

## Material properties

<b>Material</b>	<b>S 235 JR (European Union / EN)</b>
<b>Group</b>	Structural and constructional steels
<b>Subgroup</b>	EN 10025 Hot rolled products of non-alloy structural steels
<b>Comment</b>	Technical delivery conditions
<b>Application</b>	Welded assemblies, forgings, constructional sheet, less exacting constructions.

Yield Stress[MPa]			
Dimension	Min	Max	Approx
Long and flat products; <= 1 mm; (long.)	235	-	-
Long and flat products; <= 1 mm; (trans.)	235	-	-
Long and flat products; > 1 <= 1.5 mm; (long.)	235	-	-
Long and flat products; > 1 <= 1.5 mm; (trans.)	235	-	-
Long and flat products; > 1.5 <= 2 mm; (long.)	235	-	-
Long and flat products; > 1.5 <= 2 mm; (trans.)	235	-	-
Long and flat products; > 2 <= 2.5 mm; (long.)	235	-	-
Long and flat products; > 2 <= 2.5 mm; (trans.)	235	-	-
Long and flat products; > 2.5 <= 3 mm; (long.)	235	-	-
Long and flat products; > 2.5 <= 3 mm; (trans.)	235	-	-
Long and flat products; > 3 <= 16 mm; (long.)	235	-	-
Long and flat products; > 3 <= 16 mm; (trans.)	235	-	-
Long and flat products; > 16 <= 25 mm; (long.)	225	-	-
Long and flat products; > 16 <= 25 mm; (trans.)	225	-	-

Tensile Stress[MPa]			
Dimension	Min	Max	Approx
Long and flat products; <= 1 mm; (long.)	360	510	-
Long and flat products; <= 1 mm; (trans.)	360	510	-
Long and flat products; > 1 <= 1.5 mm; (long.)	360	510	-
Long and flat products; > 1 <= 1.5 mm; (trans.)	360	510	-
Long and flat products; > 1.5 <= 2 mm; (long.)	360	510	-
Long and flat products; > 1.5 <= 2 mm; (trans.)	360	510	-
Long and flat products; > 2 <= 2.5 mm; (long.)	360	510	-
Long and flat products; > 2 <= 2.5 mm; (trans.)	360	510	-

Tensile Stress[MPa]			
Dimension	Min	Max	Approx
Long and flat products; > 2.5 <= 3 mm; (long.)	360	510	-
Long and flat products; > 2.5 <= 3 mm; (trans.)	360	510	-
Long and flat products; > 3 <= 16 mm; (long.)	340	470	-
Long and flat products; > 3 <= 16 mm; (trans.)	340	470	-
Long and flat products; > 16 <= 25 mm; (long.)	340	470	-
Long and flat products; > 16 <= 25 mm; (trans.)	340	470	-

Elongation A5 [%]			
Dimension	Min	Max	Approx
Long and flat products; <= 1 mm; (long.) <b>Note:</b> Lo = 80 mm	17.0	-	-
Long and flat products; <= 1 mm; (trans.) <b>Note:</b> Lo = 80 mm	15.0	-	-
Long and flat products; > 1 <= 1.5 mm; (long.) <b>Note:</b> Lo = 80 mm	18.0	-	-
Long and flat products; > 1 <= 1.5 mm; (trans.) <b>Note:</b> Lo = 80 mm	16.0	-	-
Long and flat products; > 1.5 <= 2 mm; (long.) <b>Note:</b> Lo = 80 mm	19.0	-	-
Long and flat products; > 1.5 <= 2 mm; (trans.) <b>Note:</b> Lo = 80 mm	17.0	-	-
Long and flat products; > 2 <= 2.5 mm; (long.) <b>Note:</b> Lo = 80 mm	20.0	-	-
Long and flat products; > 2 <= 2.5 mm; (trans.) <b>Note:</b> Lo = 80 mm	18.0	-	-
Long and flat products; > 2.5 <= 3 mm; (long.) <b>Note:</b> Lo = 80 mm	21.0	-	-
Long and flat products; > 2.5 <= 3 mm; (trans.) <b>Note:</b> Lo = 80 mm	19.0	-	-
Long and flat products; > 3 <= 16 mm; (long.)	26.0	-	-
Long and flat products; > 3 <= 16 mm; (trans.)	24.0	-	-
Long and flat products; > 16 <= 25 mm; (long.)	26.0	-	-
Long and flat products; > 16 <= 25 mm; (trans.)	24.0	-	-

