–5.99	900–1,550	/				
	ASTM A 1018	6.00–14.00	900–1,850	/				
	ASTM A 830	6.00–14.00	900–1,850	/				
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SPHC	JIS G 3131	1.45–1.59	900–1,350	≥270		≥27		0a
		1.60–3.19	900–1,650	≥270		≥29		0a
		3.20–14.0	900–1,850	≥270		≥31		0.5a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ2СП

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
2.00–2.49							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• 20

Thickness, mm	Width, mm					
	900	1,300	1,350	1,400	1,500	1,600
1.45–1.99						
2.00–2.49						
2.50–2.99						
3.00–3.49						
3.50–3.99						

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

SHELVING AND STORAGE SYSTEMS

• S275JR

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• DD12, DD13

Thickness, mm	Width, mm			
	900	1,550	1,600	1,800
1.45–1.99				
2.00–2.99				
3.00–8.00				

• CS ТИП А

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

• SPHC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.5

Bridges and overhead crossings

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст2сп	GOST 16523-97	1.50–3.90	900–1,600	300–480		≥23		1.0a
	GOST 14637-89	4.00–14.00	900–1,850	330–480	≥225	≥32		1.5a
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
20	GOST 16523-97	1.80–2.00	900–1,350	350–500		≥22		0a
		2.10–3.90	900–1,600	350–500		≥23		1.0a
	GOST 1577-93	4.00–14.00	900–1,850	≥370		≥28		1.0a
	GOST 4041-2017	4.00–12.00	900–1,850	340–490		≥28, 24		a
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S275JR	EN 10149-2:2013	1.80–2.00	900–1,290	430–580	≥275	≥15		Depending on thickness
		2.01–2.50	900–1,320	430–580	≥275	≥16		
		2.51–2.99	900–1,400	430–580	≥275	≥17		
		3.00–9.99	900–1,850	410–560	≥275	≥21	Depending on thickness	
		10.00–14.00	900–1,850	410–560	≥275	≥21		
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a

Recommended by NLMK

BRIDGES AND OVERHEAD CROSSINGS

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
40	ASTM A 1011	1.80–4.45	900–1,850	≥380	≥275	≥21		2,0a
	ASTM A 1018	4.50–8.00	900–1,850	≥380	≥275	≥19		
		8.00–14.0	900–1,850	≥380	≥275	≥14		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SPHT3	JIS G 3132	1.80–2.99	900–1,400	≥412		≥22		1.5a
		3.00–5.99	900–1,850	≥412		≥25		2,0a
		6.00–13.00	900–1,850	≥412		≥27		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ2СП

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
2.00–2.49							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• 20

Thickness, mm	Width, mm					
	900	1,300	1,350	1,400	1,500	1,600
1.45–1.99						
2.00–2.49						
2.50–2.99						
3.00–3.49						
3.50–3.99						

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

BRIDGES AND OVERHEAD CROSSINGS

• S275JR

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 40

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

• SPHT3

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–13.00							

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.6

Road construction elements

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a

Recommended by NLMK

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• S275JR

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

ROAD CONSTRUCTION ELEMENTS

• 36

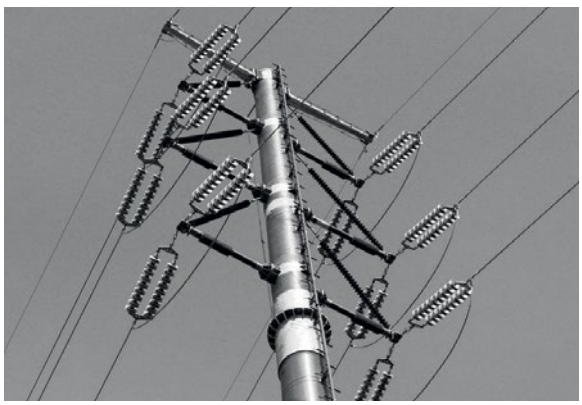
Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

SECTION 2.7

Telecommunication infrastructure and overhead power lines



GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст2сп	GOST 16523-97	1.50–3.90	900–1,600	300–480		≥23		1.0a
	GOST 14637-89	4.00–14.00	900–1,850	330–480	≥225	≥32		1.5a
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
20	GOST 16523-97	1.80–2.00	900–1,350	350–500		≥22		0a
		2.10–3.90	900–1,600	350–500		≥23		1.0a
	GOST 1577-93	4.00–14.00	900–1,850	≥370		≥28		1.0a
	GOST 4041-2017	4.00–12.00	900–1,850	340–490		≥28, 24		a
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S275JR	EN 10149-2:2013	1.80–2.00	900–1,290	430–580	≥275	≥15		Depending on thickness
		2.01–2.50	900–1,320	430–580	≥275	≥16		
		2.51–2.99	900–1,400	430–580	≥275	≥17		
		3.00–9.99	900–1,850	410–560	≥275	≥21	Depending on thickness	
		10.00–14.00	900–1,850	410–560	≥275	≥21		
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a

Recommended by NLMK

TELECOMMUNICATION INFRASTRUCTURE AND OVERHEAD POWER LINES

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ2СП

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
2.00–2.49							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• 20

Thickness, mm	Width, mm					
	900	1,300	1,350	1,400	1,500	1,600
1.45–1.99						
2.00–2.49						
2.50–2.99						
3.00–3.49						
3.50–3.99						

