

SANDVIK PROCESS SYSTEMS
**Micro alloyed dual phase
carbon steel belt**
Sandvik I320C



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Sandvik 1320C belt grade is a dual phase carbon steel with a 75 % martensitic and 25 % ferritic matrix. It is characterised by:

- very good static strength
- very good fatigue strength
- very good thermal properties
- excellent wear resistance
- good reparability

Sandvik 1320C is a carbon steel with a hard, smooth surface and a grey oxide layer, which makes it suitable for any application where there is a low risk of corrosion. Very good thermal properties make it ideal for baking and similar applications. Its low carbon content makes it possible to weld without post-annealing.

Chemical Composition (Nominal) %

C	Si	Mn	Ai	Nb
0.15	0.5	1.8	0.04	0.03

Specifikation

WNr.	No standard
AISI	

Forms of Supply

Belts are delivered, as standard, in a tempered condition and have well-rounded edges. If required, practically any surface finish can be supplied. Perforated belts are also available.

Belts are levelled and straightened to obtain optimum flatness and straightness. They can be supplied in open lengths, with the ends prepared for welding or riveting on site, or in the endless condition with a welded joint.

For tracking, belts can be provided with V-ropes, either rubber or in the form of a specially designed steel spiral. If required, the product side of the belt can be fitted with retaining strips to keep the conveyed material in place, or with transverse flights to prevent material from sliding backwards when the belt is inclined steeply. Different tolerance grades are available to ensure that the best cost alternative can be selected.

Recommendations and advice are available from your local Sandvik office.

Mechanical properties

Nominal values at 20 °C (68 °F)

Position	Yield strength		Tensile strength		Elongation A ₅ (%)	Weld factor Rm/Rm	Hardness HV ₅
	MPa	ksi	MPa	ksi			
Parent material	1250	181	1340	194	5	-	360
Transverse weld (not heat treated)	890	129	1000	145	4	0.75	*

*See figure on page 2.

Standard strength at elevated temperature

Temperature °C	°F	Yield strength		Tensile strength		Elongation A _{11.3} (%)	Hardness HV ₅
		MPa	ksi	MPa	ksi		
100	212	1140	165	1260	183	4	
200	392	1140	165	1290	187	6	
300	572	1280	157	1310	178	15	

Sandvik 1320C should not be exposed to temperatures exceeding 300 °C (572 °F) for prolonged periods (a few hours). Material softening occurs at elevated temperatures.

We recommend that if an operating temperature of 300 °C (572 °F) or above is considered, your local Sandvik office should be contacted for technical assistance.

Impact strength

This belt grade is not recommended for use at low temperature, i.e. operating in freezing conditions.

Fatigue strength

The fatigue limit is defined as the reverse bending stress at which 50 % of the test specimen withstands a minimum of 2 × 10⁶ load cycles. These values refer to 20 °C (68 °F), a normal dry atmosphere and a standard prepared specimen. The fatigue limit for the parent material is approximately ± 430 MPa (62 ksi).

Physical properties at 20 °C (68 °F)

Modulus of elasticity, E	205 000 MPa	29 700 ksi
Density, ρ	7800 kg/m ³	0.28 lb/in ³

Thermal conductivity, λ

Temp,	°C	20	100	200	300
	°F	68	212	392	572
W/mK		34	36	37	37
Btu/ft h °F		20	21	21	21

Specific Heat, Cp

Temp,	°C	20	100	200	300
	°F	68	212	392	572
kJ/kgK		450	480	520	550
Btu/lb °F		0.11	0.11	0.12	0.13

Thermal expansion, α

Temp,	°C	20-100	20-200	20-300
	°F	68-212	68-392	68-572
10 ⁻⁶ /°C		11.8	13	14
10 ⁻⁶ /°F		6.6	7.2	7.8

Resistivity, ρ

At 20 °C (68 °F)	0.3 $\mu\Omega\text{m}$
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Magnetic properties

Remanence, B_r	0.7 Wb/m ²
Coercive force, H_c	1550 A/m
Max relative permeability, μ_r	314

Sandvik 1320C has high thermal conductivity and low thermal expansion, which makes it less sensitive to buckling and thermal strain caused by uneven temperatures.

Corrosion Resistance

General corrosion

Despite its oxide layer, Sandvik 1320C is susceptible to general corrosion in aqueous solutions, especially at low pH values. Increased temperature, flow rate, acidity and the presence of salts increase the corrosion rate. In neutral solutions, ions such as CrO_4^{2-} and NO_3^- have an inhibiting effect.

Pitting and crevice corrosion

Pitting and crevice corrosion attacks can occur in chloride containing solutions at intermediate pH values, where the general corrosion rate is low.

Stress corrosion cracking

Sandvik 1320C is not susceptible to stress corrosion cracking or intercrystalline corrosion attacks.

Hydrogen embrittlement

Sandvik 1320C is susceptible to hydrogen embrittlement. If the material is exposed to possible sources of hydrogen embrittlement, a special heat-treatment is recommended. Contact your local Sandvik office for information.

Welding

Joints with very good strength and toughness can be formed in Sandvik 1600SM. A suitable fusion welding method is gas-shielded arc welding, with the TIG method as first choice.

If welding wire is used, type should be 1650SM.

Further information concerning method and equipment etc. required can be obtained from your local Sandvik office.

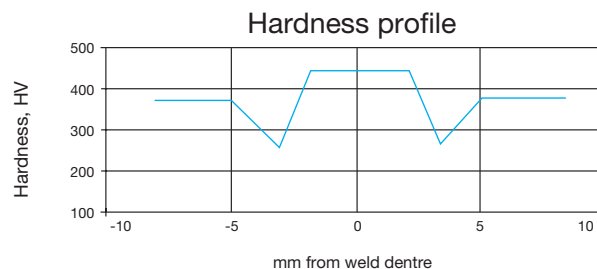


Figure 1 Example of hardness profile across a transverse weld in a Sandvik 1320C belt.

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.

