

SANDVIK SAF™ 2507 STRIP STEEL

DATASHEET

Sandvik SAF™ 2507 is a super-duplex (austenitic-ferritic) stainless steel for service in highly corrosive conditions. The grade is characterized by:

- Excellent resistance to stress corrosion cracking (SCC) in chloride-bearing environments
- Excellent resistance to pitting and crevice corrosion
- High resistance to general corrosion
- Very high mechanicalstrength
- Physical properties that offer design advantages
- High resistance to erosion corrosion and corrosion fatigue
- Good weldability

STANDARDS

- UNS: \$32750

- EN Number: 1.4410

- EN Name: X 2 CrNiMoN 25-7-4

CHEMICAL COMPOSITION (NOMINAL) %

Chemical composition (nominal) %

Charles and Shall	Si	Mn	P	S	Cr Cr	Ni	Mo
≤0.030	≤0.8	≤1.2	≤0.035	≤0.015	25	7 34	4 Str. 3tr. 3tr. 3tr.

Others: N=0.3

FORMS OF SUPPLY

The strip steel can be supplied in coils, bundles, on plastic spools or in lengths. The edges can be either slit, deburred or smoothly rounded.

Conditions and dimensions

Sandvik SAF^{m} 2507 is supplied in solution annealed (bright annealed or annealed and pickled) or cold rolled condition.

Width

2-300 mm (0.078-12 in.)

Thickness

0.015-3.5 mm (0.0006-0.14 in.)

MECHANICAL PROPERTIES

Datasheet updated 6/7/2019 2:57:19 PM (supersedes all previous editions)

Static strength, nominal values at 20°C (68°F)

Condition	Tensile stre	ngth, Rm	Proof streng	gth, Rp0,2a)	Elongation, A11,3
Trades Trades Trades	MPa	ksi	MPa	ksi	% / % / / / / /
per A state of the	900	131	600	87	30
The Carterian Statement Statement	1150	167	1100	160	The state of the s
red Carterine Statement Statement	1350	196	1250	181	and the state of t
ran Catalana Statana Statana	1550	225	1400	203	or standing to the standing st
CT State State State S	1850	268	1800	261	of 3 of state of state of
Jes Charles Statement Statement St	1800	261	1550	.225	grand

a) Rp0,2 corresponds to 0.2% offset yield strength. 1 MPa = N/mm²

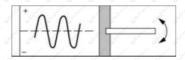
A = Annealed C = Cold rolled

CT = Cold rolled and aged, 480°C (896°F)/3 h (see further under section "Heat treatment".)

FATIGUE STRENGTH

Nominal values at 20°C (68°F) in a normal dry atmosphere. The fatigue limit is defined as the stress at which 50% of the specimens withstand a minimum of 2 million load cycles.

Reversed bending stress Average stress = 0 Bending transversal to rolling direction.



Tensile strength, Rm	Fatigue limit, MPa	Tensile strength, Rm	Fatigue limit, ksi
	Thickness, mm		Thickness, inch
MPa	0,50	ksi	0.020
1850	± 540	268	± 78

PHYSICAL PROPERTIES

The physical properties of a steel are related to a number of factors, including alloying elements, heat treatment and manufacturing process, but the following data can generally be used for rough calculations. The values refer to testing in the annealed condition at 20°C (68°F), where nothing else is mentioned.

Density: 7.8 g/cm3, 0.28 lb/in3

Thermal conductivity

Temperature, °C	W/m °C	Temperature, °F	Btu/ft h°F
20	16	68	9 / 9 / 9
100	,	200	9.5
200	19	400	
300	20 / 4	600	, 11.5 , Jan 1960 , Ja
400	21 m	750 , , , , , , , , , , , , , , ,	/ / 12.5 / / / /

Metricunits, W/(m °C)

Temperature, °C	20	100	200	300	400
SAF 2507	14	15	16	18	20
AISI 316L	14	15	17	18	20

Imperial units, Btu/(ft h °F)

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STATE OF	Sandvik SAF 2507	Steller	Skeling m	Skalina W	or Streften	or The line	of terms	States	8	Speline.	9	of testing in	or Skeins	9 ₃₀ 70	gar Garafina	Steller.	10	Staffinger (1,	2	YeaTing som	Staffes	- Stri
Siteri	ASTM 316L	Steller	Skalman	Skafran	Stefren	Streften.	Status	Steffer	8	Shelm	9	Station	Skeling	10	Stration	Steller	10		13	2	itea Treatmen	Shefre	Shi

Specific heat capacity

Temperature, °C	J/(Kg °C)	Temperature, °F	Btu/(lb °F)
20	480	68	0.12
100	500	200	0.12
200	530	400	0.13
300	550	600	0.13
400	580	800	0.14

Thermal expansion

Sandvik SAF 2507® has a coefficient of thermal expansion close to that of carbon steel. This gives Sandvik SAF 2507® definite design advantages over austenitic stainless steels in equipment comprising of both carbon steel and stainless steel. The values given below are average values in the temperature ranges.