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S275JR

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

TELECOMMUNICATION INFRASTRUCTURE AND OVERHEAD POWER LINES

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

• SS400

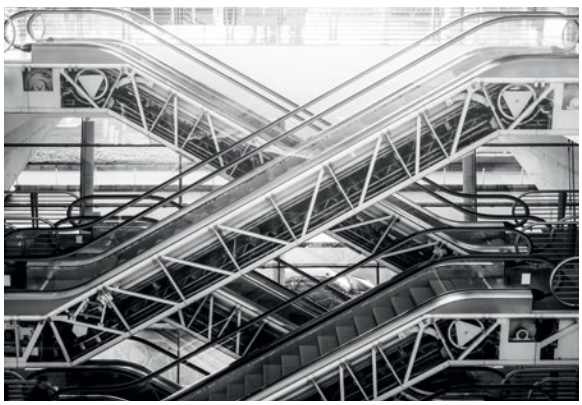
Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.8

Elevators and escalators



GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
08пс	GOST 16523-97	1.45–3.90	900–1,850	270–410		≥24		
	GOST 1577-93	4.00–14.00	900–1,850	≥274		≥32		
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
DD12	EN 10111-2008	1.45–1.99	900–1,550	≤420	170–340	≥25		
		2.00–2.99	900–1,600	≤420	170–320	≥26		
		3.00–8.00	900–1,800	≤420	170–320	≥30		
DD13	EN 10111-2008	1.45–1.99	900–1,550	≤400	170–330	≥28		
		2.00–2.99	900–1,600	≤400	170–310	≥29		
		3.00–8.00	900–1,800	≤400	170–310	≥33		
CS type A	ASTM A 1011	1.50–5.99	900–1,550	/				
	ASTM A 569	1.50–5.99	900–1,550	/				
	ASTM A 1018	6.00–14.00	900–1,850	/				
	ASTM A 830	6.00–14.00	900–1,850	/				
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
SPHC	JIS G 3131	1.45–1.59	900–1,350	≥270		≥27		0a
		1.60–3.19	900–1,650	≥270		≥29		0a
		3.20–14.0	900–1,850	≥270		≥31		0.5a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a

Recommended by NLMK

ELEVATORS AND ESCALATORS

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 08ПС

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• DD12, DD13

Thickness, mm	Width, mm			
	900	1,550	1,600	1,800
1.45–1.99				
2.00–2.99				
3.00–8.00				

• CS ТИП А

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SPHC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

SECTION 2.9

Water pipelines, water supply systems

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст2сп	GOST 16523-97	1.50–3.90	900–1,600	300–480		≥23		1.0a
	GOST 14637-89	4.00–14.00	900–1,850	330–480	≥225	≥32		1.5a
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S275JR	EN 10149-2:2013	1.80–2.00	900–1,290	430–580	≥275	≥15		Depending on thickness
		2.01–2.50	900–1,320	430–580	≥275	≥16		
		2.51–2.99	900–1,400	430–580	≥275	≥17		
		3.00–9.99	900–1,850	410–560	≥275	≥21	Depending on thickness	
		10.00–14.00	900–1,850	410–560	≥275	≥21		
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a

Recommended by NLMK

WATER PIPELINES, WATER SUPPLY SYSTEMS

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ2СП

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
2.00–2.49							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S275JR

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

WATER PIPELINES, WATER SUPPLY SYSTEMS

36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.10

Decoration elements

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст2сп	GOST 16523-97	1.50–3.90	900–1,600	300–480		≥23		1.0a
	GOST 14637-89	4.00–14.00	900–1,850	330–480	≥225	≥32		1.5a
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
08пс	GOST 16523-97	1.45–3.90	900–1,850	270–410		≥24		
	GOST 1577-93	4.00–14.00	900–1,850	≥274		≥32		
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR S235J0W	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S275JR	EN 10149-2:2013	1.80–2.00	900–1,290	430–580	≥275	≥15		Depending on thickness
		2.01–2.50	900–1,320	430–580	≥275	≥16		
		2.51–2.99	900–1,400	430–580	≥275	≥17		
		3.00–9.99	900–1,850	410–560	≥275	≥21	Depending on thickness	
		10.00–14.00	900–1,850	410–560	≥275	≥21		
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a

Recommended by NLMK

DECORATION ELEMENTS

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
DD12	EN 10111-2008	1.45–1.99	900–1,550	≤420	170–340	≥25		
		2.00–2.99	900–1,600	≤420	170–320	≥26		
		3.00–8.00	900–1,800	≤420	170–320	≥30		
DD13	EN 10111-2008	1.45–1.99	900–1,550	≤400	170–330	≥28		
		2.00–2.99	900–1,600	≤400	170–310	≥29		
		3.00–8.00	900–1,800	≤400	170–310	≥33		
CS type A	ASTM A 1011	1.50–5.99	900–1,550	/				
	ASTM A 569	1.50–5.99	900–1,550	/				
	ASTM A 1018	6.00–14.00	900–1,850	/				
	ASTM A 830	6.00–14.00	900–1,850	/				
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SPHC	JIS G 3131	1.45–1.59	900–1,350	≥270		≥27		0a
		1.60–3.19	900–1,650	≥270		≥29		0a
		3.20–14.0	900–1,850	≥270		≥31		0.5a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ2СП

