Sanicro® 625
Tube and pipe, seamless
Datasheet

Sanicro® 625 is an austenitic nickel-chromium alloy characterized by:

- Extremely good corrosion resistance in widely varying acidic and chloride containing environments
- High strength
- Excellent fabrication properties.

Sanicro® 625 can be used in a wide range of temperatures from -196°C to 815°C (-321°F to 1500°F). Typical uses include hydraulic and instrumentation systems, heat-exchangers and high-temperature applications. However, it should be noted that prolonged exposure to temperatures above 600°C (1100°F) may lead to embrittlement.

Standards

- UNS: N06625
- ISO: NW6625

Product standards

ASTM B444, Grade 1 and Grade 2
ASME SB444, Grade 1 and Grade 2
ISO 6207

Chemical composition (nominal)

Chemical composition (nominal) %

C	Si	Mn	P	S	Cr	Ni	Mo	Fe	Nb
0.025	0.2	0.15	≤0.015	≤0.015	21.5	61	8.7	4	3.5

Applications

Sanicro® 625 is an extremely versatile nickel alloy, suitable for use in both oxidizing and reducing acidic environments, such as:

- Hydrochloric acid
- Nitric acid
- Phosphoric acid

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- Chloride containing environments

The grade can also be used for a wide range of temperatures from -196°C to 815°C (-321°F to 1500°F). Typical areas of use include hydraulic systems, heat-exchangers and high-temperature applications.

Some industrial examples are:

- High temperature aerospace
- Chemical process industry
- Power industry

Corrosion resistance

Wet corrosion

Sanicro® 625 shows very good resistance to pitting corrosion, intergranular corrosion and is virtually immune to stress corrosion cracking in chloride-containing environments. The grade is able to withstand general corrosion in both severe oxidizing and non-oxidizing acids.

Resistance in chloride environments is also extremely good owing to the high PRE number, ≥48.

Pitting Resistance Equivalent, PRE
PRE = %Cr + 3.3 x %Mo + 16 x %N

High temperature corrosion

In addition to its excellent wet corrosion resistance, Sanicro® 625 is also able to resist oxidation and scaling at high temperature.

Forms of supply

Sanicro® 625 seamless nickel alloy tubing is supplied bright annealed in the outside diameter range 6 - 42 mm (0.25" - 1.625") and wall-thickness 0.89 - 5.0 mm (0.035" - 0.197"). Some dimensions may be supplied annealed and white pickled.

Tubing is supplied as:

- Annealed (Grade 1)
- Solution annealed (Grade 2)

Tolerances

Sanicro® 625, OD 6-42 mm EN 10305-1

Size OD, mm	Tolerances OD, mm	Wall thickness %
6-30	+/-0.08	+/-10
32-40	+/-0.15	+/-10
42	+/-0.20	+/-10

Mechanical properties

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At 20°C, metric units

Condition	Proof strength	Tensile strength	Elongation
	$R_{p0.2}$ [1]	R_m	$A_{2"}$
	MPa	MPa	%
Grade 1[2]	≥415	≥827	≥30
Grade 2[3]	≥276	≥690	≥30

At 68°F, imperial units

Condition	Proof strength	Tensile strength	Elongation
	$R_{p0.2}$ [1]	R_m	$A_{2"}$
	ksi	ksi	%
Grade 1[2]	≥60	≥120	≥30
Grade 2[3]	≥40	≥100	≥30

1) Corresponds to 0.2% offset yield strength

2) Annealed at 871°C (1600°F) minimum

3) Solution annealed at 1093°C (2000°F) minimum

Physical properties

Density: 8.36 g/cm^3, 0.30 lb/in^3

Welding

The weldability of Sanicro® 625 is good. Suitable methods of fusion welding are manual metal-arc welding (MMA/SMAW) and gas-shielded arc welding, with the TIG/GTAW method as first choice.

For Sanicro® 625, heat-input of <1.5 kJ/mm and interpass temperature of <100°C (210°F) are recommended. A string bead welding technique should be used.

Recommended filler metals

TIG/GTAW or MIG/GMAW welding

ISO 18274 S Ni 6625/AWS A5.14 ERNiCrMo-3 (e.g. Exaton Ni60)

MMA/SMAW welding

ISO 14172 E Ni 6625/AWS A5.11 ENiCrMo-3 (e.g. Exaton Ni60)

Disclaimer:

Recommendations are for guidance only, and the suitability of a material for a specific application can be confirmed only when we know the actual service conditions. Continuous development may necessitate changes

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in technical data without notice. This datasheet is only valid for Alleima materials.

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