

3. Hot-rolled steel flats

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

3.2.9. Hot-rolled steel (strength class — 500 MPa)

Table 3.25. 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)
S355J2G3	EN 10025: 1993	3.00 – 9.90	490–630	355	20	d=3.0a	** (-20)
S355J2G3	EN 10025: 1993	10.0 – 14.00	490–650	355	20	d=3.0a	27 (-20)
S355J0	EN 10025: 1993	3.00 – 14.00	470–630	355	20	d=5.0–32 mm****	27 (0)
S355JR	EN 10025:2-2004	3.00 – 14.00	470–630	355	20	d=5.0–32 mm****	*(+20), 27 (+20)
S355J0	EN 10025:2-2004	3.00 – 14.00	470–630	355	20	d=5.0–32 mm****	*(0), 27 (0)
S355J2	EN 10025:2-2004	3.00 – 14.00	470–630	355	20	d=5.0–32 mm****	*(-20), 27 (-20)
S355K2	EN 10025:2-2004	3.00 – 14.00	470–630	355	20	d=5.0–32 mm****	*(-30), 27 (-30)
50	ASTM A 1011 (ASTM A 570)	3.00 – 5.99	450 min	340 (345)	17	d=2.5a	...
55	ASTM A 1011 (ASTM A 570)	3.00 – 5.99	480 min	380	15	d=3.0a	...
SS 490	JIS G 3101	3.00 – 5.00	490–610	385	19	d=2.0a	...
SS 490	JIS G 3101	5.10 – 14.00	490–610	385	15*	d=2.0a	...

... — parameter not limited by standard

a — strip thickness.

**** — depending on strip thickness.

*** — subject to agreement between Parties

** — impact energy with sample width of 5.0–9.9 mm for steel S355J2G3 under EN 10025 corresponds to that of St 52-3N under DIN 17100

Previous standard designation and previous yield point value are given in parenthesis.

When ordering rolled steel under EN 10025 letter "N" is added to the steel grade name for normalized rolled steel.

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

Table 3.26. Chemical composition of steel

Fraction of total mass, %									
C	Si	Mn	Al	S	P	Cr	Ni	Cu	N
0.14–0.20	0.40–0.55	1.00–1.35	0.02–0.07	0.025 max	0.025 max	0.15 max	0.20 max	0.20 max	0.012 max

For all steel grades under A1011(ASTM A570) 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 and Mo must not exceed 0.50 %, and Cr + Mo shall be 0.16 % maximum.

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Table 3.27. Shape and dimensional tolerances

Standard for technical specification	EN 10025	ASTM A 1011 (ASTM A 570)	JIS G 3101
Standard for product mix, geometry and tolerances	EN 10051 EN 10029	ASTM A 568	JIS G 3193

Previous standard designation is given in parenthesis.

Figure 3.13. Thickness-to-width relation

Strip thickness, mm	Strip width, mm							
	900	1280	1360	1440	1550	1640	1710	1850
3.0								
4.0								
6.0								
7.0								
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.