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
2.00–2.49							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 08ПС

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S235J0W

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,850
1.45–1.50					
1.51–2.00					
2.01–2.50					
2.51–2.99					
3.00–9.99					
10.00–15.00					

DECORATION ELEMENTS

• S275JR

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• CS ТИП А

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

• DD12, DD13

Thickness, mm	Width, mm			
	900	1,550	1,600	1,800
1.45–1.99				
2.00–2.99				
3.00–8.00				

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• SPHC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.11

Doors, gates and fences

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст2сп	GOST 16523-97	1.50–3.90	900–1,600	300–480		≥23		1.0a
	GOST 14637-89	4.00–14.00	900–1,850	330–480	≥225	≥32		1.5a
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S275JR	EN 10149-2:2013	1.80–2.00	900–1,290	430–580	≥275	≥15		Depending on thickness
		2.01–2.50	900–1,320	430–580	≥275	≥16		
		2.51–2.99	900–1,400	430–580	≥275	≥17		
		3.00–9.99	900–1,850	410–560	≥275	≥21	Depending on thickness	
		10.00–14.00	900–1,850	410–560	≥275	≥21		
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a

Recommended by NLMK

DOORS, GATES AND FENCES

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ2СП

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
2.00–2.49							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S275JR

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

DOORS, GATES AND FENCES

36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.12

Cabinets, beds, tables, chairs, workbenches

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
08пс	GOST 16523-97	1.45–3.90	900–1,850	270–410		≥24		
	GOST 1577-93	4.00–14.00	900–1,850	≥274		≥32		
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
DD12	EN 10111-2008	1.45–1.99	900–1,550	≤420	170–340	≥25		
		2.00–2.99	900–1,600	≤420	170–320	≥26		
		3.00–8.00	900–1,800	≤420	170–320	≥30		
DD13	EN 10111-2008	1.45–1.99	900–1,550	≤400	170–330	≥28		
		2.00–2.99	900–1,600	≤400	170–310	≥29		
		3.00–8.00	900–1,800	≤400	170–310	≥33		
CS type A	ASTM A 1011	1.50–5.99	900–1,550	/				
	ASTM A 569	1.50–5.99	900–1,550	/				
	ASTM A 1018	6.00–14.00	900–1,850	/				
	ASTM A 830	6.00–14.00	900–1,850	/				
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
SPHC	JIS G 3131	1.45–1.59	900–1,350	≥270		≥27		0a
		1.60–3.19	900–1,650	≥270		≥29		0a
		3.20–14.0	900–1,850	≥270		≥31		0.5a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a

Recommended by NLMK

CABINETS, BEDS, TABLES, CHAIRS, WORKBENCHES

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 08ПС

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• DD12, DD13

Thickness, mm	Width, mm			
	900	1,550	1,600	1,800
1.45–1.99				
2.00–2.99				
3.00–8.00				

• CS ТИП А

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• SS400

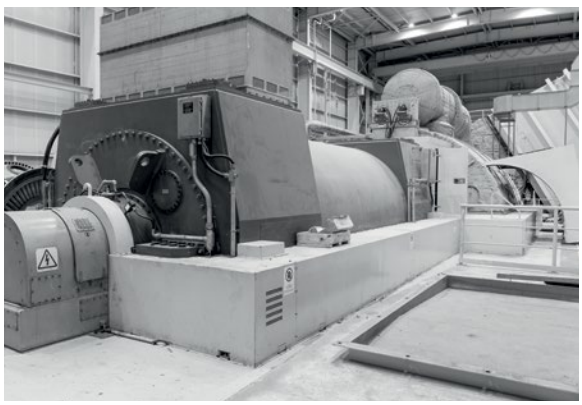
Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SPHC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

SECTION 2.13

Energy infrastructure



GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S275JR	EN 10149-2:2013	1.80–2.00	900–1,290	430–580	≥275	≥15		Depending on thickness
		2.01–2.50	900–1,320	430–580	≥275	≥16		
		2.51–2.99	900–1,400	430–580	≥275	≥17		
		3.00–9.99	900–1,850	410–560	≥275	≥21	Depending on thickness	
		10.00–14.00	900–1,850	410–560	≥275	≥21		
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

ENERGY INFRASTRUCTURE

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S275JR

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.14

Drilling well elements

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
A606 (ПГ)		3.00–6.00	100–1,500	≥555	≥480	≥22		
A606 (ПГТ)		3.00–6.00	900–1,500	≥555	≥480	≥22		
КС		5.00–8.00	950–1,800	≥590	370–500	≥18		
K55		6.00–14.00	950–1,800	655–735	340–470	≥20		
N80		7.00–10.60	1000–1,800	≥690	460–560	≥20		
22ГЮ	NLMK+	5.00–8.00	900–1,700	520–690	355–470	≥20	≥34 (+20 °C)	
		3.50–10.00	900–1,550	≥520	320–450	≥20		
25ГЮ	NLMK+	5.00–10.00	900–1,700	≥520	320–470	≥20		
КС	NLMK+	5.00–8.00	950–1,800	≥590	370–500	≥18		

