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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

国材料与试验协会　GJB 国家军用标准　SAE 动力机械工程师协会　EU 前欧洲标准化　AISI 美国钢铁学会　DIN 德国工业标准　AMS 国空航天材料规范　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

CHEMICAL COMPOSITION

C	Cr	Mo	W	Co	V
1.20	4.1	5.0	6.2	-	3.0

SAFETY DATA SHEET SDS: A

STANDARDS

- USA: AISI M3:2
- Europe: HS 6-5-3
- Germany: 1.3344
- France: AFNOR Z120WDCV6.5.4.3
- Sweden: SS2785
- Japan: JIS SKH53

DELIVERY HARDNESS

- Typical soft annealed hardness is 255 HB
- Cold drawn and cold rolled material is typically 10-40 HB harder

DESCRIPTION

EM3:2 is a highly alloyed high speed steel for good wear resistance and high hardness.

APPLICATIONS

- Taps & dies
- Reamers
- Power hacksaws
- Punches
- Bi-metal saws
- Hole saws

FORM SUPPLIED

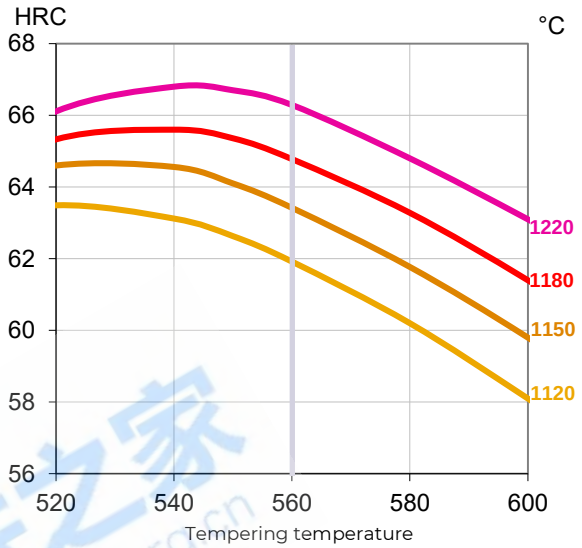
- Drawn wire
- Round bars
- Bi-metal edges
- Square bars
- Flat bars

Available surface conditions: drawn, ground, peeled, hot rolled, turned.

HEAT TREATMENT

- Soft annealing in a protective atmosphere at 850-900°C for 3 hours, followed by slow cooling 10°C per hour down to 700°C, then air cooling.
- Stress-relieving at 600°C to 700°C for approximately 2 hours, slow cooling down to 500°C.
- Hardening in a protective atmosphere with pre-heating in 2 steps at 450-500°C and 850-900°C and austenitising at a temperature suitable for chosen working hardness.
- 3 tempers at 560°C are recommended with at least 1 hour holding time each time.

GUIDELINES FOR HARDENING



Hardness after hardening, quenching and tempering 3x1 hour

Tool	Hardening	Tempering
Single-edge cutting tools	1220°C	550-570°C
Multi-edge cutting tools	1180-1220°C	550-570°C
Cold work tools	1120-1180°C	550-570°C

PROCESSING

E M3:2 can be worked as follows:

- machining (grinding, turning, milling)
- polishing
- hot forming
- electrical discharge machining
- welding (special procedure including preheating and filler materials of base material composition).

GRINDING

During grinding, local heating of the surface, which can alter the temper, must be avoided. Grinding wheel manufacturers can provide advice on the choice of grinding wheels.

SURFACE TREATMENT

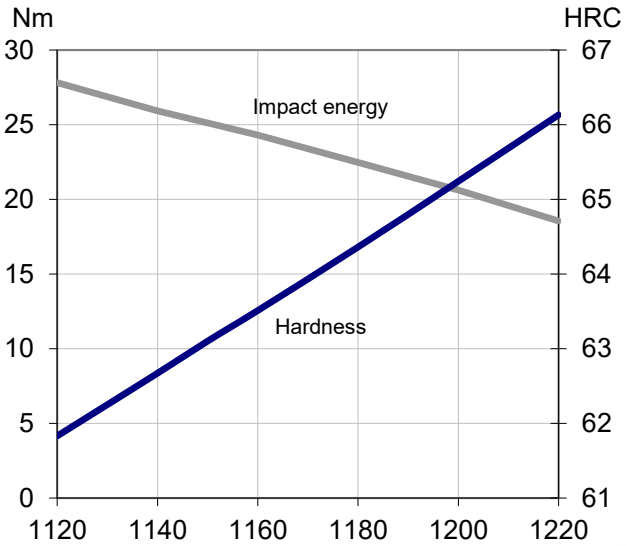
The steel grade is a perfect substrate material for PVD coating. If nitriding is requested, a small diffusion zone is recommended but avoid compound and oxidized layers.

PROPERTIES

PHYSICAL PROPERTIES

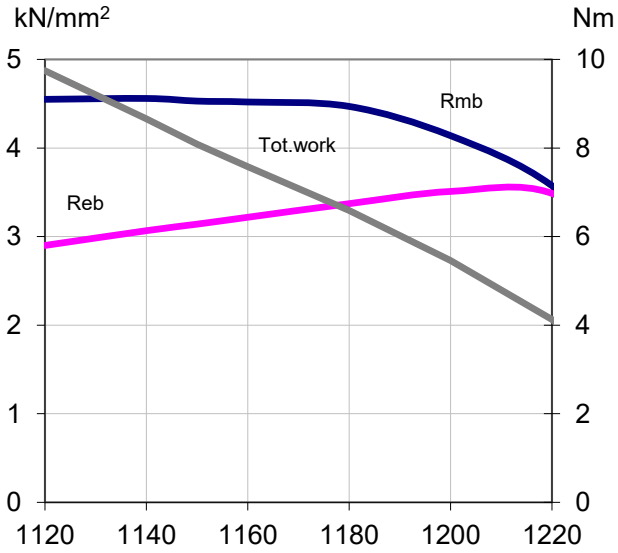
Temperature	20°C
Density g /cm³	8.0

IMPACT TOUGHNESS



Hardening temperature in °C
Tempering 3 x 1 hour at 560° C
Unnotched test piece 7 x 10 x 55 mm

4-POINT BEND STRENGTH



Hardening Temperature in °C
Tempering 3 x 1 hour at 560°C
Dimension of test piece Ø 4.7 mm

Rmb = Ultimate bend strength in kN/mm²
Reb = Bend yield strength in kN/mm²
Tot. work = Total work in Nm

COMPARATIVE PROPERTIES