

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. AISI 4145 alloy steel is similar to AISI 4140 alloy steel 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. AISI 4145 alloy steel is used extensively for drill collars.

AISI 4145 alloy steel is suitable for downhole drilling tools such as subs, crossovers, 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

Physical Properties

- Density: 0.284 LB/in³ (7.85 g/cm³)
- Melting Range: 2580-2650°F (1416-1454°C)
- Modulus of Elasticity: 29.7 x10⁶psi (205 Gpa)
- Magnetic Permeability:

Characteristics

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

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) KSI (Mpa)	Elongation (min) %	Reduction of Area (min) %	Hardness (max) HRB (BHN)
100(689)	110 (758)	20	40	94 (208)