

## 420 Tool Steel

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**420 [tool steel](#) stockholders and suppliers, delivering to the whole of the UK.** West Yorkshire Steel are suppliers of 420 stainless tool steel in round bar, flat bar and plate in full lengths or bandsaw cut. 420 is a chromium alloyed stainless plastic mould steel, which is characterised by good polishability, good hardenability with high hardness achievable after heat treatment. The steel has fair corrosion resistance giving this plastic mould stainless steel grade suitability for applications requiring good hygiene in industries such as medical and optical.

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](#) | [D3](#) | [O2](#) | [D6](#) | [A2](#) | [S1](#) | [H13](#) | [P20](#) | [P20S](#) | [1.2083](#) | [2767](#) | [M2](#) | [M42](#) | [1.1730](#)

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## Form of Supply

West Yorkshire Steel are stockholders and suppliers of round bar, flat bar and plate. Diameters can be sawn to your required lengths as one offs or multiple cut pieces. Rectangular pieces can be sawn from flat bar or plate to your specific sizes. Ground tool steel bar can be supplied, providing a quality precision finished bar to close tolerances.

- Sheet
  - Plate
  - Flat
  - Diameter
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## Applications

420 stainless steel is ideally suited for plastic moulds, acid aggressive plastics, PVC or acetates and can be used with plastics containing abrasive fillers. 420 is suitable to produce components for medical and optical applications where a high surface finish is required.

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## Typical Analysis

Carbon	0.40%	Silicon	0.75%
Manganese	0.50%	Chromium	13.50%

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## Forging

420 plastic mould stainless steel can be forged by heating slowly and uniformly to 1000°C. After forging cool slowly in furnace or thermoinsulating material.

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## Annealing

420 is commonly supplied in the annealed condition. Re-annealing will only be necessary if the steel has been forged or hardened. To anneal heat slowly to 780°C. Cool slowly in furnace to 600°C and then cool in air.

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## Stress Relieving

When heavy machining or grinding of 420 plastic mould stainless steel has been carried out it is advisable to stress relieve in order to minimise the danger of distortion or cracking during the subsequent heat treatment. To stress relieve, heat the tools slowly to 650°C, soak for a minimum of two hours per 25mm of section and allow to cool down in the furnace to 500°C then continue to cool freely in air. The tools can then be finish machined, leaving on an allowance for final grinding after hardening and tempering.

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## Hardening

Pre heat the 420 stainless steel to 600-700°C until heated through. Continue heating the 420 to the final hardening temperature of 980-1050°C ensuring that the component is heated through. Protect the 420 component against decarburisation by using a neutral salt bath, controlled atmosphere furnace or vacuum. Air cool or quench in oil.

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## Tempering

Heat uniformly and thoroughly to the selected tempering temperature and hold at heat for one hour per 25mm of total thickness. Double tempering is recommended. To achieve the best permutation of hardness, toughness and corrosion resistance it is recommended to temper at 250°C.

<b>Temperature [°C]</b>	100	200	300	400	500	600
<b>Hardness [HRc]</b>	56	54	52	54	53	34

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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 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 420 stainless tool steel.

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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

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