HONGCHEN METAL
INDUSTRIAL METAL MATERIALS

PRODUCT DATA SHEET
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PRODUCT SPECIFICATIONS · BAR

Stainless Steel 446 Round Bar

Chemical composition, mechanical properties and material characteristics

Features

- 446 is a ferritic, heat-resistant stainless steel selected for elevated-temperature service.
- It offers strong resistance to oxidation, thermal cycling, and sulfur-bearing atmospheres, making it suitable for furnace components, heat shields, and other demanding industrial parts.

Typical Applications

- Intended for furnace parts, radiant tubes, exhaust hardware, kiln components and thermal processing equipment where resistance to high-temperature oxidation and scaling is the primary requirement. Continuous and intermittent temperature limits should follow the grade standard.

Product Parameters

Product Name	446 Bar
Type	Ferritic Heat-resistant Stainless (446)
Standard	UNS S44600; ASTM A176/A268
Surface	No.1 / pickled, sandblasted or shot-blasted; brighter finishes on request.
Delivery Condition	Annealed / solution annealed suitable for elevated-temperature fabrication.
Scope of Application	Intended for furnace parts, radiant tubes, exhaust hardware, kiln components and thermal processing equipment where resistance to high-temperature oxidation and scaling is the primary requirement. Continuous and intermittent temperature limits should follow the grade standard.
Certificate	EN 10204 3.1 MTC; high-temperature oxidation / scaling data can be referenced from grade standards on request.
Production Technology	Hot- or cold-rolled and annealed; formed and welded with procedures matched to the heat-resistant grade. Avoid prolonged holds in restricted embrittlement ranges unless grade data allow it. Hot-rolled, forged or cold-drawn routes depending on size; cut-to-length available.
Edge Processing	Cut ends as standard; chamfering, deburring, peeling or centerless grinding available on request.
Diameter	6-300 mm
Length	1-6 m

Chemical Composition

C	Cr	Mn	Si	N	Ni
≤0.20	23.0-27.0	≤1.5	≤1.0	≤0.25	≤0.75

Mechanical Properties

Tensile (MPa)	Yield (MPa)	Elongation (%)
≥485	≥275	≥20

Physical Performance

Density	Service Temp	Modulus
7.6 g/cm³	up to ~1100°C	~200 GPa

Reference: 446 / UNS S44600 datasheet

Related Properties

Oxidation Resistance	Intended for furnace parts, radiant tubes, exhaust hardware and similar hot-air service where resistance to scaling is the primary requirement. Protective behavior depends on chromium level, peak temperature and whether the atmosphere is oxidizing or reducing.
Temperature Capability	Supports elevated continuous and intermittent service temperatures beyond common structural stainless. Always separate continuous-use limits from short peak excursions, and follow the grade standard for both.
Weldability	Weldable with common processes when filler chemistry and any required post-weld heat treatment match the base metal. High-alloy heat-resistant welds can be crack-sensitive if restraint and preheat / interpass control are ignored.
Formability	Can be formed by rolling, pressing and bending with conventional equipment, though higher-alloy grades need more force and careful radius control. Hot forming followed by suitable heat treatment may be preferred for heavy sections.
Service Stability	Long holds in certain intermediate temperature bands can cause embrittlement or sigma-phase formation in some grades. Review the grade's restricted temperature ranges when planning continuous furnace duty.

Material guidance for your next project

Send your grade, size and application requirements to our team.

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