Steel grade (TGM2B)

Smelting method: 15T intermediate frequency furnace +LF+VD+ ESR

Main characteristics: Favorable tenacity, high red hardness and excellent abrasion resistance.

Major applications:

✧ Due to favorable hardness and abrasion resistance, it's mainly used to fabricate tools to cut materials which are difficult to be cut. It's mainly used as various cutting tools, for example, drilling bits, screw taps, milling cutters, drawing tools, roller cutters, etc.

Chemical constituent %:

C	W	Mo	Cr	V	Co	P	S
0.89	6.2	4.8	4.15	1.9	--	≤0.026	≤0.003

O (ppm)	N (ppm)	H (ppm)
≤20	≤100	≤2.5

Physical property:

Room temperature density (g/cm^3)	Specific heat of room temperature (J/g.K)	20ºC thermal conductivity (W/m•K)	Elastic modulus (N/mm^2)	Resistivity (Ohm mm^2/m)
8.12	0.46	19.0	217,000	0.54

Ultrasonic flaw detection:

As per SEP1921 D/d or customer requirements.

Purity:

Class A		Class B		Class C		Class D	
Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse
0.5	0.5	0.5	0.5	0.5	0.5	1.0	0.5

Delivery state:

(1) Delivery under balling annealing state, delivery hardness ≤269HB.

PRODUCTION PROCESS:

EAF→LF→VD→ESR→BLOOM IN FOLLOWING MACHINE : QUICK FORGING (12.5MN), HAMMER, PRECISION FORGING →

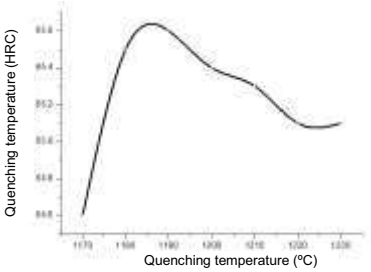
- Precision Forging : Φ 81-255mm
- Hot Rolled & Annealed Peeled : Φ 14.5-80.0mm
- Cold Draw / Sand Blasted (Coil) : Φ 2.0-13.5mm
- Cold Drawn Centerless Ground : Φ 2.0-14.4mm

SIZE : Rounds

Cold Drawn/Ground Bar	Hot Rolled Annealed & Peeled	Forged+Annealed+Turned Bar	Coil
Φ 2.0 - 14.4mm	Φ14.5-80.0mm	Φ 81.0-255.0mm	Φ 2.0-13.5mm

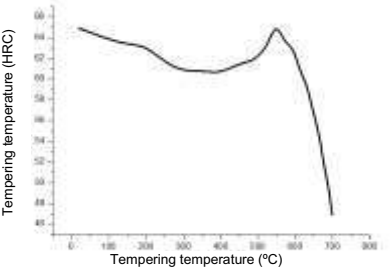
Steel grade (TGM2B)

Thermal treatment		
Softening annealing	Quenching	Tempering
Heating to 860-880ºC for heat insulation; cooling to 550ºC slowly and then removing from the furnace	1,210~1,220ºC quenching, salt bath; Air cooling to room temperature after 500~600ºC level by level quenching	Tempering temperature 540~560ºC; tempering for 3 times; material temperature shall reach the temperature interval; each time of heat insulation shall be not less than 1h; air cooling to room temperature

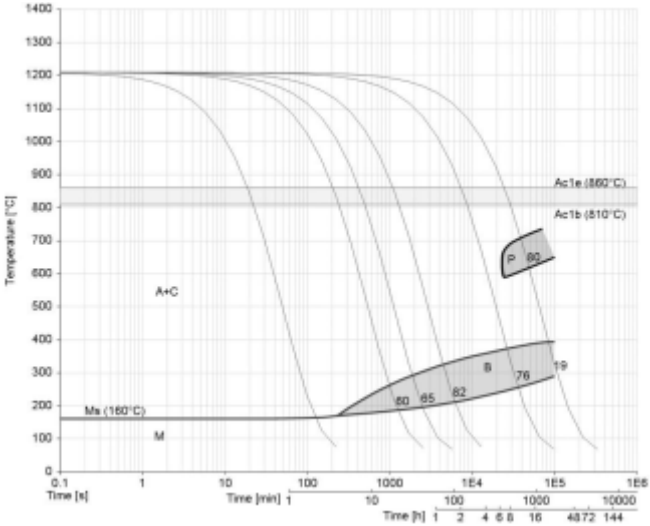


Quenching temperature and hardness relation curve

1,210ºC quenching



Tempering temperature and hardness relation curve



CCT curve