

## 1.2311

**Material no.:** 1.2311

**HASCO colour code:** blue / white / white

**Abbreviated DIN name:** 40 CrMnMo 7

**Chemical analysis (%):**

C	Mn	Cr	Mo		
0,4	1,5	1,9	0,2		

**Hardness when supplied:** annealed to max. 280 - 325 HB (~950 - 1100 N/mm<sup>2</sup>)

### Characteristics

#### Material properties:

This material should be used in its supplied condition. High mechanical properties, toughness and compressive strength.

#### Uses:

Cavity plates and inserts in plastics processing. Tool components subjected to high pressures. Other uses in mouldmaking where high strength is needed without subsequent heat treatment, up to a thickness of 400 mm. For larger sizes, please contact us direct.

### Physical properties

**Thermal expansion coefficient**  
(10<sup>-6</sup>·m)/(m·K)

100	200	300	400	500	600	700	°C
11,1	12,9	13,4	13,8	14,2	14,6	14,9	

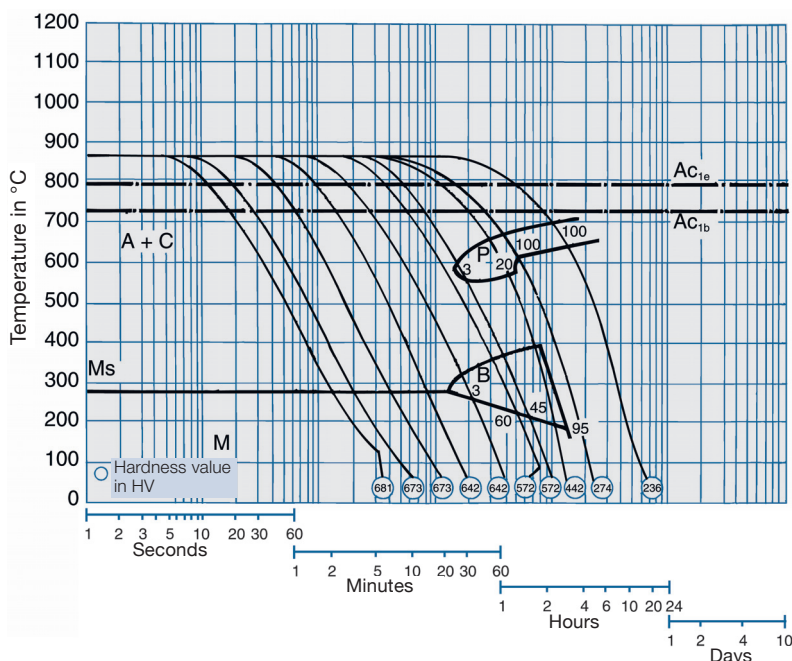
**Thermal conductivity**  
W/(m·K)

20	350	700	°C
34,5	33,5	32,0	

### Remarks

- Polishing:** Technical polishing possible because the sulphur content is very low.
- Graining:** Possible.
- Nitriding:** Possible.
- Hardening:** Not usual because material should be used in its supplied condition.
- Soft annealing:** Not usual.
- Stress-relief annealing:** To eliminate residual stress after coarse machining at max. 480°C, approx. 4 h with slow furnace cooling. At higher temperatures, there is a risk that the surface will scale.

### Time-temperature conversion chart



### Tempering chart