Impact [J]			
Dimension	Min	Max	Approx
Long and flat products; > 3 <= 16 mm; (long.) <b>Impact Test:</b> Charpy V Notch; 10 - 25 mm	27	-	-
Long and flat products; > 16 <= 25 mm; (long.) <b>Impact Test:</b> Charpy V Notch; 10 - 25 mm	27	-	-

Chemical Composition [%]			
Criterion	Min	Max	Approx
C	-	0.1700	-
Mn	-	1.4000	-
P	-	0.0450	-
S	-	0.0450	-
N	-	0.0090	-

- C For thicknesses > 16mm, C < 0.2%
- N Depending on P - content N < 0.012%

Low cycle fatigue I				
Condition	Direction	Cyclic yield strength [MPa]	Cyclic strength exponent	Cyclic strength coefficient
		265	0.24	1170

Low cycle fatigue II					
Condition	Direction	Fatigue str. coeff. [MPa]	Fatigue str. exponent	Fatigue duct. coefficient	Fatigue duct. exponent
		929	-0.12	0.39	-0.50

Cross Reference Table		
Material	Standard	Country
S 235 JR	B.S.	United Kingdom
S 275 JR	B.S.	United Kingdom
HR 37/23	B.S.	United Kingdom
CS 37/23	B.S.	United Kingdom
HS 37/23	B.S.	United Kingdom

## Cross Reference Table

Material	Standard	Country
11443	CSN	Czech Republic
Q255A	GB	China
1.0037	WN	Germany
1.0044	WN	Germany
St 44-2	DIN	Germany
S235JR / Fe 360 B	DIN	Germany
St 37-2	DIN	Germany
S275JR / Fe 430 B	DIN	Germany
St 37-2 G	DIN	Germany
St 44-2 / S275JR	DIN	Germany
Fe 42 B1 FN	EN	European Union
Fe 42 B1 FU	EN	European Union
Fe 42 B3 FN	EN	European Union
Fe 42 B3 FU	EN	European Union
Fe 42-3 FN	EN	European Union
S 275 JR	EN	European Union
1.0037	EN	European Union
1.0044	EN	European Union
Fe 430 B	EN	European Union
Fe 360 B	EN	European Union
S 235 JR	AFNOR NF	France
S 275 JR	AFNOR NF	France
Fe 360 B	UNI	Italy
Fe 360 C	UNI	Italy
Fe 360 D	UNI	Italy
Fe 430 B	UNI	Italy
Fe 430 C	UNI	Italy
S 235 JR	UNI	Italy
S 275 JR	UNI	Italy
STKM 12 A	JIS	Japan
STKM 12 C	JIS	Japan
STKR 400	JIS	Japan
St4ps	GOST	Russia
St4sp	GOST	Russia
1311	SS	Sweden

## Cross Reference Table

Material	Standard	Country
1411	SS	Sweden
1412	SS	Sweden
SA-283 B	ASME	USA
SA-283 D	ASME	USA
38W	CSA	Canada
St 3 S	PN	Poland
S 235 JR	UNE	Spain
S 275 JR	UNE	Spain
S 235 JR	NBN	Belgium
S 275 JR	NBN	Belgium
S 235 JR	NS	Norway
S 275 JR	NS	Norway
St 37 F	ONORM	Austria
FK	MSZ	Hungary
Fe 235 B	MSZ	Hungary
Fe 275 B	MSZ	Hungary
Fe 275 D	MSZ	Hungary
K02702	UNS	USA
K01702	UNS	USA
A 283 Grade B	ASTM	USA
A 283 Grade D	ASTM	USA
C 0370	JUS	Yugoslavia