## AISI 4145 Alloy Steel

## AISI 4145 ALLOY STEEL DATASHEET

AISI 4145 Alloy Steel containing $0.20 \%$ molybdenum is widely used particularly throughout oil patch applications. Similar to 4140 which has a lower carbon level it has improved hardenability and is more commonly used at higher strength levels. Larger diameters are often supplied with higher molybdenum level, $0.35 \%$ max, this may also be used on higher strength variants at smaller diameters. This grade is used extensively for drill collars.

Suitable for downhole drilling tools such as subs, $x$-overs, drill collars, pup-joints and fishing tools. General engineering applications include components exposed to heavy strain, such as shafts, gear, bolts etc.

Product forms include bar, seamless tubing, and plate.

## Standards

- UNS G41450
- AISI 4145


## Characteristics

- Good for components exposed to heavy strain
- Poor weldability, can be welded.

- Density: 0.284 LB/in ${ }^{3}\left(7.85 \mathrm{~g} / \mathrm{cm}^{3}\right)$
- Melting Range: $\mathbf{2 5 8 0}-2650^{\circ} \mathrm{F}\left(1416-1454^{\circ} \mathrm{C}\right)$
- Modulus of Elasticity: $29.7 \times 10^{6} \mathrm{psi}(\mathbf{2 0 5} \mathbf{G p a})$
- Magnetic Permeability:


## Physical Properties

Chemical Composition

| Chemical Composition |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | C | Mn | S | Si | P | Cr | Mo | Fe |
| MIN | 0.43 | 0.75 | - | 0.15 | - | 0.80 | 0.15 | 96.795 |
| MAX | 0.48 | 1.00 | 0.04 | 0.35 | 0.035 | 1.10 | 0.25 | 97.720 |


| Mechanical Properties |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Tensile (min) KSI (Mpa) | Yield (min) <br> KSI (Mpa) | Elongation (min) \% | Reduction of Area (min) \% | Hardness (max) HRB (BHN) |
| 100(689) | 110 (758) | 20 | 40 | 94 (208) |

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SPECIALTY STEEL SUPPLY 19201 CIRCLE LAKE DR PINEHURST, TX 77362


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