Recommended by NLMK

- **КС**

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,800
5.00–8.00						

- **22ГЮ, 25ГЮ**

Thickness, mm	Width, mm					
	900	1,350	1,550	1,650	1,700	1,800
3.50–3.99						
4.00–4.99						
5.00–10.00						

SECTION 2.15

Oil and gas pipelines

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

OIL AND GAS PIPELINES

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.16

Containers and vessels

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
C345	GOST 27772-2021	4.00–10.00	900–1,850	≥490	≥345	≥21	Depending on categories	2.0a
		10.01–12.00	900–1,850	≥470	≥325	≥21		2.0a
C355	GOST 27772-2021	8.00–12.00	900–1,850	≥470	≥355	≥21		2.0a
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S275JR	EN 10149-2:2013	1.80–2.00	900–1,290	430–580	≥275	≥15		Depending on thickness
		2.01–2.50	900–1,320	430–580	≥275	≥16		
		2.51–2.99	900–1,400	430–580	≥275	≥17		
		3.00–9.99	900–1,850	410–560	≥275	≥21	Depending on thickness	
		10.00–14.00	900–1,850	410–560	≥275	≥21		
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a

Recommended by NLMK

CONTAINERS AND VESSELS

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• C345

Thickness, mm	Width, mm		
	900	1,650	1,700
4.00–4.99			
5.00–12.00			

• C355

Thickness, mm	Width, mm	
	900	1,700
8.00–12.00		

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S275JR

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

CONTAINERS AND VESSELS

36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.17

Vehicle internal body elements

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
08пс	GOST 16523-97	1.45–3.90	900–1,850	270–410		≥24		
	GOST 1577-93	4.00–14.00	900–1,850	≥274		≥32		
10	GOST 16523-97	1.45–3.90	900–1,650	300–480		≥23		
	GOST 1577-93	4.00–20.00	900–1,850	≥290		≥32		
20	GOST 16523-97	1.80–2.00	900–1,350	350–500		≥22		0a
		2.10–3.90	900–1,600	350–500		≥23		1.0a
	GOST 1577-93	4.00–14.00	900–1,850	≥370		≥28		1.0a
	GOST 4041-2017	4.00–12.00	900–1,850	340–490		≥28, 24		a
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S355JR	EN 10149-2:2013	1.50	900–1,100	510–680	≥355	≥13		Depending on thickness
		1.51–2.00	900–1,350	510–680	≥355	≥14		
		2.01–2.50	900–1,350	510–680	≥355	≥15		
		2.51–2.99	900–1,400	510–680	≥355	≥16		
		3.00–15.00	900–1,850	470–630	≥355	≥20	Depending on thickness	
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a
S420MC	EN 10149-2:2013	1.75–15.00	900–1,700	480–620	≥420	≥19		0.5a
S500MC	EN 10149-2:2013	3.00–5.00	900–1,350	550–700	≥500	≥14		1.0a

Recommended by NLMK

VEHICLE INTERNAL BODY ELEMENTS

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
CS type A	ASTM A 1011	1.50–5.99	900–1,550	/				
	ASTM A 569	1.50–5.99	900–1,550	/				
	ASTM A 1018	6.00–14.00	900–1,850	/				
	ASTM A 830	6.00–14.00	900–1,850	/				
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
40	ASTM A 1011	1.80–4.45	900–1,850	≥380	≥275	≥21		2,0a
	ASTM A 1018	4.50–8.00	900–1,850	≥380	≥275	≥19		
		8.00–14.0	900–1,850	≥380	≥275	≥14		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SPHC	JIS G 3131	1.45–1.59	900–1,350	≥270		≥27		0a
		1.60–3.19	900–1,650	≥270		≥29		0a
		3.20–14.0	900–1,850	≥270		≥31		0.5a
SPHT3	JIS G 3132	1.80–2.99	900–1,400	≥412		≥22		1.5a
		3.00–5.99	900–1,850	≥412		≥25		2,0a
		6.00–13.00	900–1,850	≥412		≥27		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 08ПС

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 10

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–12.00							

• 20

Thickness, mm	Width, mm					
	900	1,300	1,350	1,400	1,500	1,600
1.45–1.99						
2.00–2.49						
2.50–2.99						
3.00–3.49						
3.50–3.99						

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

VEHICLE INTERNAL BODY ELEMENTS

• S355JR

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• S420MC

Thickness, mm	Width, mm						
	900	1,100	1,290	1,350	1,550	1640	1,700
1.75–1.79							
1.80–2.29							
2.30–2.99							
3.00–3.50							
3.51–3.99							
4.00–4.99							
5.00–8.00							
8.01–15.00							

