

D3 Tool Steel

D3 tool steel stockholders and suppliers, delivering to the whole of the UK. West Yorkshire Steel supply D3 flats cut from block and a limited range in diameters. A high carbon high chromium steel noted for its resistance to abrasion, it offers excellent dimensional stability in hardening. After heat treatment D3 is hard, durable and dense, and is immune from sinking in use. It offers a measure of corrosion resistance when polished. In general, the applications of D3 tool steel resemble those of [D2](#) but it should be remembered that D3 has better wear resistance of the two steels and is preferred for such items as shear blades. Owing to its higher wear resistance, D3 tool steel is slightly more difficult to grind than [D2](#).

We welcome export enquiries for tool steel. Please 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](#) | [O2](#) | [D6](#) | [A2](#) | [S1](#) | [H13](#) | [P20](#) | [P20S](#) | [420](#) | [1.2083](#) | [2767](#) | [M2](#) | [M42](#) | [1.1730](#)

Form of Supply

West Yorkshire Steel are stockholders and suppliers of D3 tool steel flat sections. Rectangular pieces can be sawn from flat bar or block to your specific sizes as one offs or multiple cut pieces. As D3 we have a limited range in round bar, [D6](#) tool steel grade is commonly offered in lieu when round bar sizes are not available.

Contact our experienced sales team who will assist you with your tool steel enquiry.

- Flat
 - Diameter
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Applications

D3 is suitable for applications such as complex blanking and forming tools for long runs and for hard and abrasive materials. It is commonly used for other applications such as brick and tile mould liners, master hobs for cold hobbing plastic moulds, tableting punches and sleeves for corrosive powders.

Typical Analysis

Carbon	2.10%	Chromium	11.50%
Manganese	0.30%	Silicon	0.30%

Ground Flat Stock

Precision ground flat stock / gauge plate can be produced using D3 tool steel. Subject to size suitability and availability pieces can be produced in approximately 2 to 3 weeks. Standard and non-standard sizes are available.

Forgings

Pre-heat at 900-950°C then raise temperature to 1050-1100°C. Soak until uniformly heated. D3 tool steel is relatively hard at elevated temperature. Therefore, initial hammer blows must be light and the temperature must not be allowed to fall below 1020°C until the metal begins to flow. Final forging should not be done below 900°C.

Annealing

D3 is supplied in the annealed and machineable condition. Re-annealing will only be necessary if the steel has been forged or hardened by the toolmaker. To anneal, heat slowly and uniformly to 900°C. Soak for three to four hours and allow to cool in the furnace to room temperature. Re-heat to 800-1040°C and again soak for three to four hours. Allow to cool in the furnace to room temperature.

Stress Relieving

When tools are heavily machined, ground or otherwise subjected to cold work, the relief of internal strains is advisable before hardening to minimise the possibility of distortion. Stress relieving should be done after rough machining. To stress relieve, heat the steel component to 600-650°C. Soak well and cool in the furnace or in air. The tools may then be finish machined before hardening.

Hardening

It is preferable to heat the tools in a controlled atmosphere. If this is not possible, pack hardening is recommended. A reducing atmosphere is desirable. Pre heat the component to 750-800°C. and allow to soak at this temperature. Raise to the hardening temperature of 950-980°C. Soak thoroughly at the temperature for thirty minutes per 25mm of ruling section, then cool or quench accordingly.

Martempering

Martempering is an alternative hardening procedure which may be used when suitable salt bath equipment is available. By this method internal strain, distortion and risk of quench cracking are reduced to the minimum. Pre-heat dry at 300-400°C. Pre-heat in salt at 800-850°C holding in the salt for ten minutes 25mm of ruling section. Raise to the hardening temperature of 950-980°C holding in the salt for ten minutes 25mm of ruling section. Marquench in salt at 230-250°C holding in the bath for five minutes 25mm of ruling section. Cool in still air. Tempering will be necessary.

Tempering

Double tempering is recommended. Tempering should be done with the least possible delay after hardening, preferably when the tools are still hand warm. Select a suitable tempering temperature, bearing in mind the service requirements. Heat slowly and uniformly. When the component has reached the desired temperature, soak for at least one hour per 25mm of thickness. The second tempering should be a repetition of the first.

Temperature [°C]	150	200	300	400	500
Hardness [HRc]	64-63	62-61	60-59	59-58	56-55

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 tool 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

D3 tool steel is supplied in accordance with our ISO 9001:2015 registration.