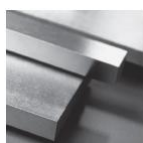


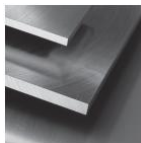
Steel grade

| | |
|--|--|
| Material No. / Werkstoff-Nr. | PREMIUM 1.4112 |
| Description | X90CrMoV18 |
| BS | 1.4112 |
| AISI/SAE | 440B; S44003 |
| Search for alternatives in the ABRAMS STEEL GUIDE® | www.steel-guide.co.uk/alternatives/1.4112 |

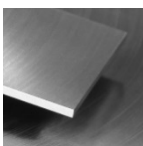
Specifications



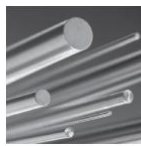
Precision flat steel with machining allowance [PFS/BA]
L: 1.000 mm



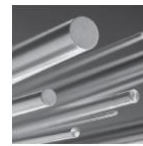
€co-Präz [€co]
L: 300 mm
L: 500 mm



Hart-Präz [Hart]
L: 250 mm
L: 500 mm



Precision round steel without machining allowance [PRS]
bright ground, ISO h9
L: 1.000 mm



Precision round steel [PRS/BA]
geschält / überdreht
L: 500 mm
L: 1.000 mm

Chemical composition BS 1.4112 (reference value %)

| C | Si | Mn | P | S | Cr | Mo | V |
|-------------|---------|---------|----------|-----------|-------------|-----------|-------------|
| 0,85 - 0,95 | 0 - 1,0 | 0 - 1,0 | 0 - 0,04 | 0 - 0,015 | 17,0 - 19,0 | 0,9 - 1,3 | 0,07 - 0,12 |

Physical properties

| | | | | |
|--|-------------------------------|------------|------------|------------|
| Hardness (delivery condition) | max. 265 HB, annealed | | | |
| Tensile strength R_m (as received condition) | approx. 925 N/mm ² | | | |
| Working hardness | max. 53-58 HRC | | | |
| Thermal expansion coefficient $10^{-6}m/(m \cdot K)$ | 20 - 100°C | 20 - 200°C | 20 - 300°C | 20 - 400°C |
| | 10,3 | 10,8 | 11,2 | 11,6 |
| Thermal conductivity $W/(m \cdot K)$ | 20°C | 350°C | | |
| | 15,9 | 20,6 | | |

Technical properties

Corrosion resistant martensitic chrome-steel (approx. 18 % Cr) for cold work. Reaches an unusually high hardness and high wear resistance after heat treatment. High gloss polishable.

Applications

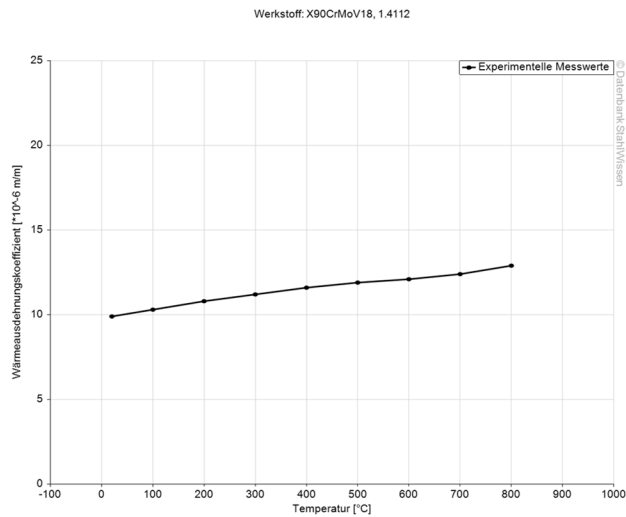
Cutting tools, knives, knife blades, cutlery, guide rails, wear parts, perforated discs, screw elements, pump shafts, scale pans, horizontal cutting, surgical instruments, plastic moulds, injection nozzles, roller bearings, ball bearings, machine construction, food industry, building industry.



