



## **Sandvik bake oven belts – the main ingredient for bake oven systems**

*Sandvik has a long established and well-earned reputation as a reliable and innovative supplier of new belts to bake oven manufacturers and replacement belts to bakeries.*

*A wide product range of quality, solid and perforated belts, skid bars and belt accessories, backed by high service and technical support levels, is available worldwide through a local presence in all of our existing and developing markets. In many markets 'Sandvik belts' are synonymous with 'bake oven belts' – mainly due to the following **7 good reasons**:*

- We work continuously with our customers to create long lasting partnerships
- We find solutions that will increase productivity
- Our products are designed and produced to provide the optimum bake oven processing properties
- Ongoing product development ensures that we can meet the changing process and plant development requirements of our customers
- We operate at a local level in over 130 countries
- Our skilled and trained engineers are always available to offer high quality service and technical support
- We offer worldwide bake oven and process experience

**good reasons**



## Technical service and support

We understand the importance of maximizing and maintaining production and ensuring minimal down time and production losses. Our technical support organisation is geared so that our highly trained engineers and salesmen are available for service support 24 hours per day, 7 days per week.

But our support goes much further – for a bakery planning a new installation, upgrading an existing facility or simply requiring a replacement belt, or bake oven manufacturers developing new bake oven systems, our help and advice is readily available.



### Our experts are ready to:

- pass on our worldwide **industry experience**
- advise on the most suitable belt **material grade**
- give recommendations on the **design and care** of bake oven belts
- investigate and give recommendations on **improving plant efficiency and performance**
- carry out **pre-installation checks** on belts, drums, scrapers, skids and rollers, before the installation of new belts, in order to enable rectification before belt installation and minimize down time



# Steel belts – descriptions and features

Sandvik solid and perforated bake oven belts are characterized by long life – 15-20 years is not unusual. Manufactured from either hardened or hardened and tempered carbon steel and supplied in an almost limitless combination of widths and lengths, Sandvik 1100C and Sandvik 1300C belts offer:

- a hard smooth surface for easy cleaning
- good flatness
- good static strength
- very good fatigue strength
- very good thermal properties
- excellent wear resistance
- good repairability
- benefits over wire mesh belts
- a low risk of corrosion



A Sandvik carbon steel belt provides the perfect base for finishing operations for sponge cakes, such as cutting, folding, layering, creaming, jamming and decorating.

## Standard dimensions – solid and perforated belts

### Sandvik 1300C

	Width					Thickness		
mm	800	1000	1200	1980	2380	1.0	1.2	1.4
inch	32	39	48	78	94	0.040	0.048	0.055

### Sandvik 1100C

	Width		Thickness
mm	1000	1500	1.2
inch	39	59	0.048

Widths in between the standard dimensions can be supplied by slitting or longitudinal welding.

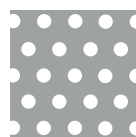
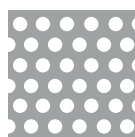
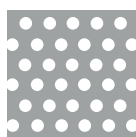
Further technical information is available in datasheets PS-SB-466 and PS-SB-483.

## Technical data (at room temperature, approx. figures)

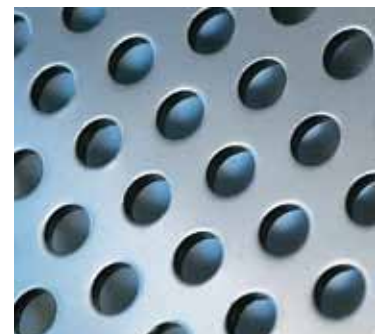
	Sandvik 1100C	Sandvik 1300C
Proof strength, MPa, (ksi)	1100 (159)	1200 (174)
Tensile strength, MPa, (ksi)	1200 (174)	1280 (186)
Density, kg/m <sup>3</sup> , (lb/in <sup>3</sup> )	7850 (0.284)	7850 (0.284)
Modulus of elasticity, MPa, (ksi) x10 <sup>3</sup>	196 (28.38)	201 (29.10)
Thermal expansion, 1/°C (1/°F) x10 <sup>-6</sup>		
20–100°C (68–212°F)	10.4 (5.8)	11.1 (6.2)
Thermal conductivity, W/m °C (Btu/ft h °F)	39 (22)	38 (22)
Specific heat capacity, kJ/kg °C (Btu/lb °F)		
20–100°C (68–212°F)	0.46 (0.11)	0.46 (0.11)

