



AISI 4145 Alloy Steel

Quality 4145 alloy steel cut and delivered straight to your workshop.

AISI 4145 alloy steel stockholders and suppliers, delivering to the whole of the UK.

AISI 4145 is a chromium molybdenum alloy steel grade widely used in the oil and gas sectors. Similar to [AISI 4140](#) and [AISI 4130](#) but with a higher carbon content. 4145 is more popular in larger diameters due to its increased strength and hardenability. AISI 4145 is commonly supplied quenched and tempered with a hardness of between 30 to 36HRC.

Other AISI [oil and gas steel](#) grades we supply:

[4130](#) | [4140](#) | [4330](#) | [4340](#) | [8620](#) | [6150](#) |

Form of Supply

West Yorkshire Steel are AISI 4145 steel stockholders and suppliers of round bar. Diameters can be supplied as full bar lengths or cut blanks. AISI 4145 ground steel bar can be supplied, providing a high tensile alloy steel precision ground bar to tight tolerances.



Contact our experienced sales team who will assist you with your AISI 4145 enquiry.

■ Diameter

Applications

AISI 4145 is commonly used for a variety of applications in the oil and gas sector. Used often for the manufacture of down hole drilling tools such as drill collars. Other applications include gears, shafts for hydraulic presses, rolls for paper mills, pump shafts and tool holders.

Analysis

| | | | |
|------------|-------------|-------------|-------------|
| Carbon | 0.43-0.49% | Silicon | 0.10-0.35% |
| Manganese | 0.85-1.10% | Chromium | 0.80-1.10% |
| Molybdenum | 0.15-0.25% | Nickel | 0.25% max |
| Sulphur | 0.040% max. | Phosphorous | 0.035% max. |

Forging

Preheat the steel carefully, then raise the temperature to 1150-1200°C for forging. Do not forge below 850°C. AISI 4145 has good forging characteristics but care must be taken when cooling the steel due to its susceptibility to cracking.

Annealing

Heat the steel slowly to 800-850°C and allow enough time for the steel to be thoroughly heated. Cool slowly in the furnace to 480°C followed by air cooling.

Stress Relieving

When parts are heavily machined, ground or otherwise subject to cold work, stress relieving will be beneficial prior to any hardening.

Hardening

AISI 4145 steel is usually supplied ready heat treated to 30-36HRc. If further heat treatment is required annealed AISI 4145 should be heated slowly to 840-875°C and after adequate soaking at this temperature quench in oil. Temper as soon as the tools reach room temperature.

Tempering

Heat carefully to a suitable temperature selected by reference to a tempering chart or table (usually between 550-700°C, soak at the temperature for 2 hours per 25mm of ruling section, then allow to cool in air. Tempering between 250-375°C is not advised as tempering within this range will seriously reduce the impact values of this steel.

Typical Mechanical Properties*

| | Tensile KSI | 0.2% Proof Stress KSI | Elongation % | Reduction of Area % | Hardness HRc | Hardness Brinell |
|-----|----------------|--------------------------|-----------------|------------------------|-----------------|---------------------|
| Min | 140 | 120 | 14 | 40 | 30 | 286 |
| Max | | | | | 36 | 336 |

(* at room temperature heat treated to 30-36HRc)

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 4145 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 4145 steel.

Quality Assured Supply

4145 alloy steel is supplied in accordance with our ISO 9001:2015 registration.



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