

## S355JR All

### General Information

S355 is a structural micro-alloyed grade used for a great variety of applications. It is standardized with a specified impact strength of 27 J at a few different temperatures, but EN10027 gives guidelines how to extend the designation.

### Similar designations

S355K2 - 15Mn4, S355JR - C16, S355J2 - C16

### Chemical composition

| Variant               | Cast | Weldability             |     | C%   | Si%  | Mn%  | P%    | S%    | Cu%  | N%     |
|-----------------------|------|-------------------------|-----|------|------|------|-------|-------|------|--------|
| S355JR                | CC   | CEV 0.52 <sub>max</sub> | Min | -    | -    | -    | -     | -     | -    | -      |
|                       |      | Pcm 0.35 <sub>max</sub> | Max | 0.24 | 0.55 | 1.60 | 0.040 | 0.040 | 0.40 | 0.0120 |
| S355JR EN10025-2:2019 | Std  | CEV 0.52 <sub>max</sub> | Min | -    | -    | -    | -     | -     | -    | -      |
|                       |      | Pcm 0.35 <sub>max</sub> | Max | 0.24 | 0.55 | 1.60 | 0.035 | 0.035 | 0.55 | -      |

## Mechanical Properties

| Variant | Condition | Format   | Dimension [mm] | Yield strength min [MPa] | Tensile strength [MPa] | Elongation A <sub>5</sub> [%] | Hardness   | Impact (ISO-V) strength <sub>min</sub> |
|---------|-----------|----------|----------------|--------------------------|------------------------|-------------------------------|------------|--|
| S355JR  | +AR       | Flat bar | < 16           | 355**                    | 470-630                | 22                            | 140-190 HB | 20 °C 27 J (long)                      |
|         |           | Flat bar | 16 < 40        | 345**                    | 470-630                | 22                            | 140-190 HB | 20 °C 27 J (long)                      |
|         |           | Flat bar | 40 < 63        | 335**                    | 470-630                | 21                            | 140-190 HB | 20 °C 27 J (long)                      |
|         |           | Flat bar | 63 < 80        | 325**                    | 470-630                | 20                            | 140-190 HB | 20 °C 27 J (long)                      |
|         |           | Flat bar | 80 < 100       | 315**                    | 470-630                | 20                            | 140-190 HB | 20 °C 27 J (long)                      |

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

## Transformation temperatures

|     | Temperature °C |
|-----|----------------|
| MS  | 540            |
| AC1 | 720            |
| AC3 | 790            |

## Other properties (typical values)

| Youngs module (GPa)           | Poisson´s ratio (-)                      | Shear module (GPa)                               | Density (kg/m3)                                  |
|-------------------------------|--|--|--|
| 210                           | 0.3                                      | 80   | 7800   |
| Average CTE 20-300°C (µm/m°K) | Specific heat capacity 50/100°C (J/kg°K) | Thermal conductivity Ambient temperature (W/m°K) | Electrical resistivity Ambient temperature (µΩm) |
| 12                            | 460 - 480                                | 40 - 45  | 0.20 - 0.25                                      |

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