

SINOXX^{...} 4539

SUPERAUSTENITIC STAINLESS STEEL

SINOXX 4539 is a low carbon high alloy austenitic stainless steel with high level of chromium and nickel. It is additionally alloyed with molybdenum and copper to provide added corrosion resistance in certain media. This grade is non-magnetic in all conditions and has excellent weldability and formability.

APPLICATIONS

- metallurgical processing – pickling equipment using sulfuric acid
- oil and gas production
- pulp and paper – processing equipment
- seawater cooling equipment
- pharmaceutical industry

SPECIFICATIONS

Superaustenitic stainless steel is designated as AISI 904L, UNS N08904 and EN 1.4539, and conforms to the following standards:

- ASTM A240/A240M, ASME SB-625,
- EN 10088-1, EN 10088-2, EN 10028-7 and VdTÜV- WB 421.

CHEMICAL COMPOSITION

Typical values in the range [wt. %]

	C	Mn	P	S	Si	Cr	Ni	Cu	Mo	N
Min.	-	1.40	-	-	0.30	19.8	24.2	1.30	4.3	0.07
Max.	0.018	1.60	0.030	0.001	0.50	20.1	24.5	1.50	4.5	0.09

PHYSICAL PROPERTIES

Density	Specific heat	Thermal conductivity	Electrical resistivity
8.0 g/cm ³	450 J/kgK*	12 W/mK*	1.0 Ωmm ² /m*

* values at 20 °C according to EN 10088-1

DIMENSIONS

SINOXX 4539	Thickness [mm]	Max. width [mm]	Max. length [mm]	Max. weight [kg]
Quarto plates	8–10.0 (0.31–0.39 in.)	1500 (59.06 in.)	12000 (472.44 in.)	9600 (21164 lbs)
Quarto plates	10.0–40.0 (0.39–1.57 in.)	2000 (78.74 in.)	12000 (472.44 in.)	9600 (21164 lbs)

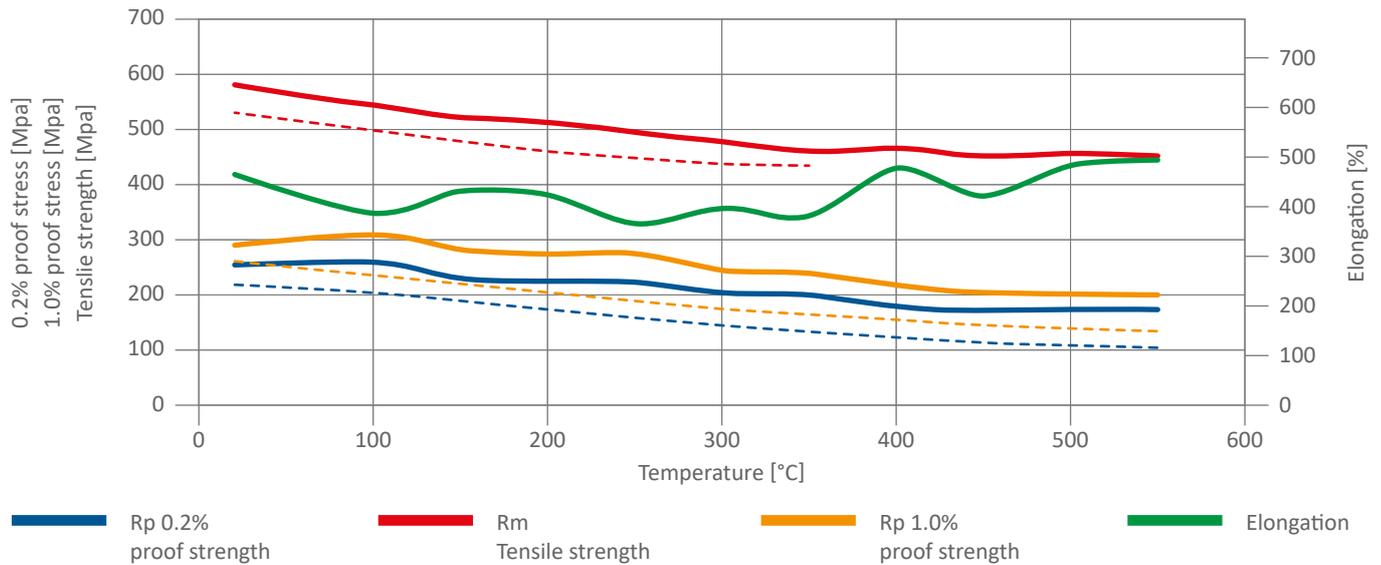
MECHANICAL PROPERTIES

Minimum guaranteed values of mechanical test requirements, for the specified thickness range.

Thickness [mm]	0.2 % Yield strength min. [MPa]	Tensile strength [MPa]	Elongation min. [%]	Hardness [HRBW]	Impact Charpy V 20 °C (L/T) [J]
8.0–40.0	215	490–720	35	70–90	100/60

Annealed SINOXX 4539 shows impact behaviour typical of austenitic stainless steel, that is, excellent toughness even at sub-zero temperatures.

HIGH TEMPERATURE TENSILE TEST RESULTS – TYPICAL VALUES



CORROSION RESISTANCE

The high content of alloying elements in SINOXX 4539 gives the alloy very good resistance to uniform corrosion. The minimum value of PREN = 35 indicates the material has good resistance to seawater and other high chloride environments. The low carbon level of SINOXX 4539 provides resistance to intergranular corrosion in welded condition.

Confirmed corrosion resistance according to following tests:

- ASTM A 262 – 10 (Method E) – STRAUSS TEST and EN ISO 3651 – 2 (Method A),
- EN ISO 3651 – 2 (Method B),
- EN ISO 3651 – 2 (Method C),
- ASTM A 262 – 10 (Method C) – HUEY TEST; EN ISO 3651 – 1,
- ASTM G 28 (Method A),
- ASTM G 48 (Method A) (T = 25 °C/24 hours in T = 22 °C/72 hours).

MICROSTRUCTURE

The typical microstructure of superaustenitic stainless steel SINOXX 4539 is shown in *Figure 1*.

HEAT TREATMENT

Solution annealing at min. 1095 °C (2003 °F) and max. 1140 °C (2084 °F), followed by rapid cooling.

PICKLING

Plates are supplied in pickled condition (bright surface).

WELDING

SINOXX 4539 can be successfully welded by all standard methods. Solidification after welding for austenitic grades causes the redistributions of certain elements such as chromium, nickel, and molybdenum. Segregations are less evident in SINOXX 4539. This material is normally welded using a filler material of the material with the same composition.



Figure 1: Austenitic microstructure

The information and data in this product data sheet are intended for informative purpose only and may be revised at any time without notice. Presented typical properties of the materials are described only to help readers make their own evaluations and decisions. They are not guaranteed.