• S500MC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

• CS ТИП А

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 40

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

VEHICLE INTERNAL BODY ELEMENTS

• SPHC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

• SPHT3

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–13.00							

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.18

Wheel discs

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
08пс	GOST 16523-97	1.45–3.90	900–1,850	270–410		≥24		
	GOST 1577-93	4.00–14.00	900–1,850	≥274		≥32		
S235JR S235JRC	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a
DD11	EN 10111-2008	1.45–8.00	900–1,850	≤440	170–360	≥23		
DD12	EN 10111-2008	1.45–1.99	900–1,550	≤420	170–340	≥25		
		2.00–2.99	900–1,600	≤420	170–320	≥26		
		3.00–8.00	900–1,800	≤420	170–320	≥30		
DD13	EN 10111-2008	1.45–1.99	900–1,550	≤400	170–330	≥28		
		2.00–2.99	900–1,600	≤400	170–310	≥29		
		3.00–8.00	900–1,800	≤400	170–310	≥33		
DD14	EN 10111-2008	1.45–1.99	900–1,350	≤380	170–310	≥31		
		2.00–2.99	900–1,600	≤380	170–290	≥32		
		3.00–8.00	900–1,800	≤380	170–290	≥36		
DS type A	ASTM A 1011	1.45–5.99	900–1,850					
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
SPHD	JIS G 3131	1.80–1.99	900–1,550	≥270		≥32		
		2.00–2.49	900–1,550	≥270		≥33		
		2.50–3.19	900–1,700	≥270		≥35		
		3.20–3.99	900–1,850	≥270		≥37		
		4.00–14.0	900–1,850	≥270		≥39		
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a

Recommended by NLMK

WHEEL DISCS

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 08ПС

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S235JRC

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,850
1.45–1.50					
1.51–2.00					
2.01–2.50					
2.51–2.99					
3.00–9.99					
10.00–15.00					

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• DD11, DD14

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–8.00						

• DD12, DD13

Thickness, mm	Width, mm			
	900	1,550	1,600	1,800
1.45–1.99				
2.00–2.99				
3.00–8.00				

WHEEL DISCS

• DS TYPE A

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• SPHD

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

SECTION 2.19

Locomotives, passenger and freight cars, tanks

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a
S420MC	EN 10149-2:2013	1.75–15.00	900–1,700	480–620	≥420	≥19		0.5a
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

LOCOMOTIVES, PASSENGER AND FREIGHT CARS, TANKS

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• S420MC

Thickness, mm	Width, mm						
	900	1,100	1,290	1,350	1,550	1640	1,700
1.75–1.79							
1.80–2.29							
2.30–2.99							
3.00–3.50							
3.51–3.99							
4.00–4.99							
5.00–8.00							
8.01–15.00							

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.20

Watercraft of various purposes

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
A	GOST P 52927-2023	4.00–12.00	900–1,850	400–520	≥235	≥22	-	
B	GOST P 52927-2023	5.00–7.49	900–1,850	400–520	≥235	≥22	≥19	
		7.50–9.99	900–1,850	400–520	≥235	≥22	≥24	
		10.00–12.00	900–1,850	400–520	≥235	≥22	≥27	
D	GOST P 52927-2023	5.00–7.49	900–1,850	400–520	≥235	≥22	≥19	
		7.50–9.99	900–1,850	400–520	≥235	≥22	≥24	
		10.00–12.00	900–1,850	400–520	≥235	≥22	≥27	
E	GOST P 52927-2023	5.00–7.49	900–1,850	400–520	≥235	≥22	≥19	
		7.50–9.99	900–1,850	400–520	≥235	≥22	≥24	
		10.00–12.00	900–1,850	400–520	≥235	≥22	≥27	
A32	GOST P 52927-2023	5.00–7.49	900–1,850	440–570	≥315	≥22	≥22	
		7.50–9.99	900–1,850	440–570	≥315	≥22	≥26	
		10.00–12.00	900–1,850	440–570	≥315	≥22	≥31	
D32	GOST P 52927-2023	5.00–7.49	900–1,850	440–570	≥315	≥22	≥22	
		7.50–9.99	900–1,850	440–570	≥315	≥22	≥26	
		10.00–12.00	900–1,850	440–570	≥315	≥22	≥31	
E32	GOST P 52927-2023	5.00–7.49	900–1,850	440–570	≥315	≥22	≥22	
		7.50–9.99	900–1,850	440–570	≥315	≥22	≥26	
		10.00–12.00	900–1,850	440–570	≥315	≥22	≥31	
D36	GOST P 52927-2023	5.00–7.49	900–1,850	490–630	≥355	≥21	≥24	
		7.50–9.99	900–1,850	490–630	≥355	≥21	≥28	
		10.00–12.00	900–1,850	490–630	≥355	≥21	≥34	
A40	GOST P 52927-2023	5.00–7.49	900–1,850	510–640	≥390	≥20	≥26	
		7.50–9.99	900–1,850	510–640	≥390	≥20	≥33	
		10.00–12.00	900–1,850	510–640	≥390	≥20	≥39	
D40	GOST P 52927-2023	5.00–7.49	900–1,850	510–640	≥390	≥20	≥26	
		7.50–9.99	900–1,850	510–640	≥390	≥20	≥33	
		10.00–12.00	900–1,850	510–640	≥390	≥20	≥39	

Recommended by NLMK

WATERCRAFT OF VARIOUS PURPOSES

- **A, B, D, E**

Thickness, mm	Width, mm			
	900	1,650	1,700	1,850
4.00–4.99				
5.00–5.99				
6.00–12.00				

- **A32, D32, E32**

Thickness, mm	Width, mm			
	900	1,650	1,700	1,850
4.00–4.99				
5.00–5.99				
6.00–12.00				

- **D36**

Thickness, mm	Width, mm			
	900	1,650	1,700	1,850
4.00–4.99				
5.00–5.99				
6.00–12.00				

- **A40, D40**

Thickness, mm	Width, mm			
	900	1,650	1,700	1,850
4.00–4.99				
5.00–5.99				
6.00–12.00				