Sandvik's technical brochures – 'Guidelines for the installation and maintenance of Sandvik Bake Oven Belts' ref PS-SB-5508 and 'The Steel Belt Conveyor – advice for calculation and design' ref PS-SB-5510 are available from the local Sandvik office or via our website [www.smt.sandvik.com/sps](http://www.smt.sandvik.com/sps)

## Standard perforation patterns



Hole diameter, mm (inch)	2.5 (0.098)	3.0 (0.118)	3.0 (0.118)
Triangular pitch, mm (inch)	5.0 (0.197)	5.0 (0.197)	6.5 (0.256)
Open area, %	22.7	32.6	19.3



## The benefits of solid and perforated steel belts

Long experience in the market shows that although wire mesh belts are initially less expensive than solid and perforated belts, they can be limited in application and product processing capability. Overall they tend to be less cost efficient in the long term.



Sandvik solid and perforated steel belts are the ideal medium for conveying all kinds of baked products. The tough, hard wearing surface guarantees product quality and gives bakers years of excellent and predictable service with a belt that stays flat, keeps its shape and maximises production output.

### The benefits of perforated steel belts

- 15-20 years lifetime is not unusual
- highly flexible universal bake oven belt with the ability to bake both mesh and solid belt products with good and consistent quality
- hygienic and more easily cleaned than wire mesh belts means less down time
- no stretching or deformation due to perforations, good tension and tracking characteristics mean lower maintenance, compared with wire mesh belts
- different perforation patterns available

*For more information, please contact us via the local Sandvik office or through our webs*



### The benefits of solid steel belts

- 15-20 years lifetime is not unusual
- excellent product support for a wide range of baked products – biscuits, pastries, sponges and bread
- a hard smooth surface for clean product release
- hygienic and more easily cleaned than wire mesh belts means less down time
- excellent heat transfer
- excellent thermal conductivity for good baking performance and consistent product quality
- faster belt speeds increase production output
- no stretching, good tension and tracking characteristics mean lower maintenance, compared with wire mesh belts
- less energy needed than heavier wire mesh belts, lowering production costs



Proven and tested accessories and components are an important part of our total supply service for our steel belt processing units – including drums, sheaves, bearings, gears, belt supports, belt and drum cleaners and safety scrapers.

## Conveyor components and accessories

### Cast iron and graphite skid bars

Most bake oven belts are supported by cast iron skid bars placed transversally underneath the belt. We recommend that for the best working conditions for solid steel belts, however, a minimum of 10% of the skid bars should be graphite. Both types are available from Sandvik, with full technical advice on the size and the shape of the bar, the optimum cast iron or graphite material to be used and guidelines for installation. Bake oven belts can also be supported by rollers. Roller support is recommended for belt speeds higher than 20 m/min.

Further technical information is available on datasheets PS-SB-5506 and PS-SB-5520.



### Graphite station

Sandvik has designed a graphite station (pictured above) that applies a homogeneous and gradual deposit of graphite – continuously and automatically. Graphite skid bars are mounted on to a supporting structure beneath the belt – the station – which can be installed on to existing framework. A graphite station is a complement to cast iron skid bars.

Further technical information is available on datasheet PS-SB-5521.

Left – Corroded underside surface of a steel belt after using roller support. Right – Optimum belt surface after using graphite skid bars supplied by Sandvik.



Above illustration shows an active steel belt tracking control using electromechanical actuation controlled by a programmable relay. This automatic tracking device is normally used in bake oven lines mounted at the axle neck on the head end drum.

