



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 2379

X153CrMoV12

C 1.55 Si 0.30 Mn 0.35 Cr 12.00 Mo 0.75 V 0.90

Steel properties

12 % ledeburitic chromium steel. Combines maximum wear resistance, good toughness, outstanding cutting edge retention and tempering resistance. It can be nitrided after special heat treatment.

Standards

AISI D2

AFNOR Z160CDV12

Physical properties

Coefficient of thermal expansion

at °C	20 – 100	20 – 200	20 – 300	20 – 400
$10^{-6} \text{ m}/(\text{m} \cdot \text{K})$	10.5	11.5	11.9	12.2

Thermal conductivity

at °C	20	350	700
$\text{W}/(\text{m} \cdot \text{K})$	16.7	20.5	24.2

Applications

Threading rolls and dies, cold extrusion tools, trimming, cutting and stamping tools for sheet thicknesses up to 6 mm, precision cutting tools for sheet thicknesses up to 12 mm, cold pilger mandrels, circular-shear blades, deep-drawing tools, pressure pads and highly wear-resistant plastic moulds.

Heat treatment

Soft annealing °C

830 – 860

Cooling

Furnace

Hardness HB

max. 250

Stress-relief annealing °C

650 – 700

Cooling

Furnace

Hardening °C

1000 – 1050

Quenching

Air, oil or saltbath, 500 – 550 °C

Hardness after quenching HRC

63

Tempering °C (three times)

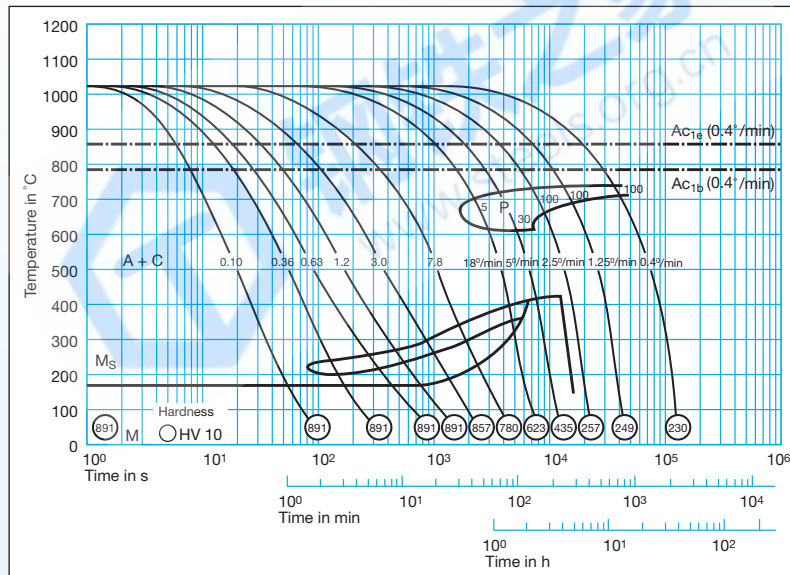
100 200 300 400 500 525 550 600

HRC

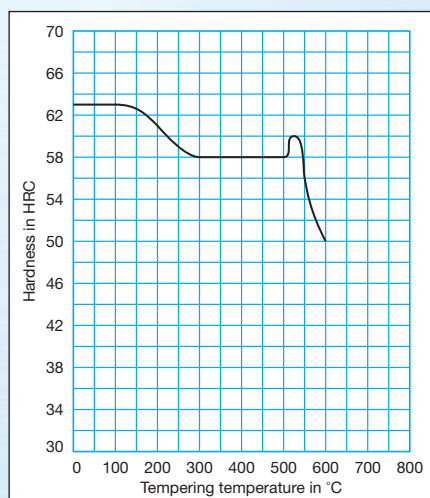
63 61 58 58 58 60 56 50

Time-temperature-transformation diagram

Hardening temperature: 1030 °C



Tempering diagram



Special heat treatment

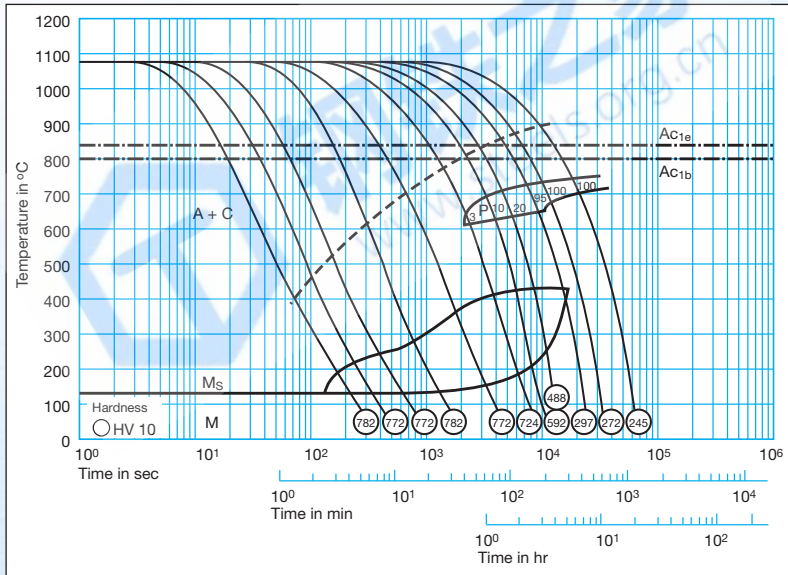
Hardening °C
1050 – 1080

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

Hardness after quenching HRC
61

Tempering °C (three times)	100	200	300	400	500	525	550	600
HRC	61	60	58	59	62	62	57	50

Time-temperature-transformation diagram
Hardening temperature: 1080 °C



Tempering diagram

