

Chemical analysis

	C	Si	Mn	S	P	Cr	Ni	Mo	N
Min.						21.0	4.5	2.5	0.14
Max.	0.03	1.0	2.0	0.015	0.03	23.0	6.5	3.5	0.2

Covers F51 and F60

Microstructure

S8490 is a ferritic/austenitic stainless steel, typ. 22Cr–duplex. The ferrite content lies between 35 – 55%

Comparable standard

Standard	Designation/Type
DIN	X2CrNiMo22-5-3
EN	1.4462
ASTM	F51/F60
UNS	S31803/S32205
BS	318S13
NORSOK	S31803/S32205

Main features and applications

General areas of application are:

- Chemical and petrochemical industry: storage tanks, pipe systems, heat exchangers.
- Desalination and wastewater plants: flanges, valves, tubes, and pipes.
- Oil and gas industry: flanges, valves, tubes, and pipes.
- Marine industry: impellers, propellers.
- Civil work: Components for structural designs and bridges

These areas take advantage of:

- High resistance to stress corrosion cracking in chloride-containing environments.
- High resistance to pitting and crevice corrosion.
- High resistance to general corrosion.
- High mechanical strength.
- High resistance to erosion corrosion and corrosion fatigue.

Process

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

Minimum mechanical properties at room temperature

Minimum test requirements for $D \leq 330$ mm, as forged.

Yield strength Rp _{0.2} [MPa]	Tensile strength Rm [MPa]	Fracture Elongation A [%]	Area contraction Z [%]	Impact Charpy-V [J]	Hardness [HB]
450	655	25	45	100	Max. 270

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 at 1020-1060 °C followed by water quenching.

Weldability

S8490 belongs to group 10.1, Austenitic/ferritic stainless steel with Cr≤24%, according to ISO/TR 15608:2005. The weldability of S8490 is good.

Physical properties at room temperature (typical values)

Density, 20 °C [kg/m ³]	Relative magnetic permeability	Coefficient of thermal expansion		Specific heat, 20°C [J/(kg °C)]	Thermal conductivity [W/m °C]	Electrical resistivity [Ωmm ² /m]	Young's modulus, 20 °C [GPa]
		Range [°C]	Coefficient [K ⁻¹]				
7800	-	20 - 100	13·10 ⁻⁶	495	15	0.8	200
		20 - 200	13.5·10 ⁻⁶				
		20 - 300	14·10 ⁻⁶				
		20 - 400	-				

General

Stavanger Steel is qualified according to NORAOK M-650 – Edition 4.
 Qualified dimensions on request.