

SANICRO® 60

TUBE AND PIPE, SEAMLESS

DATASHEET

Sanicro® 60 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® 60 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

- N06625
- 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® 60 is an extremely versatile nickel alloy, suitable for use in both oxidizing and reducing acidic environments, such as:

- Hydrochloric acid
- Nitric acid
- Phosphoric acid
- 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® 60 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

$$\text{PRE} = \% \text{Cr} + 3.3 \times \% \text{Mo} + 16 \times \% \text{N}$$

High temperature corrosion

In addition to its excellent wet corrosion resistance, Sanicro® 60 is also able to resist oxidation and scaling at high temperature.

FORMS OF SUPPLY

Sanicro® 60 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® 60, 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

At 20°C, metric units

Condition	Proof strength	Tensile strength	Elongation
	Rp0.2 ¹⁾	Rm	A2"
	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
	Rp0.2 ¹⁾	Rm	A2"
	ksi	ksi	%

Grade 12)	≥60	≥120	≥30
Grade 23)	≥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

WELDING

The weldability of Sanicro® 60 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® 60, heat-input of <1.2 kJ/mm and interpass temperature of <100°C (210°F) are recommended. A string bead welding technique should be used.

Recommended fillermetals

TIG/GTAW or MIG/GMAW welding

ISO 18274 S Ni 6625/AWS A5.14 ERNiCrMo-3 (e.g. Exaton Sanicro 60)

MMA/SMAW welding

ISO 14172 E Ni 6625/AWS A5.11 ENiCrMo-3 (e.g. Exaton Sanicro 60)

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