



DE - Brand:

# Special Steel

# CPR

**Chemical composition:**  
(Typical analysis in %)

|      |       |      |      |      |  |  |  |
|------|-------|------|------|------|--|--|--|
| C    | Cr    | Mo   | V    | W    |  |  |  |
| 1,20 | 12,00 | 1,40 | 1,70 | 2,50 |  |  |  |

**Steel properties:**

Ledeburitic 12% chrome steel with increased additions of W-, Mo- and V, high wear resistance, good toughness, high pressure resistance, minimal change in dimension, secondary hardening.

**Applications:**

Thread rolling dies, cold extrusion punches, screws, bending tools, hobbing tools, die- and punching tools, calibrating rings, pressure and profiling rolls, drawing tools.

**Condition of delivery:**

Soft annealed to max. 265 HB

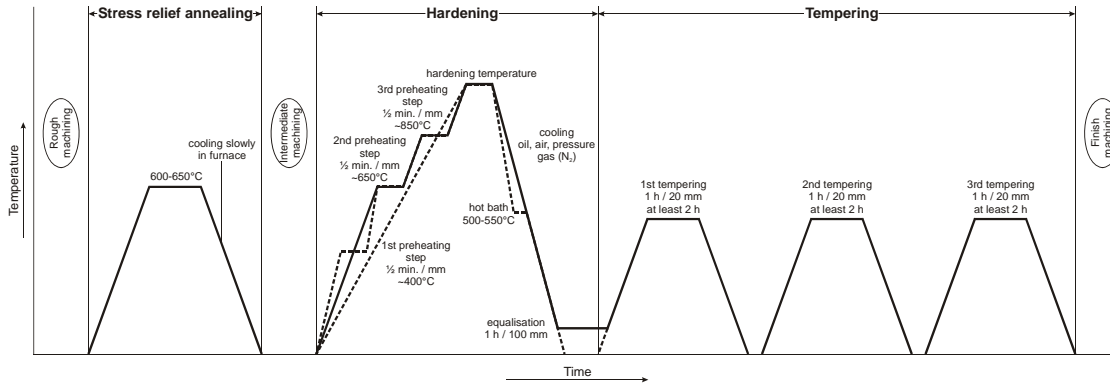
**Physical properties:**

|                               |   |          |          |          |          |
|-------------------------------|---|----------|----------|----------|----------|
| Thermal expansion coefficient | $\left[ \frac{10^{-6} \cdot \text{m}}{\text{m} \cdot \text{K}} \right]$ | 20-100°C | 20-200°C | 20-300°C | 20-400°C |
|                               |   | 10,6     | 11,2     | 11,6     | 12,0     |
| Thermal conductivity          | $\left[ \frac{\text{W}}{\text{m} \cdot \text{K}} \right]$               | 20°C     | 350°C    | 700°C    |          |
|                               |   | 22,8     | 23,8     | 24,9     |          |

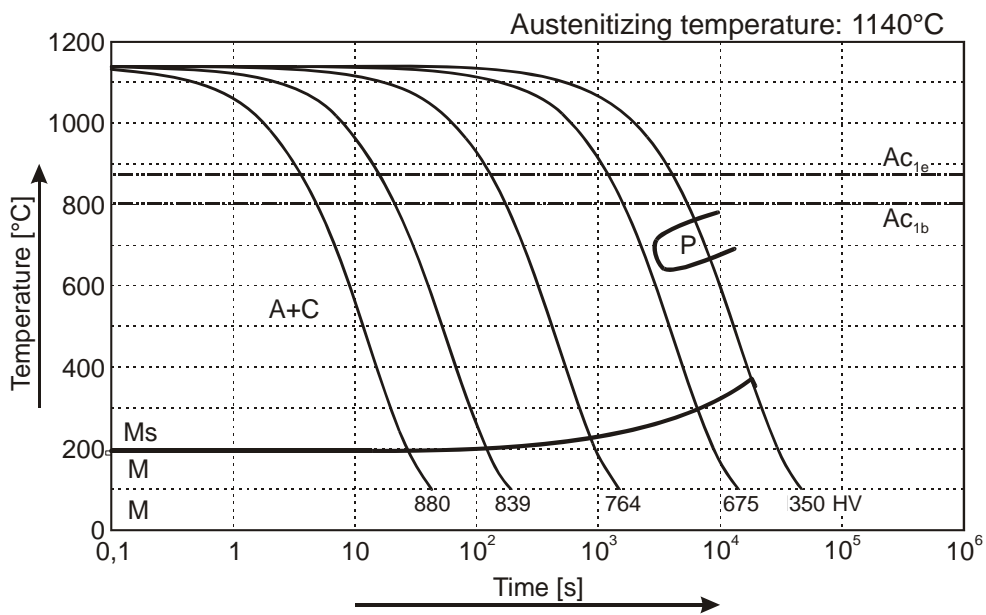
**Heat treatment:**

|                         |                    |  |                          |
|-------------------------|--------------------|--|--------------------------|
| Soft annealing          | <b>Temperature</b> | <b>Cooling</b>   | <b>Hardness</b>          |
|                         | 820 - 850°C        | furnace  | max. 265 HB              |
| Stress relief annealing | <b>Temperature</b> | <b>Cooling</b>   |                          |
|                         | 600 - 650°C        | furnace  |                          |
| Hardening               | <b>Temperature</b> | <b>Cooling</b>   | <b>Tempering</b>         |
|                         | 1130 - 1150°C      | oil, pressure gas (N <sub>2</sub> ),<br>air or hot bath<br>500 - 550°C | see tempering<br>diagram |

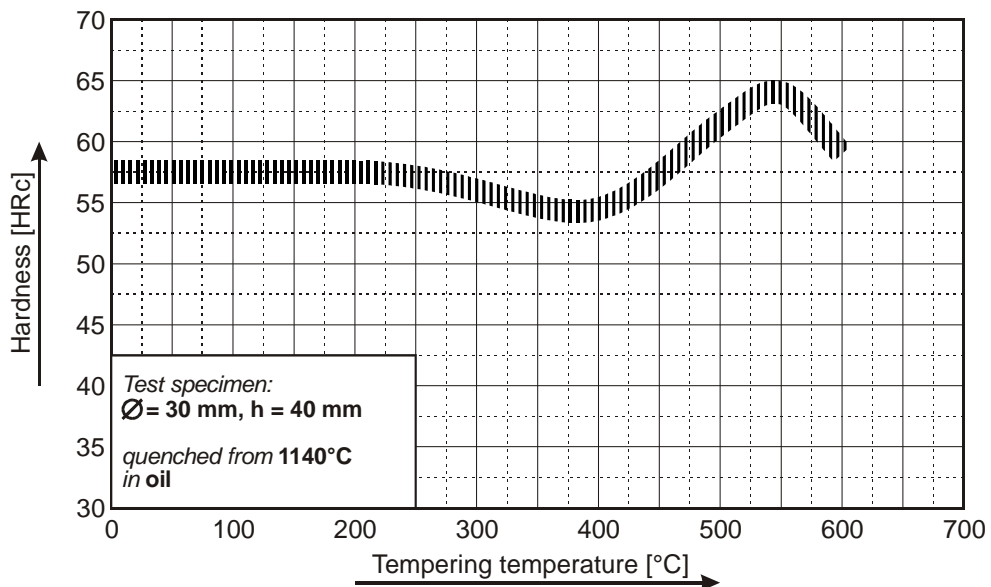
## (CPR) Thermal Cycle Diagram



## Continuous Cooling Transformation Diagram (CCT)



## Tempering Diagram



Remarks: All technical information is for reference only.