SECTION 2.21

Excavators, loaders and cranes

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
08пс	GOST 16523-97	1.45–3.90	900–1,850	270–410		≥24		
	GOST 1577-93	4.00–14.00	900–1,850	≥274		≥32		
10	GOST 16523-97	1.45–3.90	900–1,650	300–480		≥23		
	GOST 1577-93	4.00–20.00	900–1,850	≥290		≥32		
20	GOST 16523-97	1.80–2.00	900–1,350	350–500		≥22		0a
		2.10–3.90	900–1,600	350–500		≥23		1.0a
	GOST 1577-93	4.00–14.00	900–1,850	≥370		≥28		1.0a
	GOST 4041-2017	4.00–12.00	900–1,850	340–490		≥28, 24		a
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a
S420MC	EN 10149-2:2013	1.75–15.00	900–1,700	480–620	≥420	≥19		0.5a
S500MC	EN 10149-2:2013	3.00–5.00	900–1,350	550–700	≥500	≥14		1.0a

Recommended by NLMK

EXCAVATORS, LOADERS AND CRANES

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
CS type A	ASTM A 1011	1.50–5.99	900–1,550	/				
	ASTM A 569	1.50–5.99	900–1,550	/				
	ASTM A 1018	6.00–14.00	900–1,850	/				
	ASTM A 830	6.00–14.00	900–1,850	/				
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
40	ASTM A 1011	1.80–4.45	900–1,850	≥380	≥275	≥21		2,0a
	ASTM A 1018	4.50–8.00	900–1,850	≥380	≥275	≥19		
		8.00–14.0	900–1,850	≥380	≥275	≥14		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SPHC	JIS G 3131	1.45–1.59	900–1,350	≥270		≥27		0a
		1.60–3.19	900–1,650	≥270		≥29		0a
		3.20–14.0	900–1,850	≥270		≥31		0.5a
SPHT3	JIS G 3132	1.80–2.99	900–1,400	≥412		≥22		1.5a
		3.00–5.99	900–1,850	≥412		≥25		2,0a
		6.00–13.00	900–1,850	≥412		≥27		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 08ПС

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 10

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–12.00							

• 20

Thickness, mm	Width, mm					
	900	1,300	1,350	1,400	1,500	1,600
1.45–1.99						
2.00–2.49						
2.50–2.99						
3.00–3.49						
3.50–3.99						

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

EXCAVATORS, LOADERS AND CRANES

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• S420MC

Thickness, mm	Width, mm						
	900	1,100	1,290	1,350	1,550	1640	1,700
1.75–1.79							
1.80–2.29							
2.30–2.99							
3.00–3.50							
3.51–3.99							
4.00–4.99							
5.00–8.00							
8.01–15.00							

• S500MC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

• CS ТИП А

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 40

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

EXCAVATORS, LOADERS AND CRANES

• SPHC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

• SPHT3

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–13.00							

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.22

Tractors, combines and other machines

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
08пс	GOST 16523-97	1.45–3.90	900–1,850	270–410		≥24		
	GOST 1577-93	4.00–14.00	900–1,850	≥274		≥32		
10	GOST 16523-97	1.45–3.90	900–1,650	300–480		≥23		
	GOST 1577-93	4.00–20.00	900–1,850	≥290		≥32		
20	GOST 16523-97	1.80–2.00	900–1,350	350–500		≥22		0a
		2.10–3.90	900–1,600	350–500		≥23		1.0a
	GOST 1577-93	4.00–14.00	900–1,850	≥370		≥28		1.0a
	GOST 4041-2017	4.00–12.00	900–1,850	340–490		≥28, 24		a
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a
S420MC	EN 10149-2:2013	1.75–15.00	900–1,700	480–620	≥420	≥19		0.5a
S500MC	EN 10149-2:2013	3.00–5.00	900–1,350	550–700	≥500	≥14		1.0a

Recommended by NLMK

TRACTORS, COMBINES AND OTHER MACHINES

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
CS type A	ASTM A 1011	1.50–5.99	900–1,550	/				
	ASTM A 569	1.50–5.99	900–1,550	/				
	ASTM A 1018	6.00–14.00	900–1,850	/				
	ASTM A 830	6.00–14.00	900–1,850	/				
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
40	ASTM A 1011	1.80–4.45	900–1,850	≥380	≥275	≥21		2,0a
	ASTM A 1018	4.50–8.00	900–1,850	≥380	≥275	≥19		
		8.00–14.0	900–1,850	≥380	≥275	≥14		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SPHC	JIS G 3131	1.45–1.59	900–1,350	≥270		≥27		0a
		1.60–3.19	900–1,650	≥270		≥29		0a
		3.20–14.0	900–1,850	≥270		≥31		0.5a
SPHT3	JIS G 3132	1.80–2.99	900–1,400	≥412		≥22		1.5a
		3.00–5.99	900–1,850	≥412		≥25		2,0a
		6.00–13.00	900–1,850	≥412		≥27		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 08ПС

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 10

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–12.00							

• 20

Thickness, mm	Width, mm					
	900	1,300	1,350	1,400	1,500	1,600
1.45–1.99						
2.00–2.49						
2.50–2.99						
3.00–3.49						
3.50–3.99						

