

## 1.3247 High Speed Steel

**1.3247 high speed steel suppliers and stockholders delivering to the whole of the UK.** West Yorkshire Steel are suppliers of this high speed steel grade in round bar. As a cobalt molybdenum high speed steel it achieves a high hardness and superior hot hardness. Excellent cutting performance can be achieved from tools made from 1.3247 high speed steel. With the high heat treated hardness of up to 70 Rockwell this 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 details.

### Form of Supply

West Yorkshire Steel are stockholders and suppliers of round bar. Diameters in 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 finished bar to your required tolerances.

- Diameter

### Applications

1.3247 high speed steel can be used in conditions where the demand for hot hardness is important. It is suitable for cutting tools including twist drills, taps, broaches tools, milling cutters, reamers, end mills, bandsaws and cold work tools.

### Analysis

Carbon	1.05-1.15%	Chromium	3.50-4.50%
Manganese	0.40% max	Molybdenum	9.00-10.00%
Silicon	0.70% max	Vanadium	0.90-1.30%
Phosphorous	0.03% max	Tungsten	1.20-1.90%
Sulphur	0.03% max	Cobalt	7.50-8.50%

## Forging

Pre heat the 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.

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## Annealing

Annealing is recommended after hot working and before re hardening. Heat the 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 annealed hardness achieved should be 269 Brinell or lower.

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## Stress Relieving

If tools produced from 1.3247 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 1.3247 tools can be finish machined before heat treatment.

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## Hardening

For best results harden the 1.3247 in a vacuum or atmosphere furnace, or in a properly rectified salt bath. Pre heat thoroughly to 820-870°C, transfer to the high temperature salt bath or furnace. The exact hardening temperature to use 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.

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## Tempering

1.3247 high speed steel components can be tempered between 510-595°C. The steel requires a minimum tempering temperature of 540°C and this is recommended to provide suitable relief to the hardening stresses. Triple tempering is strongly advised with a minimum of two hours at temperature per cycle. The components should be cooled in still air to room temperature between tempering treatments.

<b>Temperature [°C]</b>	500	550	600
<b>Hardness [HRc]</b>	67	69	63

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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 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

1.3247 high speed steel is supplied in accordance with our ISO 9001:2015 registration.