A2 Cold Work Tool Steel

Properties

Air hardening cold work tool steel with good dimensional stability, high resistance to wear and good machining properties.

Application

Cutting tools (dies and punches), blanking and punching tools, thread rolling dies, shear blades.

Chemical composition

C	Si	Mn	Cr	Mo	V	P	S
0.95-1.05	0.20-0.40	0.45-0.75	4.75-5.50	0.90-1.40	0.10-0.30	0.025 MAX	0.025 MAX

Standards

DIN 1.2363, JIS SKT12, BS BA2

Hot forming

Forging:

1050 to 850°C

Slow cooling in furnace or thermoinsulating material.

Heat treatment

Annealing:

800 to 850°C

Slow controlled cooling in furnace at a rate of

10 to 20°C/hr down to approx. 600°C, further cooling in air.

Hardness after annealing:

max. 240 HB.

Stress relieving:

approx. 650°C

Slow cooling in furnace.

Intended to relieve stresses set up by exten- sive machining, or in complex shapes.

After through heating, hold in neutral at- mosphere for 1 - 2 hours.

Hardening:

950 to 980°C

Oil, salt bath (200 to 250°C or 500 to 550°C), air blast, still air.

Tools of intricate shape or with sharp edges should preferably be hardened in air or salt bath.

Holding time after temperature equalization:

15 to 30 minutes.

Obtainable hardness: 63 - 65 HRC

Tempering:

Slow heating to tempering temperature im- mediately after hardening/time in

furnace 1 hour for each 20 mm of workpiece thickness but at least 2 hours/cooling in air.

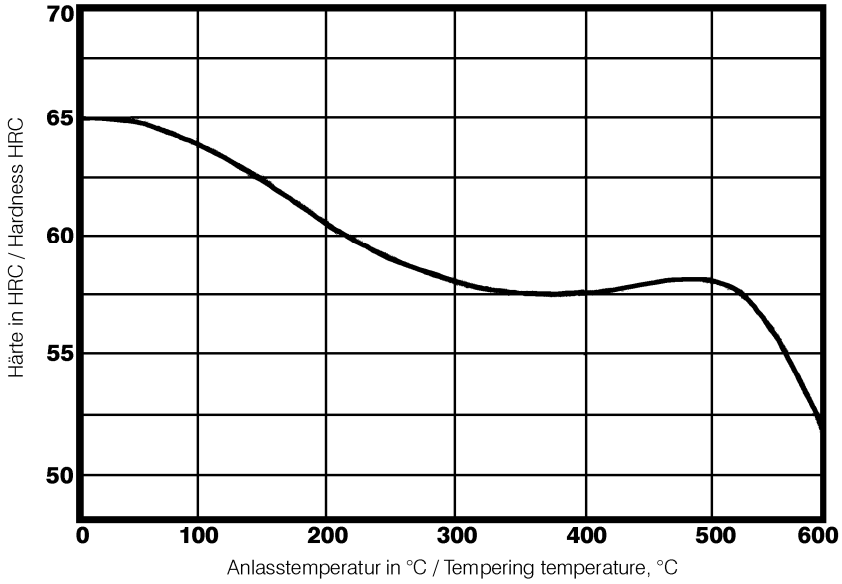
For average hardness figures to be obtained please refer to the tempering chart.

For certain cases we recommend to re- duce tempering temperature and increase holding time.

Tempering chart

Hardening temperature: 970°C / Oil

Specimen size: square 20 mm



Repair welding

There is a general tendency for tool steels to develop cracks after welding.

If welding cannot be avoided, the instructions of the appropriate welding electrode manufacturer should be sought and followed.