

M42 High Speed Steel

M42 high speed steel stockholders and suppliers, delivering to the whole of the UK. West Yorkshire Steel are suppliers of M42 in round bar. This grade is a cobalt molybdenum high speed steel which achieves a high hardness and superior hot hardness. Excellent cutting performance can be achieved from tools made in M42 high speed steel. With the high heat treated hardness of up to 70 Rockwell M42 high speed steel also offers excellent wear resistance.

We welcome export enquiries for high speed steel. Contact our sales office and consult our [shipping policy](#) for further details.

Related Specifications

AISI ASTM A681 DIN 17350 BS EN ISO 4957

Alternative tool steel grades we supply

[O1](#) | [D2](#) | [D3](#) | [O2](#) | [D6](#) | [A2](#) | [S1](#) | [H13](#) | [P20](#) | [P20S](#) | [420](#) | [1.2083](#) | [2767](#) | [M2](#)

Form of Supply

West Yorkshire Steel are stockholders and suppliers of round bar. Diameters can be sawn to your required lengths as one offs or multiple cut pieces. Ground steel bar can be supplied, providing a high quality high speed steel precision ground bar to tight tolerances.

- Diameter

Applications

M42 high speed steel can be used in conditions where the demand for hot hardness is important. Commonly used for cutting tools including twist drills, taps, broaches tools, milling cutters, reamers, end mills, bandsaw blades, cold work tools.

Typical Analysis

| | | | |
|----------|-------|------------|-------|
| Carbon | 1.05% | Silicon | 0.35% |
| Tungsten | 1.50% | Chromium | 3.75% |
| Vanadium | 1.15% | Molybdenum | 9.50% |
| Cobalt | 8.00% | | |

M42 Tool Bits

M42 high speed steel tool bits are supplied in flats, squares and rounds. Commonly supplied in standards sizes though non standard metric and imperial sizes can be produced within a few weeks, subject to availability of suitable raw material.

Forging

Pre heat the M42 high speed steel slowly and uniformly to 650-760°C and equalise. Then increase more quickly to the forging temperature of 1010-1150°C and equalise prior to forging. Do not allow the forging temperature to drop below 980°C, if this occurs re heating will be necessary. Always cool the high speed steel very slowly after forging.

Annealing

Annealing of M42 is recommended after hot working and before re hardening. Heat the M42 high speed steel to 850°C at a rate of no more than 220°C per hour. Always hold at temperature for one hour per 25mm of thickness (with two hours being minimum). Furnace cool slowly. The M42 annealed hardness achieved should be 269 Brinell or lower.

Stress Relieving

If tools produced from M42 high speed steel are heavily machined or ground it is recommended to stress relieve after machining and prior to hardening to minimise the possibility of distortion. To stress relieve heat the component to 600-650°C and soak well (approximately two hours) Cool slowly in the furnace. The M42 tools can be finish machined before heat treatment.

Hardening

For best results harden the M42 in a vacuum or controlled furnace, or in a properly rectified salt bath. Pre heat the steel thoroughly to 820-870°C then transfer to the high temperature salt bath or furnace. The exact hardening temperature to use for M42 will depend on the type of work being treated, but in general components should be hardened from the range of 1160-1180°C in salt, or 1180-1190°C in atmosphere or vacuum furnaces. After a short hold at the hardening temperature, quench the component without further soaking into salt at 540-595°C or warm oil. If salt quenched allow the component to equalise at the bath temperature and then complete the quench in still air.

Tempering

M42 tool steel components can be tempered between 510-595°C. Components require a minimum tempering temperature of 540°C and it is recommended to provide suitable relief to the hardening stresses. Triple tempering is recommended with a minimum of two hours at temperature per cycle. The component should be cooled in still air to room temperature between tempering treatments.

| | | | |
|-------------------------|-----|-----|-----|
| Temperature [°C] | 500 | 550 | 600 |
| Hardness [HRc] | 67 | 69 | 63 |

Heat Treatment

Heat treatment temperatures, including rate of heating, cooling and soaking times will vary due to factors such as the shape and size of each M42 steel component. Other considerations during the heat treatment process include the type of furnace, quenching medium and work piece transfer facilities. Please consult your heat treatment provider for full guidance on heat treatment of high speed steels.

Final Grinding

Select the correct grade of wheel in consultation with the grinding wheel manufacturer. Ensure the grinding wheel is in good condition by means of a suitable dressing tool. Wet grinding is a preferable option using a copious supply of coolant. If dry grinding is resorted to then use a very soft wheel.

Quality Assured Supply

M42 high speed steel is supplied in accordance with our ISO 9001:2015 registration.