

## CHEMICAL COMPOSITION

C	Cr	Mo	W	Co	V
1.02	3.8	8.6	1.8	-	1.9

SAFETY DATA SHEET SDS: A

## STANDARDS

- USA: AISI M7
- Europe: HS 2-9-2
- Germany: 1.3348
- France: AFNOR Z100DCWV9.4.2.2
- Sweden: SS2782
- Japan: JIS SKH58

## DELIVERY HARDNESS

- Typical soft annealed hardness is 250 HB
- Cold drawn and cold rolled material is typically 10-40 HB harder

## DESCRIPTION

EM7 is a molybdenum-alloyed grade with some vanadium in order to increase the wear resistance.

## APPLICATIONS

- Twist drills
- Taps
- Reamers
- Rolls
- End mills

## FORM SUPPLIED

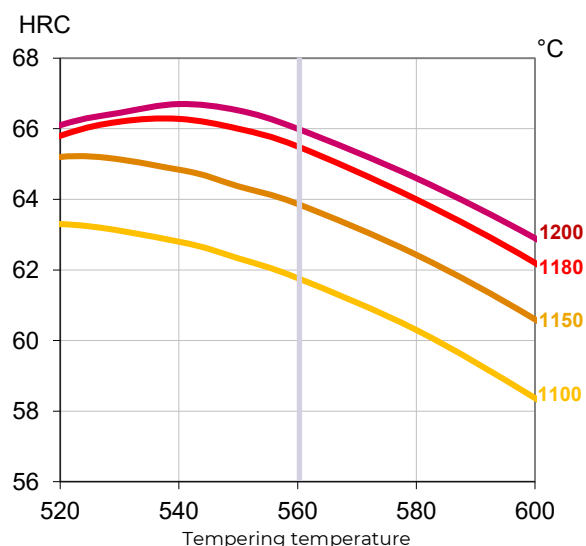
- Drawn wire
- Round bars
- Square bars
- Flat bars

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

## 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 preheating in 2 steps at 450-500°C and 850-900°C and austenitising at a temperature suitable for chosen working hardness.
- 2 tempers at 560°C are recommended with at least 1 hour holding time each time.

## GUIDELINES FOR HARDENING



Hardness after hardening, quenching and tempering 2x1 hour

Tool	Hardening	Tempering
Single-edge cutting tools	1200°C	550-570°C
Multi-edge cutting tools	1150-1200°C	550-570°C
Cold work tools	1100-1150°C	550-570°C

## PROCESSING

E M7 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

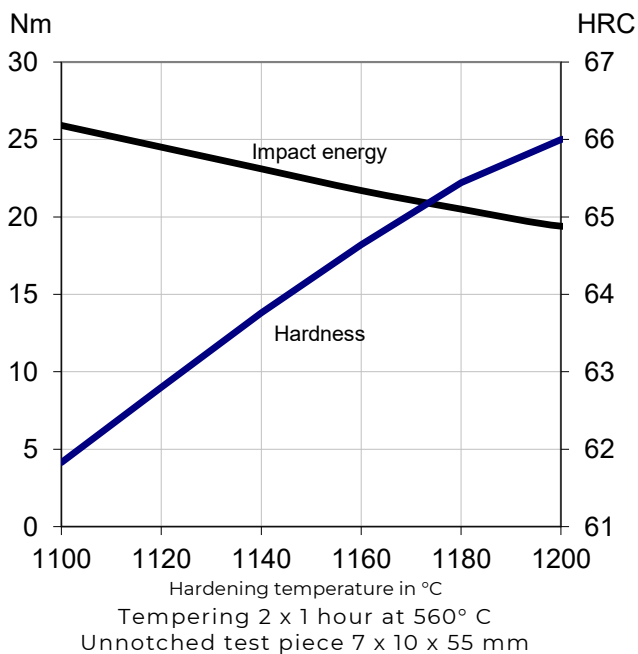
The steel grade is a perfect substrate material for PVD coating. If nitriding is requested, a small diffusion zone is recommended but avoid compound and oxidized layers.

**PROPERTIES**

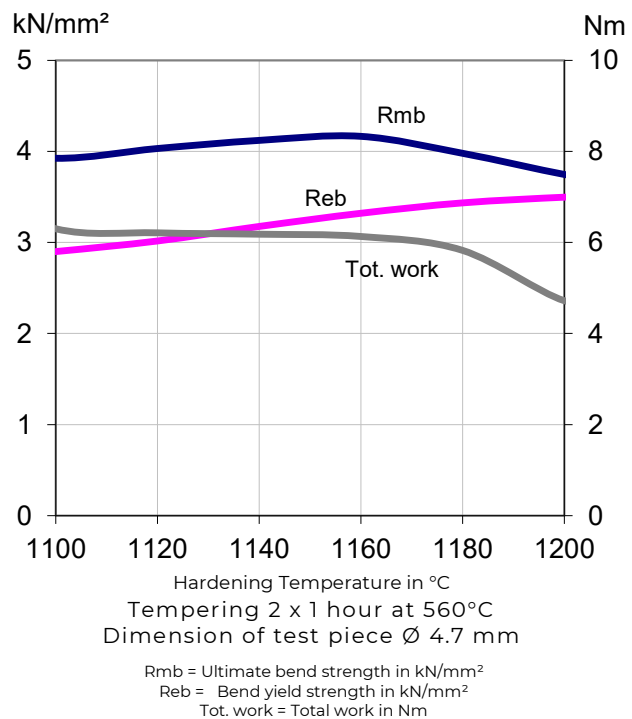
**PHYSICAL PROPERTIES**

Temperature	20°C
Density g /cm <sup>3</sup>	7.9

**IMPACT TOUGHNESS**



**4-POINT BEND STRENGTH**



**COMPARATIVE PROPERTIES**

