

Chemical analysis

	C	Si	Mn	S	P	Cr	Ni	Mo	N
Min.						16.5	11.0	2.50	0.14
Max.	0.03	1.0	2.0	0.025	0.045	18.5	14.0	3.00	0.22

Microstructure

S2439 is a high alloyed austenitic stainless steel with increased content of nitrogen and molybdenum for improved mechanical strength and corrosion resistance.

Comparable standard

Standard	Designation/Type
DIN	X2CrNiMoN17-13-3
UNS	S31653
EN	1.4429
ASTM A182	F316LN
SS	14 23 75

Applications

General areas of application:

- Marine industry: shafts, pump bodies, impellers.
- Petrochemical industry: Piping, heat exchangers.

The application areas take advantage of:

- Good corrosion resistance.
- Good weldability.

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

Yield strength Rp _{0.2} [MPa]	Tensile strength Rm [MPa]	Fracture Elongation A [%]	Reduction of area Z [%]	Hardness [HB]
295	590	40	50	<220

Heat treatment

Solution annealing between 1040 and 1060°C, followed by quenching in water.

Weldability

S316LN belongs to group 8.1 Austenitic (stainless steel Cr≤19%) according to ISO/TR 15608. Excellent weldability. Neither preheating nor PWHT are normally necessary.

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]				
7900	-	20 - 100	16.5·10 ⁻⁶	500	15	0.75	200
		20 - 200	17.5·10 ⁻⁶				
		20 - 300	17.5·10 ⁻⁶				
		20 - 400	18.5·10 ⁻⁶				