

40CrMnMo7 Steel

40CrMnMo7 steel suppliers, delivering throughout the UK. West Yorkshire Steel are stockholders and suppliers of round, flat, plate and block. 40CrMnMo7 is commonly supplied hardened and tempered. This grade gives excellent wear resistance but if maximum surface hardness is required for compression moulding plastic dies or similar tools, the steel can be case hardened or nitrided. This steel gives an excellent polished finish and is one of the most widely accepted specifications for machine cut plastic moulds.

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

Form of Supply

West Yorkshire Steel are suppliers of 40CrMnMo7 steel round bar, flat bar, plate and block. Diameters can be sawn to your required lengths as one offs or multiple pieces. Rectangular pieces can be sawn to your specific sizes. Ground bar can be supplied, providing a quality precision ground bar to close tolerances.

Contact our experienced sales team who will assist you with your 40CrMnMo7 steel enquiry.

- Plate
- Flat
- Diameter

Applications

A popular grade used in the production of plastic moulds. Applications include die holders, casting dies, backers, bolsters and injection moulds. With its high tensile characteristics it is also suitable for producing shafts, wear strips and rails.

Analysis

Carbon	0.35-0.45%	Chromium	1.80-2.10%
Manganese	1.30-1.60%	Molybdenum	0.15-0.25%
Sulphur	0.03% max	Silicon	0.20-0.40%
Phosphorous	0.03% max		

Forging

Heat slowly, allowing sufficient time for it to become heated through. Forge at 1050°C. Do not forge below 930°C reheating if necessary. Cool very slowly after forging.

Annealing

Heat uniformly to 770-790°C. Soak well, cool slowly in a furnace.

Stress Relieving

If components are heavily machined, we recommend stress relieving just before finish machining in order to relieve machining strains. Heat to 460-500°C. Soak well and allow air cool.

Hardening

Heat the component uniformly to 820-840°C until heated through. Quench in oil.

Tempering

Heat uniformly and soak at the tempering temperature for at least one hour per 25mm of section. Air cool.

Temperature [°C]	100	200	300	400	500	600
Hardness [HRc]	51	50	48	46	42	36
Tensile [N/mm²]	1730	1670	1570	1480	1330	1140

Nitriding

Nitriding will give a wear resistant case of approximately Rockwell C60 surface hardness with a case depth of between 0.35-0.5mm. Nitriding increases the corrosion resistance. After nitriding at 525°C in ammonia gas the surface hardness be approximately 650HV.

Temperature	Time	Approx. Depth of Case
525°C	20 hours	0.30mm
525°C	40 hours	0.35mm
525°C	60 hours	0.50mm

Carbursing / Case Hardening

In order to obtain maximum surface hardness, 40CrMnMo7 may be case hardened, which can achieve a surface hardness of approximately 55-59 HRc.

Flame / Induction Hardening

Flame or induction hardening will achieve a hardness of 50-55 HRc. Air cooling is preferable, though smaller components may require forced cooling. Always temper after hardening.

Heat Treatment

Heat treatment temperatures, such as 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 the work piece transfer facilities. Please consult a heat treatment specialist for full advice and guidance on heat treatment.

Quality Assured Supply

40CrMnMo7 steel is supplied in accordance with our ISO 9001:2008 registration.