

## M35 High Speed Steel

**M35 high speed steel stockholders and suppliers, delivering to the whole of the UK.** West Yorkshire Steel are suppliers of M35 in round bar. Similar to [M2 high speed steel](#) but with added cobalt to increase hot hardness. Suitable for heat treatment up to 66 HRC M35 high speed steel offers excellent cutting performance.

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

### Related Specifications

ISI 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](#) | [M42](#)

## 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, M35 high speed steel precision ground bar to tight tolerances.

- Diameter

## Applications

Used in conditions where the demand for hot hardness is important. It is also a good quality wear resistant grade for cold work applications. Commonly used for cutting tools including broaches, milling cutters, reamers, end mills and saw blades.

## Typical Analysis

Carbon	0.92%	Silicon	0.35%
Tungsten	6.40%	Chromium	4.30%
Vanadium	1.80%	Molybdenum	5.00%
Cobalt	4.80%		

## Forging

Pre heat the M35 high speed steel slowly and uniformly to 450-500°C and equalise. Then increase more quickly to the forging temperature of 950-1100°C and equalise prior to forging. Do not allow the forging temperature to drop below 950°C, if this occurs re heating will be necessary. Always cool the steel very slowly after forging.

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## Annealing

M35 is supplied in the annealed and machineable condition. Re annealing will only be necessary if the steel has been hot worked, forged, or hardened by the toolmaker. Heat the M35 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 M35 annealed hardness achieved should be 260 Brinell or lower.

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## Stress Relieving

If tools produced from M35 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 600-700°C and soak well (approx 2 hours) Cool slowly in the furnace. The tools can be finish machined before heat treatment.

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## Hardening

For best results harden in a vacuum or controlled furnace, or in a properly rectified salt bath. Pre heat thoroughly in two steps to 450-500°C, then to 820-870°C, transfer to the high temperature salt bath or furnace. The exact hardening temperature to use for M35 will depend on the type of work being treated, but in general components should be hardened from the range of 1050-1250°C.

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## Tempering

M35 high speed steel components can be tempered between 510-620°C. 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.

<b>Temperature [°C]</b>	540	560	580
<b>Hardness [HRc]</b>	67	66	65

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## 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 M35 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.

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## 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.

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## Quality Assured Supply

M35 high speed steel is supplied in accordance with our ISO 9001:2015 registration.