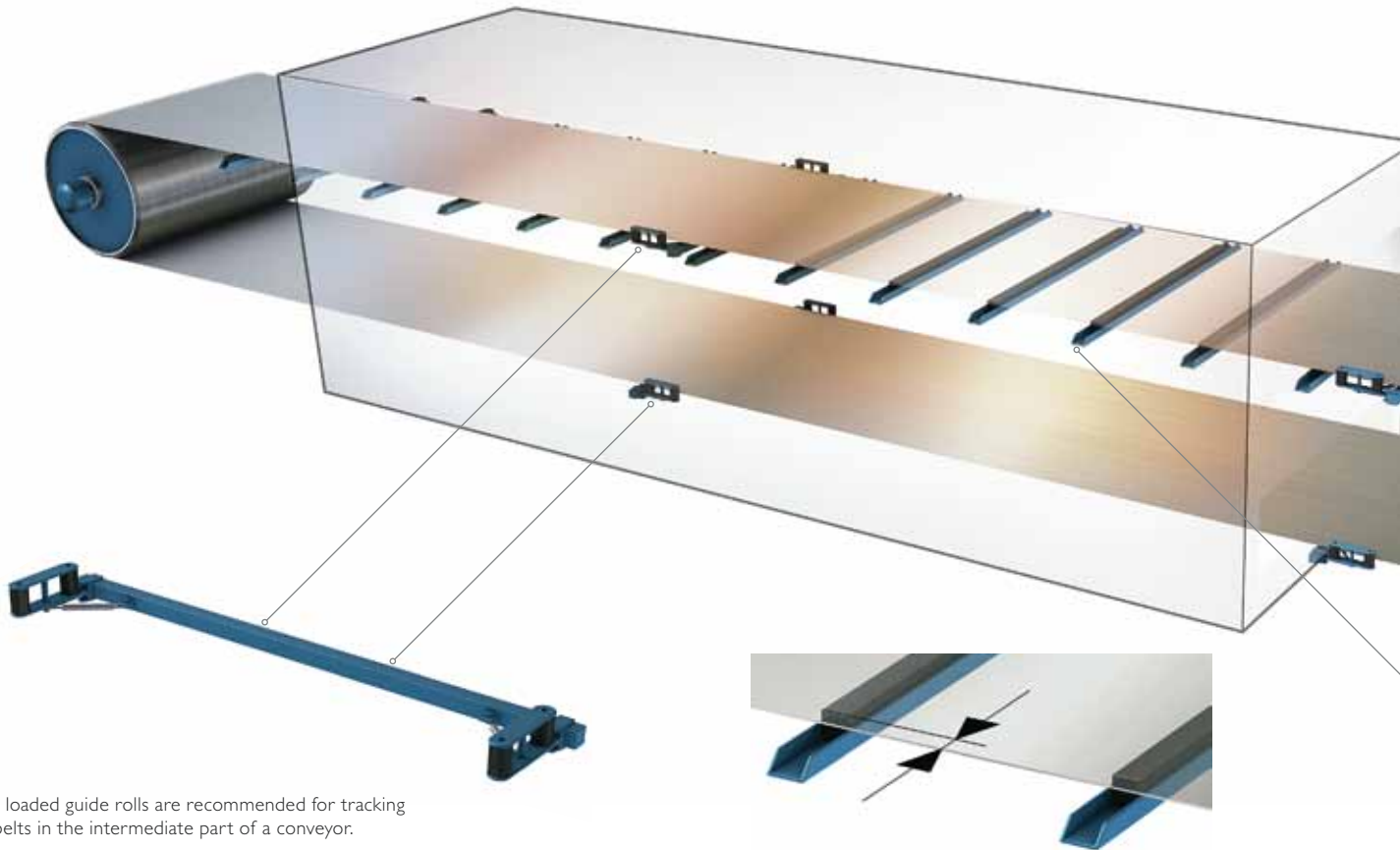
### Belt tracking control

To ensure that acceptable tracking tolerances are maintained and belt alignment can be adjusted, we offer several belt tracking controls, providing both active and passive system solutions.

For more information on alternative systems available and further technical information, contact the local Sandvik office or our website

[www.smt.sandvik.com/sps](http://www.smt.sandvik.com/sps) for brochure PS-SB-454.

## Case story – conversion of a bake oven belt from a wire mesh belt to a steel belt



Spring loaded guide rolls are recommended for tracking steel belts in the intermediate part of a conveyor.

Skid support is narrower than the steel belt.



