

Material specification sheet

Saarstahl - C35R (Cm35)

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|---------------|--------------------|---|
| Material No.: | Former brand name: | International steel grades: |
| 1.1180 | R3 | BS: C50R, 080A35 AFNOR: C50R, 3C35, XC32 SAE: 1035 |

Material group: Steel for quenching and tempering according to DIN EN 10083

| Chemical composition: (Typical analysis in %) | C | Si | Mn | S | other |
|--|------|------|------|----------------|-------|
| | 0,35 | 0,25 | 0,65 | 0,020 0,035 | (Pb) |

Application: Plain carbon steel for mechanical engineering and automotive components

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|--|-------------------------|------------------------|
| Hot forming and heat treatment: | Forging or hot rolling: | 1100 - 850°C |
| | Normalising: | 860 - 900°C/air |
| | Soft annealing: | 680 - 710°C/furnace |
| | Hardening: | 840 - 880°C/water, oil |
| | Tempering: | 550 - 660°C/air |

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| Mechanical Properties: | Treated for cold shearability +S: | Shearable in as rolled condition |
| | Soft annealed +A: | - |

Quenched and tempered, +QT:

| | < 16 | >16 – 40 | >40 – 100 | >100 – 160 | >160 – 250 |
|--|-----------|-----------|-----------|------------|------------|
| Diameter d [mm] | < 16 | >16 – 40 | >40 – 100 | >100 – 160 | >160 – 250 |
| Thickness t [mm] | < 8 | 8<t<20 | 20<t<60 | 60<t<100 | 100<t<160 |
| 0,2% proof stress R_{p0,2} [N/mm²] | min. 430 | min. 380 | min. 320 | - | - |
| Tensile strength R_m [N/mm²] | 630 - 780 | 600 - 750 | 550 - 700 | - | - |
| Fracture elongation A_s [%] | Min. 17 | min. 19 | min. 20 | - | - |
| Reduction of area Z [%] | Min. 40 | min. 45 | min. 50 | - | - |
| Notch impact energy ISO-V [J] | min. 35 | min. 35 | min. 35 | - | - |

Normalised, +N:

| | | | | | |
|--|----------|-----------|------------|--|--|
| Diameter d [mm] | < 16 | >16 – 100 | >100 – 250 | | |
| Thickness t [mm] | < 16 | 16<t<100 | 100<t<250 | | |
| 0,2% proof stress R_{p0,2} [N/mm²] | min. 300 | min. 270 | min. 245 | | |
| Tensile strength R_m [N/mm²] | min. 550 | min. 520 | min. 500 | | |
| Fracture elongation A₅ [%] | min. 18 | min. 19 | min. 19 | | |