

Description

4130M/1.7218 is a low alloy steel known for its excellent strength-to-weight ratio and versatility in various applications. It is often used in the manufacture of high-stress components due to its good toughness and ductility.

Chemical Composition

The typical chemical composition of 4130M is as follows:

- Carbon (C): 0.28 - 0.33%
- Manganese (Mn): 0.60 - 0.90%
- Silicon (Si): 0.15 - 0.40%
- Phosphorus (P): $\leq 0.035\%$
- Sulfur (S): $\leq 0.040\%$
- Chromium (Cr): 0.80 - 1.10%
- Molybdenum (Mo): 0.15 - 0.25%

Mechanical Properties

The mechanical properties of 4130M can vary based on heat treatment but generally include:

- Yield Strength: 350 - 470 MPa
- Tensile Strength: 620 - 850 MPa
- Elongation: 20 - 25%
- Hardness: 28 - 32 HRC (as quenched)

Thermal & Physical Properties

- Density: 7.85 g/cm³
- Thermal Conductivity: 43 W/m·K
- Specific Heat: 490 J/kg·K
- Melting Point: Approximately 1425°C (2600°F)

Other Designations

4130M is also known by several other designations, including:

- AISI 4130
- ASTM A29
- DIN 1.7218

Fabrication and Heat Treatment

4130M can be fabricated through various methods, including:

- Welding: Suitable for welding using standard techniques.
- Machining: Can be machined using conventional methods.

Heat Treatment: Common heat treatment processes include:

- Annealing: 843 - 871°C (1550 - 1600°F) followed by slow cooling.
- Quenching: Heating to 850 - 870°C (1560 - 1600°F) followed by quenching in oil or water.
- Tempering: Typically performed at 400 - 600°C (750 - 1110°F) to achieve desired hardness and toughness.

Applications

4130M is widely used in various industries, including:

- Aerospace: Aircraft components, landing gear.
- Automotive: High-performance vehicles, chassis components.
- Oil and Gas: Drill bits, tubing.
- Manufacturing: Machinery parts, structural components.

Supplied Form

4130M is available in various forms, including:

- Bars

Features

- High strength and toughness.
- Good weldability and machinability.
- Excellent fatigue resistance.

DIN Number

The DIN equivalent for 4130M is 1.7218.

This datasheet provides a comprehensive overview of the 4130M grade, highlighting its properties, applications, and specifications essential for engineers and designers in material selection and application.

