

# First Choice for Energy Technologies and Industry

Material datasheet for 1.4418 | X4CrNiMo16-5-1 | SIS 2387

1.4418 is a martensitic material notable for its outstanding combination of good mechanical properties. This is reflected in good toughness values (including at low temperatures), high mechanical resistance values and its good corrosion resistance in aggressive media.

1.4418 is used in a diverse range of industries, for all kinds of parts exposed to mechanical and corrosive stress, such as shafts, axles, centrifuges and pump components, for example.

## WELDING

The low carbon content means that welding can be performed without any particular difficulties. The material can be welded using all standard methods, but pre-heating to temperatures between 100 °C and 200 °C is recommended. 1.4430 is a suitable filler material. Once welding is complete, the material is annealed or tempered.



## ROUND BAR STEEL

### AVAILABLE DIMENSIONS

25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 120, 125, 130, 140, 150, 160, 170, 180, 200, 210, 220, 230, 240, 250, 260, 280, 300, 330 and 350 mm



### APPLICATIONS

- Chemical industry
- Energy technologies, onshore and offshore
- Drive technology
- Aerospace industry
- Mechanical engineering
- Plant engineering

### MACHINING

The machinability is equivalent to structural steels with a similar hardness, but can be improved with small amounts of added sulphites (up to 0.03% maximum). However, this can negatively affect the mechanical properties and the corrosion resistance.

MECHANICAL PROPERTIES UNDER HIGH TEMPERATURES

Strength characteristic	Delivery condition	Temperature °C				
		100	150	200	250	300
Rp 0.2	QT 900	≥660	≥640	≥620	≥600	≥580

MECHANICAL PROPERTIES AT ROOM TEMPERATURE

Stated values apply to bar steel up to 160 mm max.  
for the QT900 remuneration level (EN 10088-3)

<b>Diameter dimensions:</b> max. 160 mm	<b>Tensile strength Rm (N/mm²):</b> 900 - 1100
<b>Heat treatment :</b> QT 760 - QT 900	<b>Elongation at fracture A5 (%):</b> longitudinal: max. 16
<b>Yield strength Rp0.2 (N/mm²):</b> at least 700	<b>Impact value (ISO-V) J:</b> longitudinal: 80 - 90

CHEMICAL ANALYSIS

Chem. element	1.4418	
	min.	max.
C	-	0.06
Si	-	0.7
Mn	-	1.5
P	-	0.04
S	-	0.03
Cr	15.0	17.0
Mo	0.8	1.50
Ni	4.0	6.0
N	0.02	-

HEAT TREATMENT

<b>Solution annealing:</b> 600 - 650 °C	<b>Hot forming:</b> 950 - 1150 °C
<b>Hardening:</b> 950 - 1050 °C	<b>Cooling:</b> Air, oven, oil or polymer
<b>Tempering:</b> 550 - 620 °C	

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**Note:** All information regarding material properties, recommendations for use of the material, and available delivery configurations have been carefully researched, and is provided according to the best of our knowledge. However, no guarantee is made for the information provided. In the case of orders, all information and data must always be agreed in a separate written agreement.