


S235JR
STRUCTURAL STEELS

Reference standard: EN 10025-2:2019

W.-Nr.	1.0038	AFNOR	E 24-2
AISI	-	BS	40 B
UNI	Fe360B	JIS	-
DIN	RSt 37-2	Other	ISO 630-2 S235B

CHEMICAL COMPOSITION

C	Si	Mn	P	S	Cu	N
0.20	-	1.40	0.035	0.035	0.55	0.012

Cast analysis composition, maximum values in % by mass | The C figure is the maximum: up to 40 mm it is 0.17, and on sections above 100 mm it is agreed at the time of order | For long products, and therefore for bars, P and S are allowed 0.040 instead of 0.035

Carbon equivalent CEV max on cast analysis $0.35 (t \leq 40 \text{ mm}) \cdot 0.38 (40 < t \leq 150 \text{ mm}) \cdot 0.40 (150 < t \leq 250 \text{ mm})$ | Deoxidation FN: only rimming steels are ruled out, fully killed applies to J2 and K2 alone | No heat treatment is prescribed: on long products the delivery condition is +AR, +N or +M at the manufacturer's discretion

MECHANICAL PROPERTIES

HOT-ROLLED - Tensile and longitudinal impact test at 20 °C EN 10025-2:2019					
Diameter/thick. (in mm)		ReH N/mm ² min	R N/mm ²	A% min	KV2 J min
>	≤				
3	16	235	360-510	26	27
16	40	225	360-510	26	27
40	63	215	360-510	25	27
63	80	215	360-510	24	27
80	100	215	360-510	24	27
100	150	195	350-500	22	27
150	200	185	340-490	21	27
200	250	175	340-490	21	27

ReH = upper yield strength | KV2 = Charpy V impact energy at 20 °C, striker radius 2 mm, average of 3 test pieces: on quality JR the 27 J are specified, but the test is carried out only when required at the time of order, and on sections above 100 mm the values are agreed | For quality JR the standard's scope stops at 250 mm: beyond it, only flat products of qualities J2 and K2 are covered

PEELED AND ROLLER-BURNISHED +SH - Longitudinal tensile test at 20 °C			
Diameter/thick. (in mm)		R N/mm ²	HBW for info.
>	≤		
16	40	360-510	107-152
40	63	360-510	107-152
63	100	360-510	107-152

COLD-DRAWN +C - Longitudinal tensile test at 20 °C				
Diameter/thick. (in mm)		Rp 0.2 N/mm ² min	R N/mm ²	A% min
>	≤			
5	10	355	470-840	8
10	16	300	420-770	9
16	40	260	390-730	10
40	63	235	380-670	11
63	100	215	360-640	11

Cold-finished conditions to EN ISO 683-7:2024, which designates this steel S235JRC (1.0122): the C denotes suitability for cold drawing, not a different composition | Below 5 mm and above 100 mm the mechanical properties are agreed at the time of order

For flats and special sections Rp 0.2 may deviate by -10% and R by ±10% | The +SH condition has no specified Rp 0.2 or A values

Physical properties to EN 1993-1-1 (elastic moduli, expansion) and EN 1993-1-2 (density, conductivity, specific heat). The expansion coefficient applies up to 100 °C. Density 7.85 kg/dm³ · thermal conductivity 53.3 W/(m·K) · specific heat 440 J/(kg·K), both at 20 °C

Temperature	Elastic modulus GPa		Mean expansion
° C	E long	G tang	10 ⁻⁶ K ⁻¹ (20 °C → T)
20	210	81	12