3. Hot-rolled steel flats

3.2. HOT-ROLLED STEEL FOR EXPORT ACCORDING TO DOMESTIC AND INTERNATIONAL STANDARDS

3.2.4. Hot-rolled steel (strength class — 300 MPa)

Table 3.10. Mechanical properties of steel

Steel grade	Standard	Strip thickness, mm	Mechanical properties			
			Tensile strength MPa (N/mm^2)	Yield point, MPa (N/mm^2)	Elongation %, min	Mandrel diameter at 180° bending
1010	ASTM A 635	4.50 – 14.00	…	…	…	…
1010	SAE J403	1.50 – 4.45	…	…	…	…
SPHT2	JIS G 3132	1.50 – 2.90	340 min	…	27	d=1.0a
SPHT2	JIS G 3132	3.00 – 5.90	340 min	…	30	d=1.5a
SPHT2	JIS G 3132	6.00 – 14.00	340 min	…	32	d=1.5a

… — parameter not limited by standard
* — subject to agreement between Parties.
a — strip thickness.

On customer demand hot-rolled steel with agreed mechanical properties may be produced.

Table 3.11. Chemical composition of steel

Fraction of total mass, %									
C	Si	Mn	Al	S	P	Cr	Ni	Cu	N
0.08–0.13	0.17–0.35	0.35–0.60	0.02–0.07	0.035 max	0.030 max	0.15 max	0.20 max	0.20 max	0.008 max

For steel grade 1010 under ASTM A 635 and SAE J403 fraction of total mass of molybdenum, vanadium and niobium is determined, which must not exceed:

Mo — 0.06 %; V — 0.008 %; Nb — 0.008 %

Total content of Cu, Cr, Ni, Mo must not exceed 0.50 %.

Table 3.12. Shape and dimensional tolerances

Standard for technical specification	ASTM A 635	SAE J403	JIS G 3132
Standard for product mix, geometry and tolerances	ASTM A 635	ASTM A 568	JIS G 3132 JIS G 3193

3. Hot-rolled steel flats

3.2. HOT-ROLLED STEEL FOR EXPORT ACCORDING TO DOMESTIC AND INTERNATIONAL STANDARDS

Figure 3.8. Thickness-to-width relation

Strip thickness, mm	Strip width, mm							
	900	1280	1360	1440	1550	1640	1710	1850
1.45	■	■						
1.8	■	■	■					
2.0	■	■	■	■	■			
2.6	■	■	■	■	■	■		
3.0	■	■	■	■	■	■	■	
3.5	■	■	■	■	■	■	■	■
up to 14.0	■	■	■	■	■	■	■	■

Hot-rolled material with other product mix requirements, including those in terms of thickness to width ratio may be produced on special order subject to an additional agreement.

3.2.5. Hot-rolled steel (strength class — 350 MPa)

Table 3.13. Mechanical properties of steel

Steel grade	Standard	Strip thickness, mm	Mechanical properties				
			Tensile strength MPa (N/mm^2)	Yield point, MPa (N/mm^2)	Elongation%, min	Mandrel diameter at 180° bending	Impact energy J, min (T, °C)
S235JRG2	EN 10025: 1993	1.45 – 2.90	360–510	235	19	d=1.5a	…
S235JRG2	EN 10025: 1993	3.00 – 9.90	340–470	235	24	d=2.0a	*(+20)
S235JRG2	EN 10025: 1993	10.0 –14.00	340–470	235	24	d=2.0a	27 (+20)
S235JO	EN 10025: 1993	1.50 – 2.90	360–510	235	19	d=1.0a	…
S235JO	EN 10025: 1993	3.00 – 9.90	340–470	235	24	d=1.5a	*(0)
S235JO	EN 10025: 1993	10.0 –14.00	340–470	235	24	d=1.5a	27 (0)
S235J2G3	EN 10025: 1993	1.50 – 2.90	360–510	235	19	d=1.0a	…
S235J2G3	EN 10025: 1993	3.00 – 9.90	340–470	235	24	d=1.5a	*(–20)
S235J2G3	EN 10025: 1993	10.0 –14.00	340–470	235	24	d=1.5a	27 (–20)
S235JR	EN 10025: 2004	1.50 –14.00	360–510	235	16–24**	d=1.6–25 mm*	27 (+20)
S235JO	EN 10025: 2004	1.50 –14.00	360–510	235	16–24**	d=1.6–25 mm	27 (0)
S235J2	EN 10025: 2004	1.50 –14.00	360–510	235	16–24**	d=1.6–25 mm	*(–20)
30	ASTM A 1011 (ASTM A 570)	1.50 – 1.59	340 min	205	21	d=1.0a	…
30	ASTM A 1011 (ASTM A 570)	1.60 – 2.49	340 min	205	24	d=1.0a	…
30	ASTM A 1011 (ASTM A 570)	2.50 – 4.45	340 min	205	25	d=1.0a	…
30	ASTM A 1018 (ASTM A 907)	4.50 –14.00	340 min	205	22	…	…
33	ASTM A 1011 (ASTM A 570)	1.50 – 1.59	360 min	230	18	d=1.0a	…
33	ASTM A 1011 (ASTM A 570)	1.60 – 2.45	360 min	230	22	d=1.0a	…