### Sandvik's total supply capability

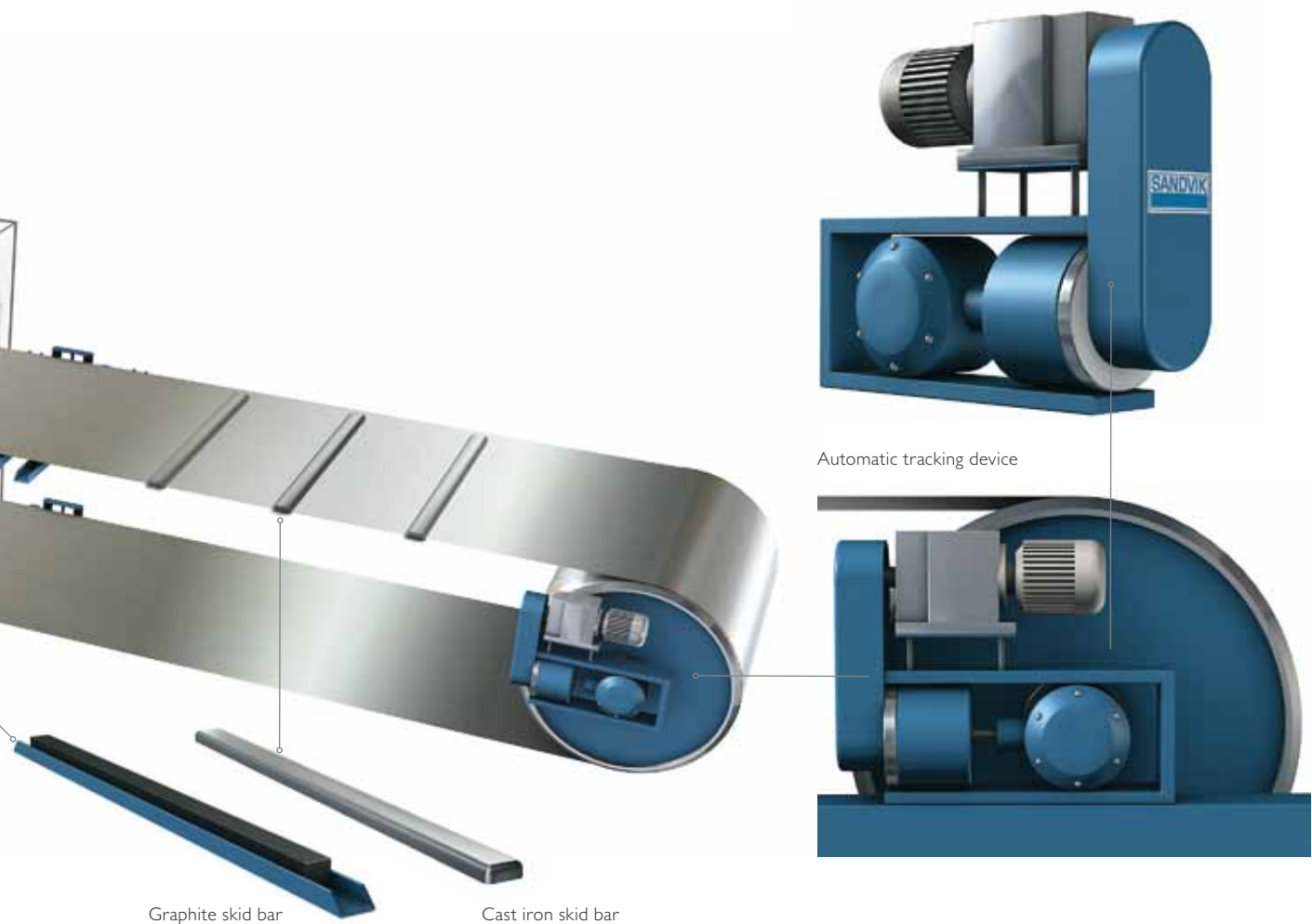
#### The objective

A Chinese customer producing thin crackers on a mesh belt planned to improve production volumes and to increase the number of product types he could manufacture to include a range of biscuits and cakes.

#### The solution

Sandvik supplied and installed a Sandvik 1300C solid steel belt, 1000mm wide, 1.2mm thick and 170m long, complete with new drums, scraper, spring loaded guiding rolls, an automatic tracking device, graphite skid bars and cast iron skid bars.

*See illustration above.*



Graphite skid bar

Cast iron skid bar

Automatic tracking device

**The installation**

Once installed the commissioning process revealed a belt tracking problem during the oven heating-up process, although belt tracking during actual production was stable. Sandvik engineers investigated temperature differences during the heating-up stage and discovered too great a variation in temperature across the belt.

Once the oven heating system was checked and rectified to ensure that the temperature across the belt was at a constant level throughout the heating-up process, the problem was solved.

**The result**

Our customer achieved his objective, increased his product range and increased production output, with products of a high and consistent quality. Importantly, all this was achieved with a short payback time on the investment.





## **Sandvik Process Systems – world leaders in steel belt process technology**

Sandvik Process Systems, a product area within Sandvik Materials Technology, designs, manufactures and installs steel belts and belt systems for the food, chemical, wood based panel, oil and gas and many other process industries.

Solid, perforated and special surface belts, smooth and textured endless press belts are produced and incorporated into tailor-made single and double belt systems for applications ranging from granulation, film/sheet casting and lamination to conveying, baking, drying, cooling, freezing and other specialized processes.

