T1 tool steel : is one of the original tungsten high speed steels, although all tungsten steel grades are used to a limited extent because of the cost and questionable availability of tungsten. Of the T group steels, the general purpose T1 tool steels is the most commonly used.

STANDARDS

- » USA: AISI T1
- » Japan: JIS SKH2
- » Germany: 1.3355
- » France: AFNOR Z80WCV.18.4.1
- » Sweden: SS 2750
- » Europe: HS 18-0-1

CHEMICAL COMPOSITION

	C	Cr	Si	Mn	W	V	P	S
Min	0.73	3.80	--	--	17.20	1.00	--	--
Typical	**0.78**	**4.15**			**17.95**	**1.10**		
Max	0.83	4.50	0.45	0.40	18.70	1.20	0.035	0.035

APPLICATIONS

- » Twist Drills
- » Textile Knives
- » Paper Knives
- » Wood Knives
- » Milling cutters
- » Taps

FORM SUPPLIED

- » Flat bars
- » Discs
- » Strips
- » Square bars
- » Sheets

Available surface conditions : drawn, ground, hot rolled, cold rolled

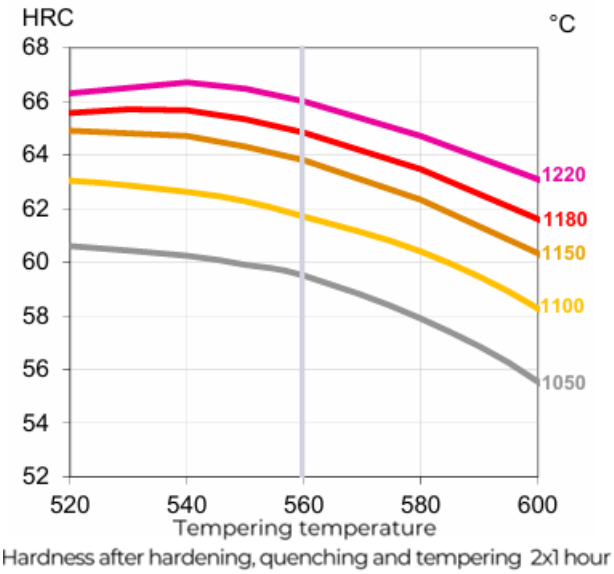
HEAT TREATMENT

- Stress-releiving 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	**1280 °C**	**550-570 °C**
multi edge cutting tools	**1180-1280 °C**	**550-570 °C**
cold work tools	**1150-1200 °C**	**550-570 °C**

GUIDELINES FOR HARDENING



Hardness after hardening, quenching and tempering 2x1 hour

Processing

T1 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

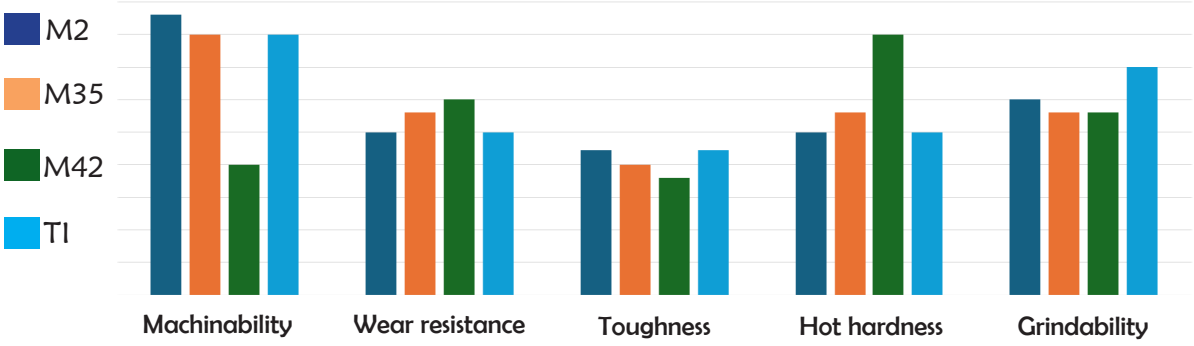
Sizes available

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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