

Chemical analysis

	C	Si	Mn	S	P	Cr	Ni	V	W	Mo	Cu	Al	N
Min.						24,0	6,0		0,5	3,0	0,5		0,2
Max.	0,03	1,0	1,0	0,005	0,03	26,0	8,0	0,2	1,0	4,0	1,0	0,02	0,3

PRE = %Cr + 3,3 x %Mo + 16 x %N ≥ 40

Microstructure

S4501 is a ferritic/austenitic stainless steel, typ. 25Cr – duplex. The ferrite content lies between 35 – 55%. It is delivered in solution annealed and waterquenched condition.

Comparable standard

Standard	Designation/ Type
EN	1.4501
DIN	X2CrNiMoCuWN25-7-4
ASTM	F55
ASTM A276	UNS S32760
NORSOK	MDS-D57

Main features and applications

General areas of application are:

- Petroleum and petrochemical industries: exchangers, chemical tankers and reactor vessels.
- Oil and gas industry: multiphase flow lines, pipe for seawater handling.
- Chemical industries: flanges, bolting, connectors, manifolds.
- Marine industry: turbine blades, propeller.

These areas take advantage of:

- High resistance to general corrosion, stress corrosion cracking, pitting and crevice corrosion.
- High resistance to erosion corrosion and corrosion fatigue.
- High mechanical strength and good ductility.

Process

Produced from scrap and alloys. Melting process: Electric Arc Furnace + AOD. Forged on a free – form 1600 t hydraulic press.

Minimum mechanical properties.

Minimum test requirements for D≤250 mm, as forged.

Yield strength Rp _{0.2} [MPa]	Tensile strength Rm [MPa]	Fracture Elongation A [%]	Area contraction Z [%]	Impact Charpy-V [J]	Hardness BHN [kg/mm ²]
550	750	25	-	45 (- 46 °C)	max. 301

For other dimensions, please contact us. We will be pleased to give you additional information.

Corrosion resistance guidelines.

Method	ASTM G48 practice A (50 °C, 24h)	EN-ISO3651-2 Method C
Acceptance criteria	- No pitting detected at 20 X magnification - Weight loss < 4.0 g/m ²	No cracking*

*See EN-ISO3651-2 Method C, paragraph 7

Heat treatment

Solution annealing between 1100°C – 1140°C, followed by water quenching.

Weldability

S4501 belongs to group 10.2, Austenitic/ferritic stainless steel (duplex) with Cr>24%, according to ISO/TR 15608:2005.

The weldability of S4501 is good.

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Physical properties at room temperature (typical values)

Density, 20 °C [kg/m ³]	Relative magnetic permeab.	Coefficient of thermal expansion		Specific heat, 20°C [J/(kg K)]	Thermal conductivity [W/m K]	Electrical resistivity [μΩm]	Young's modulus, 20 °C [MPa]
		Range [°C]	Coefficient [K ⁻¹]				
7810	-	20-100	13·10 ⁻⁶	500	15	0,8	200
		20-300	14·10 ⁻⁶				
		20-500	15·10 ⁻⁶				

General.

Stavanger Steel is qualified according to NORSOK M650 – Edition 4.
 Qualified dimensions on request.