# SANDVIK 1RK95 STRIP STEEL

DATASHEET

Sandvik 1RK95 is a precipitation hardening stainless steel. In the annealed condition the formability is good and by an aging heat treatment the material obtains extensive precipitation hardening. The corrosion resistance of Sandvik 1RK95 is between that of the stainless 13% chromium steels and the austenitic stainless steels of the ASTM 304 type.

# **STANDARDS**

- UNS: S45500

# CHEMICAL COMPOSITION (NOMINAL)%

## Chemical composition (nominal) %

jert'r	C. Star	y Siy y	Mn 🧹	م من المعرف المعرفي P	S	Cr Ni	Ti	Cu	Nb
Jeating	0.01	≤0.5	≤0.5	≤0.030	≤0.015	11.5 8.5	1.2	2.2	0.2

## FORMS OF SUPPLY

Cold rolled strip can be supplied in coils, bundles, on spools or in cut lengths. Contact us for more information.

The following range of thicknesses and widths can be supplied as standard. Contact us if other dimensions are required.

Steffer	Thickness		Width	Thickness	Width
sterner	mm 🖉 🖉 🖉 🎸		mm 🧳 🧳	in. It also also also also also also	" J"in.J" Jack Jack Star Jack Jack
Sterrer	1–3.5*	fron States	10-330	0.039–0.138	0.39–13.0

\* Depending on requested tensile strength.

#### Tolerances

Contact us for information on tolerances.

# MECHANICAL PROPERTIES

Static strength Nominal values at 20°C (68°F).

	Condition1)			Aging		Tensile stre	Proof strength, Rp0,2a)					Elongation, A50							
				Stratus	°C	°F	MPa	ksi 🧹	Station	MPa	Shelm	ksi	Steiner	Shell	%	Status	Sterr	Steller	Shelman
at at a	A	Steffer	States	States	-trainer State	Station Station	1050	152	Steller	800	adres Shelfer	116	Steres	Shell	10	States	Sterr	Stales	Stefan
Cites I'm	AT	Stales	States	of States	480	896	1850 🗸 🗸	268	Claire .	1800	Steller	261	States	GRAT'	4	of States	Sterr	Stales	Station .
Stel	AT	Steal and	Statut	of the first	510	950	1750	254	of States	1700	Statut	247	Giternet.	Steel"	4	of Staffa	of State	Steller 201	Sterrer

jtert.	Condition1)	Aging	State State	Tensile st	ength,Rm	Proof stre	ngth, Rp0,2a)	Elongation, A50					
		°C	۴	MPa	ksi	MPa	ksi	%					
steel	AT	538	1000	1500	218	1400	203	8 8 8 8 8 8					

1) A = Annealed, AT = Annealed and aged for 4h

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

#### Impact toughness

Charpy impact test according to ASTM E23 type A with the exception of the thickness. Nominal values at 20°C (68°F).

Condition1)	Nominal tensile strength, Rm	Thickness, t	Energy absorption	at impact, J*)
and Shall Shall Shall Shall Shall	MPa	oʻ oʻmm oʻ	A	all an an an an
A	1050	2.5	14	18
AT	1750	2.5	6	6

1) A = Annealed, AT = Annealed and aged, 510°C (950°F)/4 h

\*) ^ Sample direction is transverse to the rolling direction

// Sample direction is parallel to the rolling direction

## PHYSICAL PROPERTIES

The physical properties of a steel are related to a number of factors, including alloying elements, heat treatment and manufacturing route, but the following data can generally be used for rough calculations. These values refer material at a temperature of 20°C (68°F) unless otherwise stated.

Density: 7.75 g/cm3 (0.28 lb/in3)

## Modulus of elasticity

Annealed: approx. 180 000 MPa (26 100 ksi) Tempered: approx. 200 000 MPa (29 000 ksi)

## Shear modulus

Annealed: approx. 75 000 MPa (10 900 ksi) Tempered: approx. 70 000 MPa (10 200 ksi)

# CORROSION RESISTANCE

The resistance to general corrosion for Sandvik 1RK95 is between that of the martensitic 13% chromium steels and the austenitic stainless steels of the ASTM 304 type. Sandvik 1RK95 has showed good resistance to corrosion attack in the annealed and precipitation hardened condition during salt spray testing according to standard ISO 9227:2006 at 35°C (95°F) in 5% NaCl.

## HEAT TREATMENT

The strength of Sandvik 1RK95 in the annealed condition can be increased by an aging process. An increase in tensile strength, due to precipitation hardening, of up to approximately 800 MPa (116 ksi) can be expected as shown in the "Mechanical properties" section. The different aging parameters result in different combinations of strength and ductility. This gives an opportunity to customize the mechanical properties depending on the application.

The recommended aging treatment is at 510°C (950°F) for 4h.

Aging is normally carried out by the customer after forming. To avoid discoloration, parts should be carefully

cleaned before heat treatment. Aging in open air furnaces gives a harmless brownish oxide on the surface.

In order to minimize the influence on properties of welding, Sandvik 1RK95 can be annealed at 830°C (1530°F)/1h and quenched in water to room temperature before the aging process.

## WELDING

Due to the low carbon content Sandvik 1RK95 is readily weldable using common welding methods. If welding is performed following tempering, a softer heat affected zone (HAZ) is to be expected adjacent to the weld metal. It is possible to temper the welded material, but in order to get the best material properties it is recommended to perform a solution annealing prior to tempering.

# BENDING

The values given below have been obtained by bending according to the standard SS-EN ISO 7438:2005 (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 a guidance for the smallest recommended bending radius for material in the annealed condition.

Nominal tensile strength				Thickness Min. bending radius as function of thickness*															
Rm	Starting Challenger Challenger	Steffeeter Steffeet	of States	State t State	Station of	Station Stat	Instant Ghatra	Station Stat		States			States	a Staffaar	Station	Granal	States	Stationer	er Steel
MPa	Star States States	Staffarm Staffar	Stefree	mm	Station C	sterner ster	and the	5		Star Star		II.	Stelles .	Cleating	Stellar	Station	States	Steeleseen	-
1050	trand Station Station .	Steeling Steeling	Station	2.3	Stellar 2	Station Stat	2t		Status Status		3	4 t	States	Stefree	Station	Station	Stelles	Stelles	- Steel

// Bend parallel to the rolling direction

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.