From the supply of steel belts to turnkey processing systems, Sandvik Process Systems uses its vast industry experience, combined with complementary expertise within the Sandvik Group, to deliver on its product promises anywhere in the world.

### THE SANDVIK GROUP

The Sandvik Group is a global high technology enterprise with 47,000 employees in 130 countries. Sandvik's operations are concentrated on three core businesses: Sandvik Tooling, Sandvik Mining and Construction and Sandvik Materials Technology – areas in which the group holds leading global positions in selected niches.

### SANDVIK MATERIALS TECHNOLOGY

Sandvik Materials Technology is a world-leading manufacturer of high value-added products in advanced stainless steels, special alloys, metallic and ceramic resistance materials, as well as process plants.

### QUALITY ASSURANCE

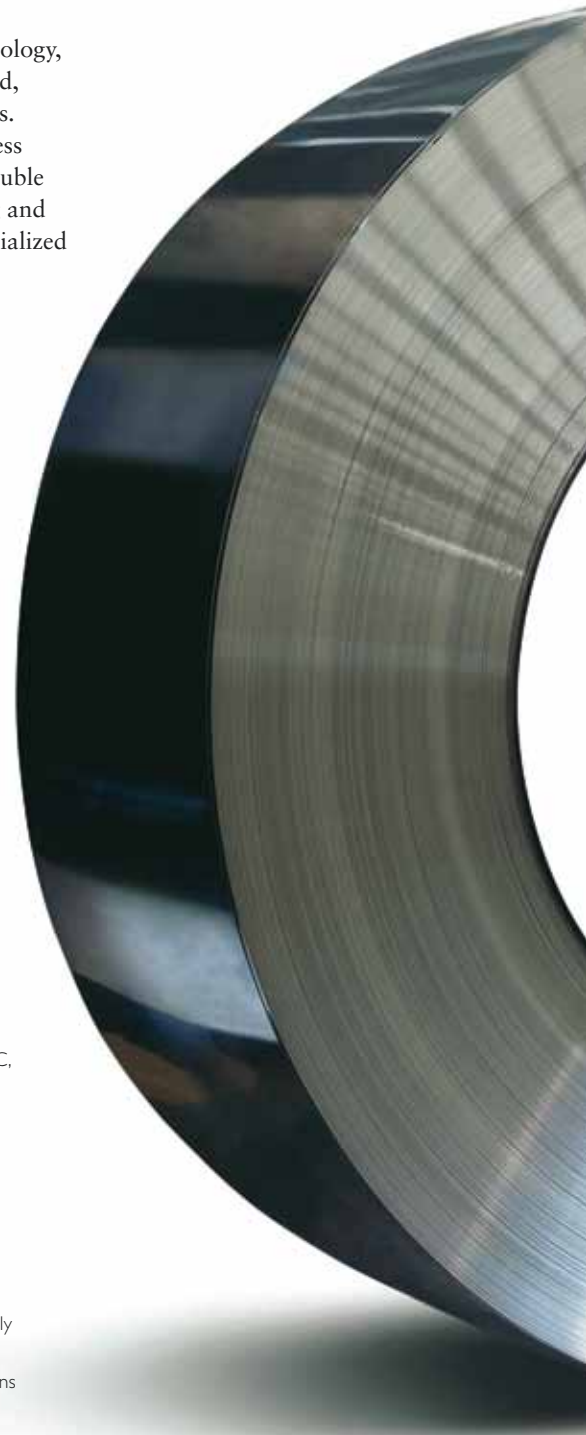
Sandvik Materials Technology has Quality Management Systems approved by internationally recognized organizations. We hold for example: the ASME Quality Systems Certificate as a Materials Organization, approval to ISO 9001, ISO/TS 16949, ISO 17025, and PED 97/23/EC, as well as product approvals from TÜV, JIS and Lloyd's Register.

### ENVIRONMENT, HEALTH & SAFETY

Environmental awareness, health and safety are integral parts of our business and are at the forefront of all activities within our operation. We hold ISO 14001 and OHSAS 18001 approvals.

### RESEARCH AND DEVELOPMENT

Sandvik has one of the largest steel research centers in Europe. New materials are constantly being developed and existing materials and production processes improved. In addition, we have a comprehensive program of liaison and cooperation with universities, research institutions and specialized companies that possess particular expertise.







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***Sandvik bake oven belts***  
***high quality belts***  
***for high quality baking***

**SANDVIK**