



钢铁之家

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全球钢号百科!

Global Steel Grade Encyclopedia



涵盖的行业或国家与地区类别



国际材料与试验协会

GJB

国家军用标准



动力机械工程师协会

EU

前欧洲标准化

AISI

美国钢铁学会



德国工业标准

AMS

航空航天材料规范



国际标准

JASO

日本汽车标准组织

EN

欧洲标准

JB

中国机械行业标准

UNS

统一编号系统

UNI

意大利标准



美国机械工程师协会

SS

瑞典标准



国家标准



日本工业标准

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
1030¹⁾ – 1080²⁾

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

Hardness after quenching HRC
62 – 64

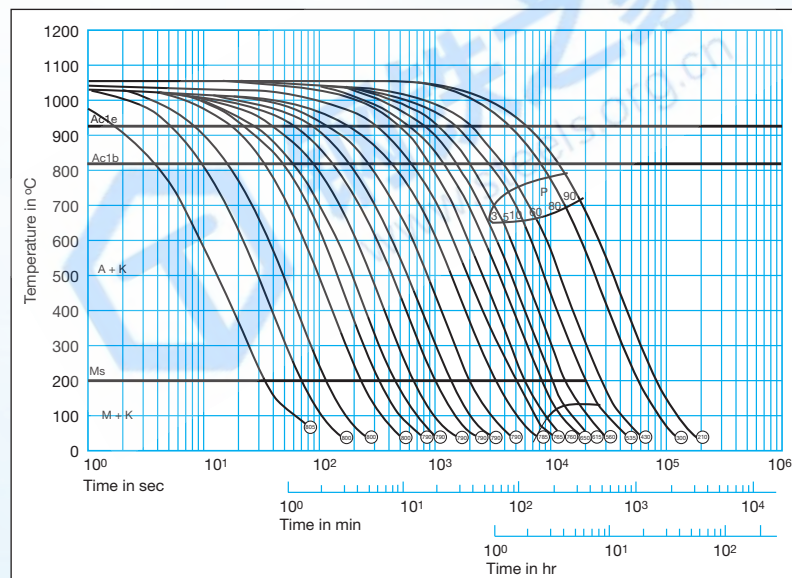
Tempering °C

¹⁾ HRC

²⁾ HRC

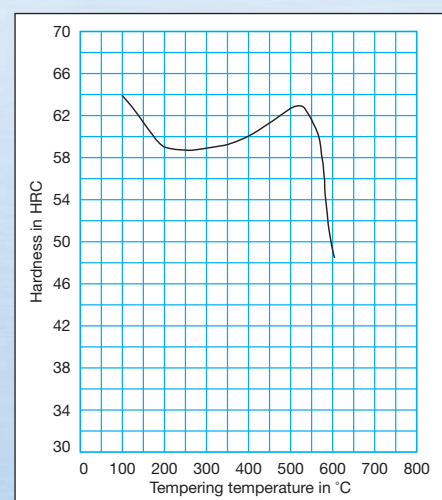
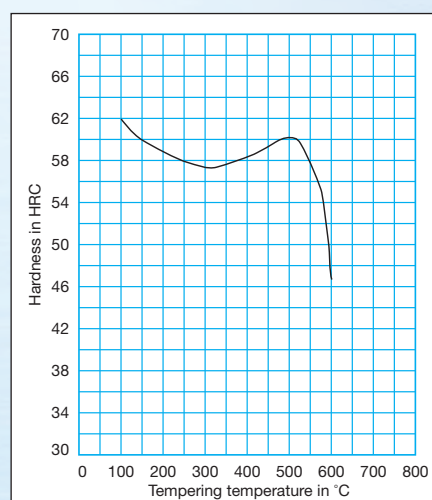
	100	200	300	400	500	525	550	575	600
¹⁾ HRC	62	59	57	58	60	60	59	55	46
²⁾ HRC	64	59	59	60	63	63	61	57	48

Time-temperature-transformation diagram



Tempering diagram

Hardening 1030 °C/
Hardening 1080 °C



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