

S235J2+N

Non-alloy structural steels

| | |
|------------------------|----------------|
| Material no. | 1.0117+N |
| according to | DIN EN 10025-2 |
| Tensile strength class | A |

Usage

These general structural steel grades are characterised by a minimum yield strength of 185-360 N/mm². Suitability for cold-forming such as bending, folding, borderin and flanging etc. can be ordered separately.

The user of these steel grades must make sure that his calculation, design and processing methods are appropriate for the material. The welding technique used must be suitable for the intended application and comply with the state-of-the-art.

With distinctly closer chemical composition values and mechanical properties, the steel grades of the S235-S355 series are used as material for wheels of passenger cars, lorries and other vehicles.

Chemical composition ¹⁾

(in percent by weight)

| | min. | max. |
|----------------|---------------------|----------------------|
| C | | 0,17% |
| Mn | | 1,40% |
| P | | 0,035% |
| S | | 0,035% |
| N | | 0,012% ²⁾ |
| C _E | 0,35% ³⁾ | |

1) Heat analysis

2) The maximum nitrogen content shall not apply if the total aluminium content of the steel is at least 0.020% or if it contains enough other nitrogenfixing elements.

3) Max. carbon equivalent value

$$C_E = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15$$

Mechanical properties ¹⁾

| Nom. thick. e | Yield strength R _{eH} |
|---------------|--------------------------------|
| ≤ 16 mm | ≥ 235 MPa |
| > 16 mm | ≥ 225 MPa |

| Nom. thick. e | Tensile strength R _m |
|---------------|---------------------------------|
| < 3 mm | 360 – 510 MPa |
| ≥ 3 mm | 360 – 510 MPa |

| Nom. thick. e | Total elong. A ²⁾ (long./trans.) |
|---------------|---|
| 3 ≤ e < 25 mm | ≥ 26/24 % |

| Temperature | Notch impact energy ³⁾ |
|-------------|-----------------------------------|
| -20 °C | ≥ 27 J |

The samples for the tensile test are taken at right angles to rolling direction unless the product width is opposed to this.

1) The tensile test values given in the table apply to longitudinal samples; in case of strip and sheet steel of width ≥ 600 mm they apply to transverse samples.

2) It applies to nominal thickness e:

e < 3 mm: A₈₀

e ≥ 3 mm: A₅

3) Average values of 3 samples; one individual value may fall short of the required minimum value by not more than 30%. The sample width shall equal the product thickness if the latter is between 5 and 10 mm. The tests are performed by using samples similar to Charpy-V samples. The values specified in the table above are to be reduced proportionally to the sample width.

Available dimensions

Hot-rolled coils unpickled, mill-edge

| Thickness in mm | Width in mm |
|-----------------|-------------|
| 1,50 – 1,79 | 900 – 1250 |
| 1,80 – 1,99 | 900 – 1390 |
| 2,00 – 2,24 | 900 – 1540 |
| 2,25 – 2,49 | 900 – 1700 |
| 2,50 – 12,70 | 900 – 1880 |

Hot-rolled slit strip

| Thickness in mm | Width in mm |
|-----------------|-------------|
| 1,50 – 1,79 | 100 – 515 |
| 1,80 – 1,99 | 100 – 635 |
| 2,00 – 2,24 | 100 – 760 |
| 2,25 – 7,00 | 100 – 800 |
| 7,01 – 8,00 | 140 – 800 |
| 8,01 – 9,00 | 175 – 800 |
| 9,01 – 10,00 | 233 – 800 |

≤ 100 mm on request

Welding

No indications on weldability of steel grades S185, E295, E335 und E360 are made because there are no requirements on their chemical composition. The steel grades JR, JO, J2 and K2 categories are in general suitable for all welding techniques.

Condition of delivery, scope of testing and certificate

The provisions of DIN 10025-2, chapters 6.3 and 8 shall apply for delivery and inspection. Other inspections may be agreed.