

Steel grade

| | |
|--|--|
| Material No. / Werkstoff-Nr. | PREMIUM 1.2083 |
| Description | X40Cr14 |
| AISI/SAE | ~420 |
| Search for alternatives in the ABRAMS STEEL GUIDE® | www.steel-guide.eu/alternatives/420 |

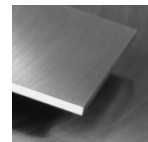
Specifications



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



Eco-Präz® [Eco]
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 with machining allowance [PRS/BA]
peeled / rough-turned
L: 500 mm
L: 1.000 mm

Chemical composition AISI/SAE ~420 (reference value %)

| C | Si | Mn | P | S | Cr |
|-------------|---------|---------|----------|----------|-------------|
| 0,36 - 0,42 | 0 - 1,0 | 0 - 1,0 | 0 - 0,03 | 0 - 0,03 | 12,5 - 14,5 |

Physical properties

| | | | | | | | |
|--|-------------------------------|------------|------------|------------|------------|------------|------------|
| Hardness (delivery condition) | max. 241 HB, annealed | | | | | | |
| Tensile strength R_m (as received condition) | approx. 815 N/mm ² | | | | | | |
| Working hardness | max. 55 HRC | | | | | | |
| Thermal expansion coefficient $10^{-6}m/(m \cdot K)$ | 20 - 100°C | 20 - 200°C | 20 - 300°C | 20 - 350°C | 20 - 400°C | 20 - 450°C | 20 - 500°C |
| | 11,1 | 11,6 | 12,0 | 12,3 | 12,4 | 12,5 | 12,6 |
| Thermal conductivity $W/(m \cdot K)$ | 23°C | 150°C | 300°C | 350°C | 400°C | 500°C | |
| | 22,6 | 24,0 | 24,6 | 24,9 | 24,4 | 23,7 | |

Technical properties

Corrosion-resistant cold work steel and plastic mould steel, good machinability. Can be hardened and polished. Low distortion through-hardening steel with high hardness and high wear resistance. For maximum required polishability use the ESR (Electro Slag Remelted Steel) production. The material is conditionally acid resistant.

Applications

Mechanical engineering, medical technology, plastic moulds, synthetic resin mould tools, die casting tools, light metal die casting, cutting tools, machine knives, kitchen knives, razors, shears, scraper blades, surgical instruments, measuring tools, roller bearings, ball bearings, ice-skates, pump parts, valves.

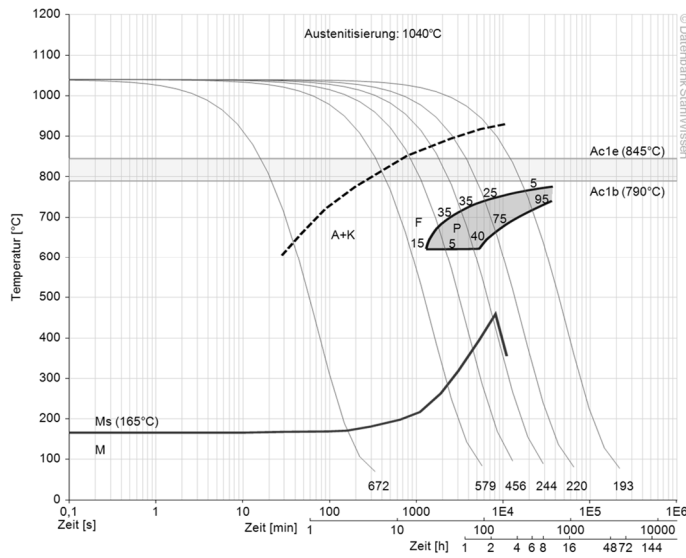


Heat treatment

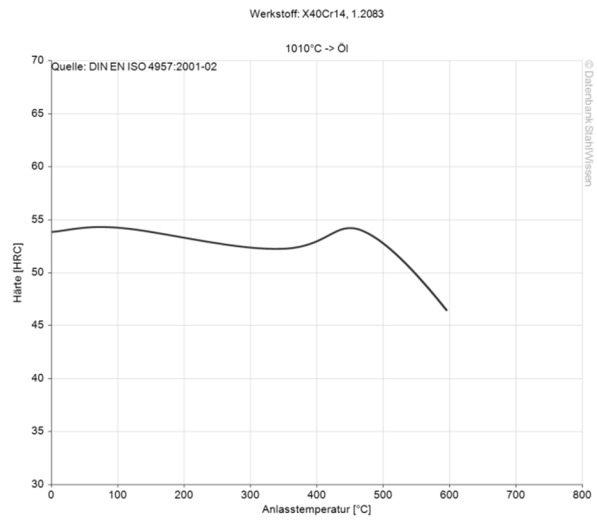
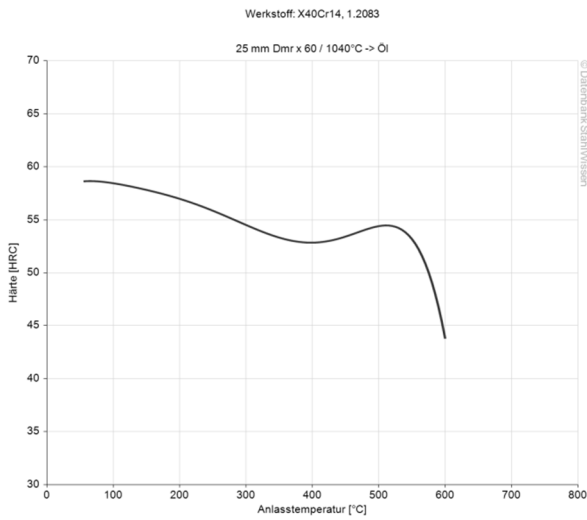
| | Temperature | Cooling | Hardness | | | |
|-------------------------|---------------|--------------------------|--------------------------|--------|--------|--------|
| Soft annealing | 760 - 800°C | Furnace | max. 241 HB | | | |
| Stress relief annealing | 600 - 650°C | Furnace | | | | |
| | Temperature | Quenching in | Hardness after quenching | | | |
| Hardening | 1000 - 1050°C | Oil, basin (500 - 550°C) | 56 HRC | | | |
| | 100°C | 200°C | 300°C | 400°C | 500°C | 600°C |
| Tempering | 56 HRC | 55 HRC | 52 HRC | 51 HRC | 52 HRC | 40 HRC |

Continuous ZTU-diagram

Werkstoff: X40Cr14, 1.2083



Tempering diagrams



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

