

**M35 high speed tool steel** : is suitable for heat treatment up to 66 HRC, and also offers excellent cutting performance and offers excellent cutting performance. This kind of steel is suitable for conditions involving thermal stresses and discontinuous cutting.

## STANDARDS •

- » USA: AISI M35
- » Japan: JIS SKH55
- » Germany: 1.3243
- » France: AFNOR Z90WDKCV6.5.5.4.2
- » Sweden: SS 2723
- » Europe: HS 6-5-2-5
- » UK: BM35

## CHEMICAL COMPOSITION •

	C	Cr	Si	Mn	Mo	W	V	Co	P	S
Min	0.86	3.75	0.20	0.20	4.50	5.50	1.70	4.50	--	--
<b>Typical</b>	<b>0.9</b>	<b>4.00</b>	<b>0.30</b>	<b>0.30</b>	<b>5.00</b>	<b>6.00</b>	<b>1.90</b>	<b>4.70</b>		
Max	0.94	4.50	0.40	0.40	5.50	6.70	2.10	5.00	0.035	0.035

## APPLICATIONS •

- » End Mills
- » Hobs
- » Broaches
- » Reamers
- » Cutters
- » Milling cutters
- » Saws
- » Cold work

## FORM SUPPLIED •

- » Drawn wire
- » Discs
- » Round bars
- » Wire rod
- » Square bars
- » Sheets
- » Flat bars
- » Strips

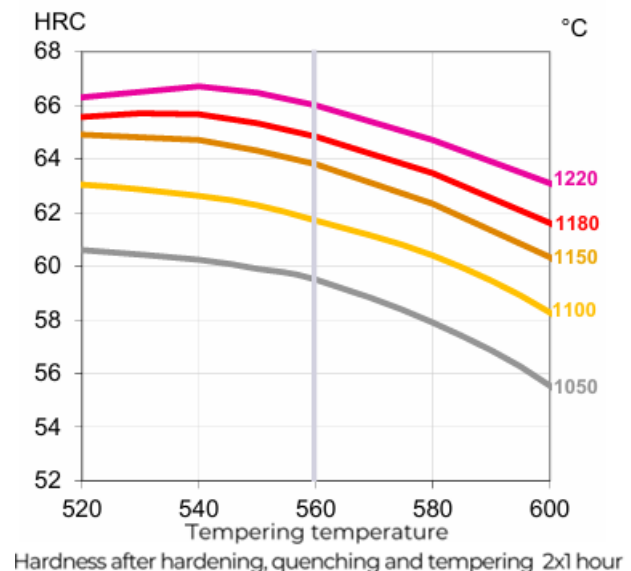
Available surface conditions : drawn, ground, rolled, hot rolled, cold rolled, peeled, turned.

## HEAT TREATMENT •

- **Stress-relieving** at 600 °C to 700 °C for approximately 2 hours, slow cooling down to 500 °C.
- **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.
- **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.  
2 tempers at 560 °C are recommended with atleast 1 hour holding time, each time.

Tool	Hardening	Tempering
single edge cutting tools	1220 °C	560 °C
multi edge cutting tools	1180-1220 °C	550-570°C
cold work tools	1050-1150 °C	550-570°C

## GUIDELINES FOR HARDENING •



## PROCESSING •

M35 can be worked as follows :

- » Machining( grinding,turning,milling)
- » Polishing
- » Hot forming
- » Electrical discharge machining
- » Welding(special procedure incl. pre-heating & 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 advise 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.

## DELIVERY HARDNESS •

- » Typical soft annealed hardness is 260 HB
- » Cold drawn and cold rolled material is typically 10-40 HB harder

## SIZES AVAILABLE •



ROUND	Starting From	Upto
DIAMETER	8 mm	500 mm
LENGTH	2000 mm	6000 mm

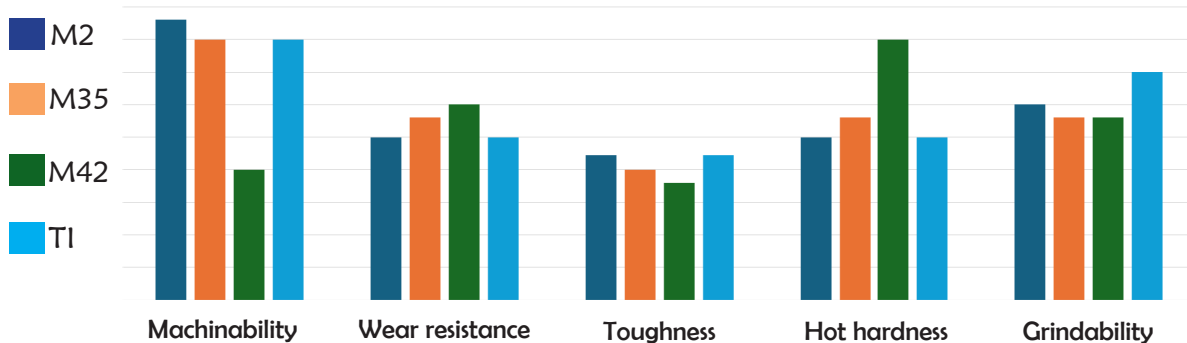


SQUARE BAR	Starting From	Upto
SIZE	8x8 mm	250x250 mm



FLAT	Starting From	Upto
THICKNESS	4 mm	205 mm
WIDTH	20 mm	400 mm

## COMPARATIVE PROPERTIES •



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