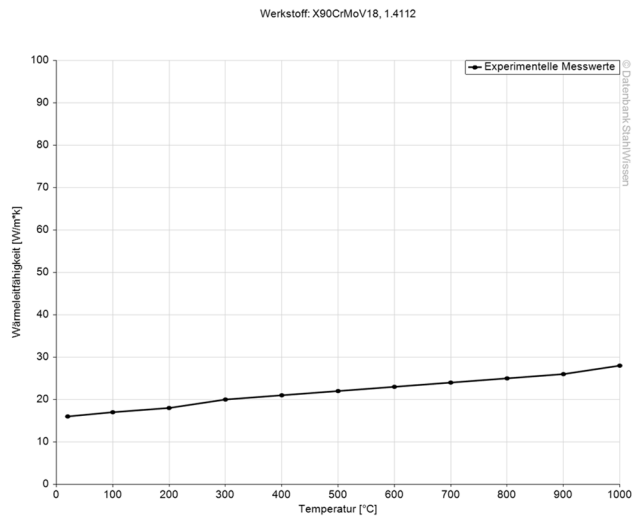
Heat treatment

| | Temperature | Cooling | Hardness |
|-------------------------|---------------|---|-------------|
| Soft annealing | 780 - 840°C | Furnace | max. 265 HB |
| Stress relief annealing | 600 - 650°C | Furnace | |
| Hardening | 1000 - 1050°C | Quenching in | |
| | | Air, oil, hot basin (500 - 550°C), compressed gas (N ₂) | |
| Tempering | 100°C | 300°C | 600°C |
| | 59 HRC | 57 HRC | 40 HRC |

Thermal expansion coefficient diagram



Thermal conductivity diagram



ABRAMS PREMIUM STEEL

is a registered trademark of
Abrams Engineering Services GmbH & Co. KG
Hannoversche Str. 38 · 49084 Osnabrueck / Germany
Managing Director: Dipl.-Wi.-Ing. Dr. Juergen Abrams

Amtsgericht Osnabrueck / Germany, HRA 6865
VAT-No.: DE 221940667
General Partner: Abrams Engineering Verwaltungs GmbH
Amtsgericht Osnabrueck / Germany, HRB 20019

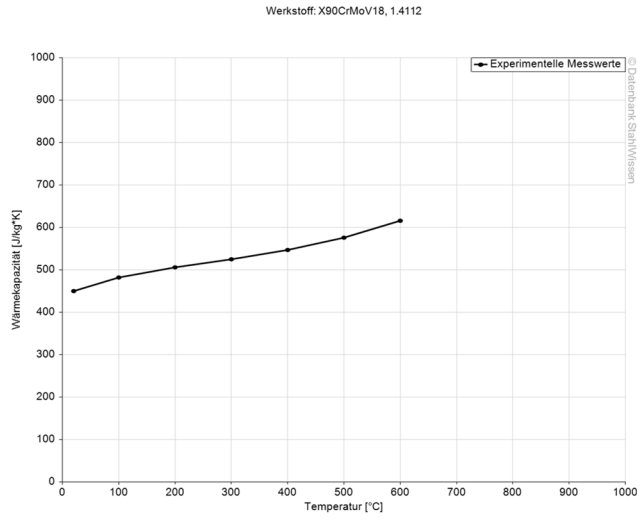
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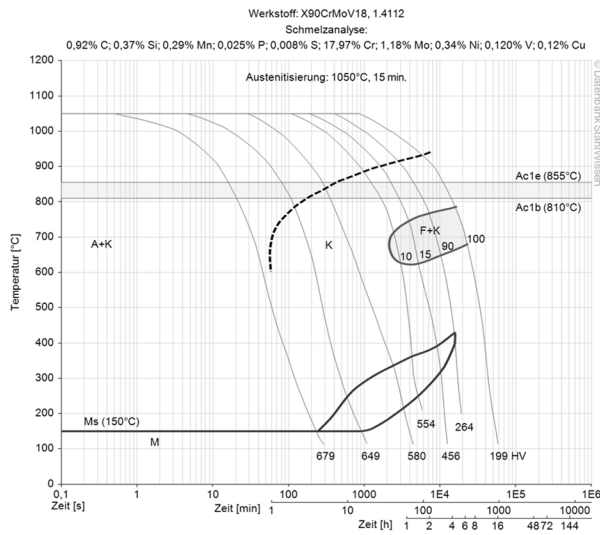
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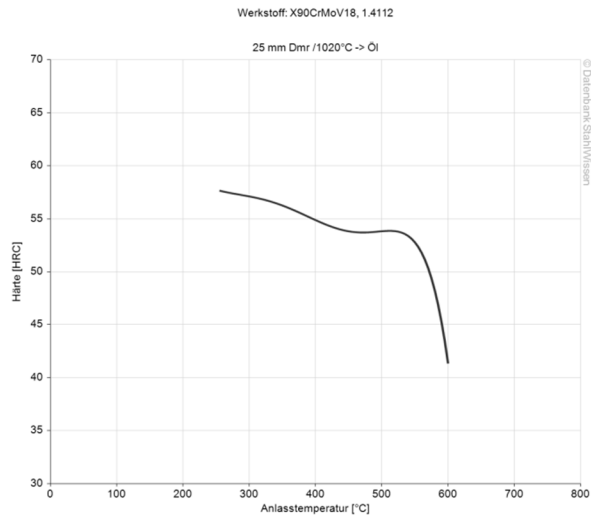
Thermal capacity diagram



Continuous ZTU-diagram



Tempering diagram



The data shown here is to be used only as an indication of the statistics, thus we accept no liability.
Diagrams are taken from Datenbank StahlWissen Dr. Sommer Werkstofftechnik
Issued: 2012

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