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

TRACTORS, COMBINES AND OTHER MACHINES

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• S420MC

Thickness, mm	Width, mm						
	900	1,100	1,290	1,350	1,550	1640	1,700
1.75–1.79							
1.80–2.29							
2.30–2.99							
3.00–3.50							
3.51–3.99							
4.00–4.99							
5.00–8.00							
8.01–15.00							

• S500MC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

• СЅ ТИП А

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 40

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

TRACTORS, COMBINES AND OTHER MACHINES

• SPHC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

• SPHT3

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–13.00							

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.23

Attachments and accessory equipment

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
08пс	GOST 16523-97	1.45–3.90	900–1,850	270–410		≥24		
	GOST 1577-93	4.00–14.00	900–1,850	≥274		≥32		
10	GOST 16523-97	1.45–3.90	900–1,650	300–480		≥23		
	GOST 1577-93	4.00–20.00	900–1,850	≥290		≥32		
20	GOST 16523-97	1.80–2.00	900–1,350	350–500		≥22		0a
		2.10–3.90	900–1,600	350–500		≥23		1.0a
	GOST 1577-93	4.00–14.00	900–1,850	≥370		≥28		1.0a
	GOST 4041-2017	4.00–12.00	900–1,850	340–490		≥28, 24		a
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a
S420MC	EN 10149-2:2013	1.75–15.00	900–1,700	480–620	≥420	≥19		0.5a
S500MC	EN 10149-2:2013	3.00–5.00	900–1,350	550–700	≥500	≥14		1.0a

Recommended by NLMK

ATTACHMENTS AND ACCESSORY EQUIPMENT

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
CS type A	ASTM A 1011	1.50–5.99	900–1,550	/				
	ASTM A 569	1.50–5.99	900–1,550	/				
	ASTM A 1018	6.00–14.00	900–1,850	/				
	ASTM A 830	6.00–14.00	900–1,850	/				
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
40	ASTM A 1011	1.80–4.45	900–1,850	≥380	≥275	≥21		2,0a
	ASTM A 1018	4.50–8.00	900–1,850	≥380	≥275	≥19		
		8.00–14.0	900–1,850	≥380	≥275	≥14		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SPHC	JIS G 3131	1.45–1.59	900–1,350	≥270		≥27		0a
		1.60–3.19	900–1,650	≥270		≥29		0a
		3.20–14.0	900–1,850	≥270		≥31		0.5a
SPHT3	JIS G 3132	1.80–2.99	900–1,400	≥412		≥22		1.5a
		3.00–5.99	900–1,850	≥412		≥25		2,0a
		6.00–13.00	900–1,850	≥412		≥27		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 08ПС

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 10

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–12.00							

• 20

Thickness, mm	Width, mm					
	900	1,300	1,350	1,400	1,500	1,600
1.45–1.99						
2.00–2.49						
2.50–2.99						
3.00–3.49						
3.50–3.99						

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

ATTACHMENTS AND ACCESSORY EQUIPMENT

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• S420MC

Thickness, mm	Width, mm						
	900	1,100	1,290	1,350	1,550	1640	1,700
1.75–1.79							
1.80–2.29							
2.30–2.99							
3.00–3.50							
3.51–3.99							
4.00–4.99							
5.00–8.00							
8.01–15.00							

• S500MC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

• CS ТИП А

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 40

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

ATTACHMENTS AND ACCESSORY EQUIPMENT

• SPHC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

• SPHT3

Thickness, mm	Width, mm						
	900	1,290	1,320	1,400	1,500	1,550	1,850
1.80–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–13.00							

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.24

Mining equipment elements

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a
S420MC	EN 10149-2:2013	1.75–15.00	900–1,700	480–620	≥420	≥19		0.5a
S500MC	EN 10149-2:2013	3.00–5.00	900–1,350	550–700	≥500	≥14		1.0a
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

MINING EQUIPMENT ELEMENTS

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• S420MC

Thickness, mm	Width, mm						
	900	1,100	1,290	1,350	1,550	1640	1,700
1.75–1.79							
1.80–2.29							
2.30–2.99							
3.00–3.50							
3.51–3.99							
4.00–4.99							
5.00–8.00							
8.01–15.00							

