

# S235JR

All

## General Information

Soft structural steel easy to weld and bend.

Variants suitability for hot dip zinc coating according the classification in Table 1 EN 10025-2:2004:  
Class 1: Si max 0,030% and Si + 2,5 P max 0,090%. Class 2: Si max 0,035%. Class 3 Si 0,14...0,25% and P max 0,035%.

## Similar designations

SS 1312, S235JR, 1.0038, Fe 360 BFN, RSt37-2, 40 B, SB1312, IM2191

## Chemical composition

| Variant                | Cast | Weldability             |     | C %  | Mn % | P %   | S %   | Cu % | N %    |
|------------------------|------|-------------------------|-----|------|------|-------|-------|------|--------|
| S235JR EN10025-2 (ref) | Std  | CEV 0.35 <sub>max</sub> | Min | -    | -    | -     | -     | -    | -      |
|                        |      | Pcm 0.25 <sub>max</sub> | Max | 0.17 | 1.40 | 0.035 | 0.035 | 0.55 | 0.0120 |

S235JR: C max 0,20 % for sizes over 40 mm. Only CEV required in standard

Mechanical Properties

| Variant                   | Condition ⓘ | Format      | Dimension [mm] | Yield strength min [MPa] | Tensile strength [MPa] | Elongation A <sub>5</sub> [%] | Impact (ISO-V) strength <sub>min</sub> |
|---------------------------|-------------|-------------|----------------|--------------------------|------------------------|-------------------------------|----------------------------------------|
| S235JR<br>EN10025-2 (ref) | +AR         | All formats | < 16           | 235*                     | 360-510                | 26                            | 20 °C 27 J (long)                      |
|                           |             | All formats | 16.1 < 40      | 225*                     | 360-510                | 26                            | 20 °C 27 J (long)                      |
|                           |             | All formats | 40.1 < 63      | 215*                     | 360-510                | 25                            | 20 °C 27 J (long)                      |
|                           |             | All formats | 63.1 < 100     | 215*                     | 360-510                | 24                            | 20 °C 27 J (long)                      |
|                           |             | All formats | 100.1 < 150    | 195*                     | 350-500                | 22                            | 20 °C 27 J (long)                      |
|                           |             | All formats | 150.1 < 200    | 185*                     | 340-490                | 21                            | 20 °C 27 J (long)                      |

*R<sub>p0.2</sub> \* R<sub>eh</sub>, \*\* R<sub>el</sub>*

Transformation temperatures

|     | Temperature °C |
|-----|----------------|
| MS  | 485            |
| AC1 | 725            |
| AC3 | 863            |

## Other properties (typical values)

| Youngs module (GPa)           | Poisson´s ratio (-)                       | Shear module (GPa)                               | Density (kg/m <sup>3</sup> )                     |
|-------------------------------|-------------------------------------------|--------------------------------------------------|--------------------------------------------------|
| 210                           | 0.3                                       | 80                                               | 7800                                             |
| Average CTE 20-300°C (µm/m°C) | Specific heat capacity 50/100°C (J/kg °K) | Thermal conductivity Ambient temperature (W/m°C) | Electrical resistivity Ambient temperature (µΩm) |
| 12                            | 460 - 480                                 | 40 - 45                                          | 0.20 - 0.25                                      |

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