Metric units 1)

Temperature, °C	30-100	30-200	30-300	30-400
Sandvik SAF 2507	13	13.5	14	14.5
Carbon steel (0.2%C)	12.5	13	13.5	garden garden 14 m. garden garden garden
ASTM 304L	16.5	17.5		garden garden 18 garden garden garden

^{1) (}x10-6/°C)

Imperial units 1)

Temperature, °F	86-200	86-400	Station Station	86-600	86-750	
Sandvik SAF 2507	To grand grand grand	7.5	Shellien Shellien	7.8	Staller Stall	8 / 3 / 3 / 3 /
Carbon steel (0.2%C)	of the state of th	State 7 State State	Status Status	3.5 T.5	Status State	7.5
ASTM 304L	9.5	9.5	Stealing Stealing	3 10 3 m	Station Shell	10

^{1) (}x10-6/°F)

Modulus of elasticity, E1)

Straf	Condition	Tensile	strength, Rm,MPa	Stating.	E, MPa	Tensil	le strength, Rm,ksi	Station.	E, ksi
Straf	Cold rolled	1550	The state of the s	Staffa.	180	225	The States States States States States States	Steller.	26.1
Strai	Cold rolled and aged	1850		Stration of	210	268		State	30.5

^{1) (}x103)

CORROSION RESISTANCE

General corrosion

Sandvik $SAF^{\mathbb{T}}$ 2507 is highly resistant to corrosion by organic acids, e.g. formic and acetic acid. Also in chloride contaminated acid the grade remains resistant.

Sandvik SAF $^{\text{TM}}$ 2507 in the annealed, cold rolled as well as cold rolled and aged condition has passed salt spray tests during 500 h according to ISO 9227:2006 without any attack.

Pitting corrosion

The pitting corrosion resistance was assessed electrochemically by the method ASTM G150. The Critical Pitting Temperature (CPT) was measured with results according to the below table.

Condition	Tensile strength, Rm,MPa	CPT,∘C	CPT,∘F
Annealed	900	>80	>176
Cold rolled	1600	>80	>176
Cold rolled and aged (480°C/3h)	2000	>80	>176

HEAT TREATMENT

Solution annealing

The recommended annealing cycle is 1050-1125°C (1920-2060°F) for 1-5 minutes, followed by rapid cooling in air or water.

Aging

The strength of cold rolled Sandvik SAF $^{\text{TM}}$ 2507 can be increased by a heat treatment operation at 480 $^{\circ}$ C (900 $^{\circ}$ F) for 3 h. An increase in tensile strength of 200-300 MPa and in proof strength of 400-500 MPa can be expected. Aging also increases the modulus of elasticity.

Aging is normally carried out after forming. If the aging is performed in an open air furnace, a brownish oxide is formed on the surface. To avoid discoloration, parts should be carefully cleaned before heat treatment.

WELDING

The weldability of Sandvik SAF™ 2507 is good. Suitable welding methods are manual metal-arc welding with covered electrodes or gas shielded arc welding. Welding should be undertaken within the heat input range of 0.2-1.5 kJ/mm and with an interpass temperature of maximum 150°C (300°F).

Preheating or post-weld heat treatment is not necessary.

Matching filler metals are recommended in order to obtain a weld metal with optimum corrosion resistance and mechanical properties. For gas-shielded arc welding use Sandvik 25.10.4.L, and for manual metal-arc welding the covered electrode Sandvik 25.10.4.LR.

BENDING

The values given below have been obtained by bending according to Swedish standard SS 11 26 26 method 3 (in a 90° V-block with a 25 mm die opening, a sample of 35 mm width, turned so that the burrs of the blanked edges face into the bend). They can be used as guidance for the smallest recommended bending radius.

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Staffin .	MPa	Shelling	or Stratus	ksi	States	The Tree	mm	Steller.	Skeling	in.	ord Startler	Straffer.	all shift	and Shaffer	ort Status	ord Staffer	Status	11	of Shaller	Steller	Stration .	Sheller	a Stri
Jike Tres	900	Shelin.	Stration .	131	State	Steller.	1.1	Steller.	Steller.	0.043	Steller Steller	Station .	0.4t	and Strates	Stefm	Staff.	Status	0.4t	Sheling	Stalin.	Steller.	Status	31
Gifted mar	1550	Steil .	State.	225	Stell	Stratus.	0.50	Strin.	Stalm	0.020	State.	Stella .	0.8t	Starte	Stales	Sterlin	Stration .	13t	Stein	State	Steller.	Strating	Silvi Silvi
GTrain	1650	Straw.	er Stand	239	Steller	Sterior Sterior	0.28	State	Green	0.011	Steeler Steeler	Sterior Sterior	1.4t	Strate Strate	Steel	Steel	States	9t	Steel Control	State	States	Street Control	Str.

//Parallel to the rolling direction

t is short for thickness

APPLICATIONS

Sandvik SAF^{TM} 2507 strip can be used in general strip applications where a good corrosion resistance is required. It is especially suitable for

- Seawater applications
- Chloride-containing bleaching environments in the pulp and paper industry
- Chemical industry

In the cold rolled condition Sandvik SAF™ 2507 is a very good spring material for corrosive environments.

In the annealed condition the combination of high yield strength and good corrosion resistance is inviting to a new design approach for a variety of applications. Especially allowing for non-corrosion protected light weight constructions with a low life cycle cost.

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.