• S500MC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.25

Other equipment elements

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
Ст3сп/пс	GOST 16523-97	1.45–2.00	900–1,350	360–530		≥20	Depending on thickness	1.0a
		2.10–3.90	900–1,600	360–530		≥22		2.0a
	GOST 14637-89	4.00–20.00	900–1,850	370–480		≥26		
09Г2С	GOST 17066-94	3.00–3.90	900–1,400	≥510		≥19		2,0a
	GOST 19281-2014	4.00–14.00	900–1,700	≥490	≥345	≥21	Depending on categories	2,0a
S235JR	EN 10149-2:2013	1.45–1.50	900–1,300	360–510	≥235	≥16		Depending on thickness
		1.51–2.00	900–1,300	360–510	≥235	≥17		
		2.01–2.50	900–1,400	360–510	≥235	≥18		
		2.51–2.99	900–1,500	360–510	≥235	≥19		
		3.00–9.99	900–1,850	360–510	≥235	≥24	Depending on thickness	
		10.00–15.00	900–1,850	360–510	≥235	≥24		
S355MC	EN 10149-2:2013	1.50–15.00	900–1,700	430–550	≥355	≥23		0.5a
S420MC	EN 10149-2:2013	1.75–15.00	900–1,700	480–620	≥420	≥19		0.5a
S500MC	EN 10149-2:2013	3.00–5.00	900–1,350	550–700	≥500	≥14		1.0a
36	ASTM A 1018	6.00–8.00	900–1,850	≥365	≥250	≥15		
		8.01–14.00	900–1,850	≥365	≥250	≥21		
45	ASTM A 1011	1.80–2.49	900–1,850	≥410	≥310	≥18		2,0a
		2.50–6.00	900–1,850	≥410	≥310	≥19		2,0a
SS400	JIS G 3101	1.45–5.00	900–1,850	400–510	≥245	≥21		1.5a
		5.01–14.00	900–1,850	400–510	≥245	≥17		1.5a
SS490	JIS G 3101	1.50–5.00	900–1,550	490–610	≥285	≥19		2,0a
		5.01–15.00	900–1,700	490–610	≥285	≥15		2,0a

Recommended by NLMK

OTHER EQUIPMENT ELEMENTS

• СТ3СП/ПС

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.90							
4.00–14.00							

• 09Г2С

Thickness, mm	Width, mm					
	900	1,350	1,400	1,420	1,650	1,700
2.00–2.49						
2.50–2.99						
3.00–3.90						
4.00–4.99						
5.00–14.00						

• S235JR

Thickness, mm	Width, mm						
	900	1,300	1,400	1,500	1,550	1,650	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–15.00							

• S355MC

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,600	1640	1,700
1.50–1.79							
1.80–2.49							
2.50–2.99							
3.00–3.99							
4.00–4.50							
4.51–4.99							
5.00–10.00							
10.01–15.00							

• S420MC

Thickness, mm	Width, mm						
	900	1,100	1,290	1,350	1,550	1640	1,700
1.75–1.79							
1.80–2.29							
2.30–2.99							
3.00–3.50							
3.51–3.99							
4.00–4.99							
5.00–8.00							
8.01–15.00							

• S500MC

Thickness, mm	Width, mm			
	900	1,100	1,300	1,350
3.00–3.49				
3.50–3.99				
4.00–5.00				

• 36

Thickness, mm	Width, mm						
	900	1,250	1,350	1,550	1,650	1,700	1,850
1.50–1.79							
1.80–2.99							
3.00–3.99							
4.00–4.99							
5.00–5.99							
6.00–12.00							

• 45

Thickness, mm	Width, mm				
	900	1,300	1,400	1,500	1,550
1.80–2.99					
3.00–3.99					
4.00–4.99					
5.00–5.99					

• SS400

Thickness, mm	Width, mm						
	900	1,300	1,350	1,400	1,500	1,600	1,850
1.45–1.99							
2.00–2.49							
2.50–2.99							
3.00–3.49							
3.50–3.99							
4.00–14.00							

• SS490

Thickness, mm	Width, mm									
	900	1,270	1,350	1,400	1,550	1,650	1,700	1,750	1,800	1,850
1.50–1.79										
1.80–2.49										
2.50–2.99										
3.00–3.99										
4.00–4.99										
5.00–6.99										
7.00–7.99										
8.00–9.99										
10.00–15.00										

SECTION 2.26

Cold rolled, galvanized, pre-painted steel and tin

GRADES PRODUCED BY NLMK

Grade	Standart	Product mix		Mechanical properties			Properties	
		Thickness, mm	Width, mm	Ultimate tensile strength, MPa	Yield strength, MPa	Relative elongation, %	Impact energy, J	Mandrel diameter when bending 180°
08nc	GOST 16523-97	1.45–3.90	900–1,850	270–410		≥24		
	GOST 1577-93	4.00–14.00	900–1,850	≥274		≥32		
DD12	EN 10111-2008	1.45–1.99	900–1,550	≤420	170–340	≥25		
		2.00–2.99	900–1,600	≤420	170–320	≥26		
		3.00–8.00	900–1,800	≤420	170–320	≥30		
DD13	EN 10111-2008	1.45–1.99	900–1,550	≤400	170–330	≥28		
		2.00–2.99	900–1,600	≤400	170–310	≥29		
		3.00–8.00	900–1,800	≤400	170–310	≥33		
DS type A, B	ASTM A 1011	1.45–5.99	900–1,850					
SPHD	JIS G 3131	1.80–1.99	900–1,550	≥270		≥32		
		2.00–2.49	900–1,550	≥270		≥33		
		2.50–3.19	900–1,700	≥270		≥35		
		3.20–3.99	900–1,850	≥270		≥37		
		4.00–14.0	900–1,850	≥270		≥39		

Recommended by NLMK

COLD ROLLED, GALVANIZED, PRE-PAINTED STEEL AND TIN

• 08ПС

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• DD12, DD13

Thickness, mm	Width, mm			
	900	1,550	1,600	1,800
1.45–1.99				
2.00–2.99				
3.00–8.00				

• DS TYPE A, B

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

• SPHD

Thickness, mm	Width, mm					
	900	1,350	1,550	1,600	1,700	1,850
1.45–1.89						
1.90–2.49						
2.50–2.99						
3.00–3.19						
3.20–14.00						

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