

# Cryodur 2990

(~X100CrMoV8-1-1)

C 1.00 Si 0.90 Cr 8.00 Mo 1.10 V 1.60

## Steel properties

Newly developed ledeburitic cold-work steel with high hardness, good toughness and high tempering resistance combined with high wear resistance.

## Physical properties

### Coefficient of thermal expansion

at °C	20-100	20-150	20-200	20-250	20-300	20-350	20-400	20-450	20-500
$10^{-6} \text{ m}/(\text{m} \cdot \text{K})$	11.4	11.6	11.7	11.9	12.0	12.1	12.3	12.4	12.6

### Thermal conductivity

at °C	RT	100	150	200	300	400	500
$\text{W}/(\text{m} \cdot \text{K})$	24.0	25.9	26.8	27.1	27.4	27.2	26.8

## Applications

Cutting and punching tools including precision cutting tools, threading dies and rolls, rotary shear blades, cold pilger mandrels, pressure pads and plastic moulds, cold-forming and deep-drawing dies, woodworking tools and cold rolls.

## Heat treatment

**Soft annealing °C**  
830 – 860

**Cooling**  
Furnace

**Hardness HB**  
max. 250

**Stress-relief annealing °C**  
approx. 650

**Cooling**  
Furnace

**Hardening °C**  
1030<sup>1)</sup> – 1080<sup>2)</sup>

**Quenching**  
Air, oil or  
saltbath, 500 – 550 °C

**Hardness after quenching HRC**  
62 – 64

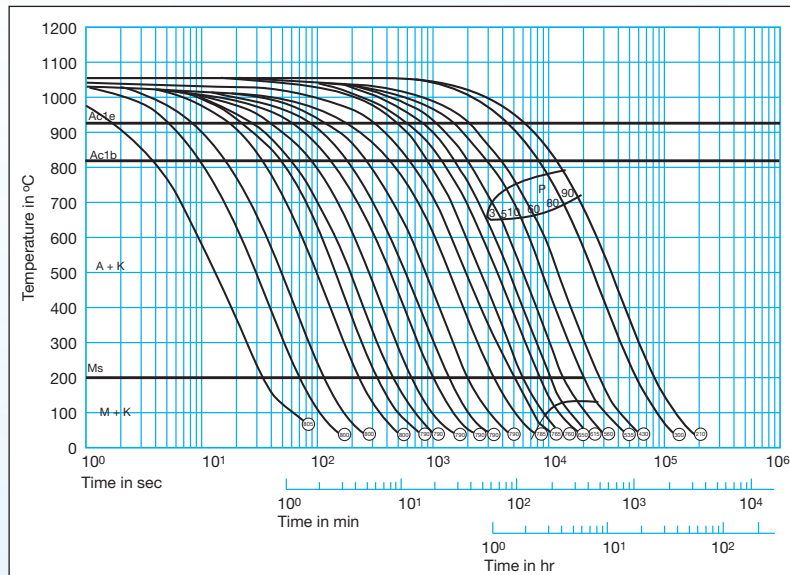
**Tempering °C**

<sup>1)</sup> HRC

<sup>2)</sup> HRC

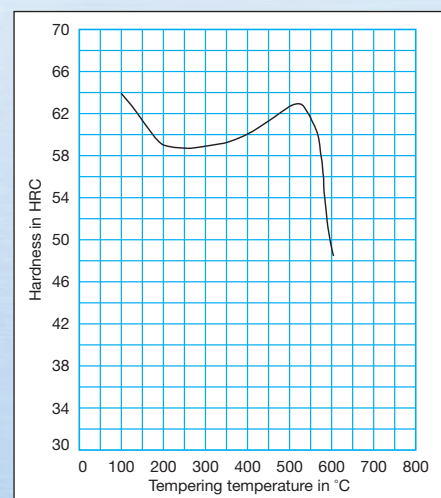
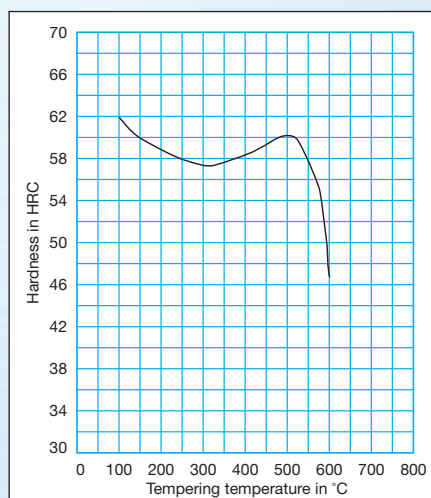
	100	200	300	400	500	525	550	575	600
<sup>1)</sup> HRC	62	59	57	58	60	60	59	55	46
<sup>2)</sup> HRC	64	59	59	60	63	63	61	57	48

## Time-temperature-transformation diagram



## Tempering diagram

Hardening 1030 °C/  
Hardening 1080 °C



Reference numbers in brackets are not standardized in EN ISO 4957.