

# Steel belts for the chemical industry

High quality equipment for chemical processes

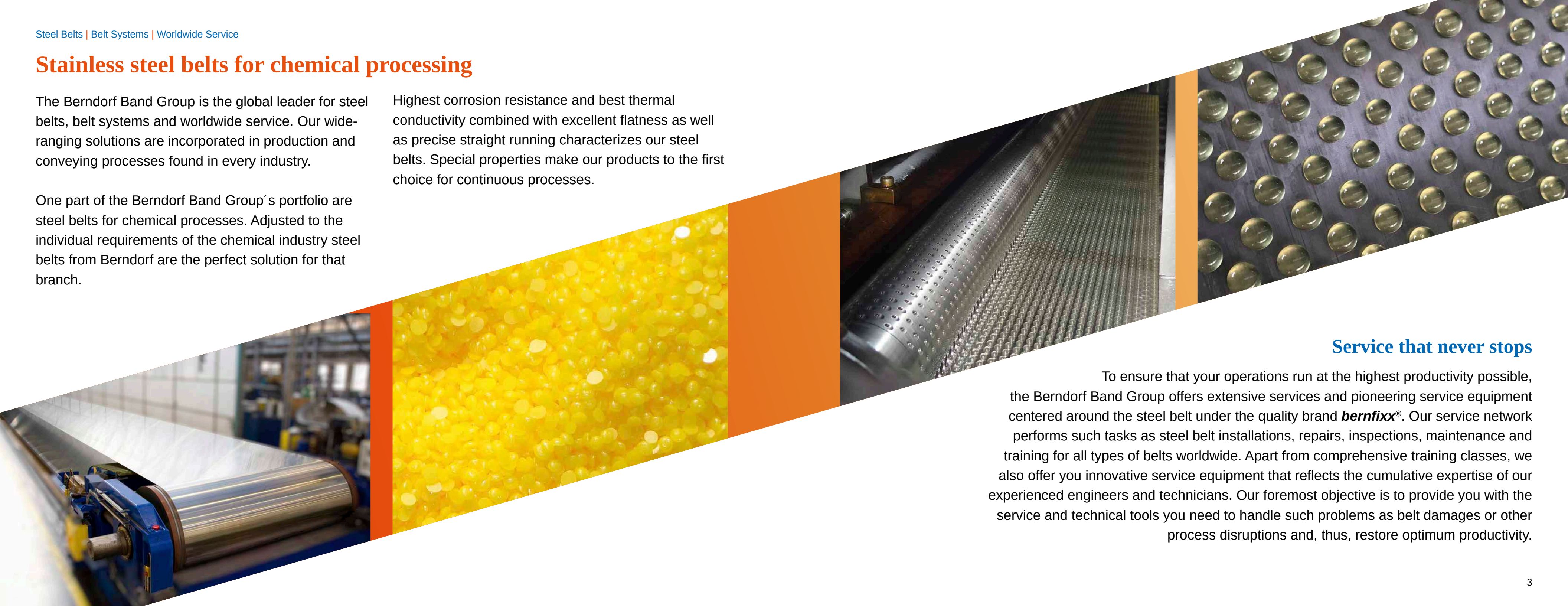


## Stainless steel belts for chemical processing

The Berndorf Band Group is the global leader for steel belts, belt systems and worldwide service. Our wide-ranging solutions are incorporated in production and conveying processes found in every industry.

One part of the Berndorf Band Group's portfolio are steel belts for chemical processes. Adjusted to the individual requirements of the chemical industry steel belts from Berndorf are the perfect solution for that branch.

Highest corrosion resistance and best thermal conductivity combined with excellent flatness as well as precise straight running characterizes our steel belts. Special properties make our products to the first choice for continuous processes.



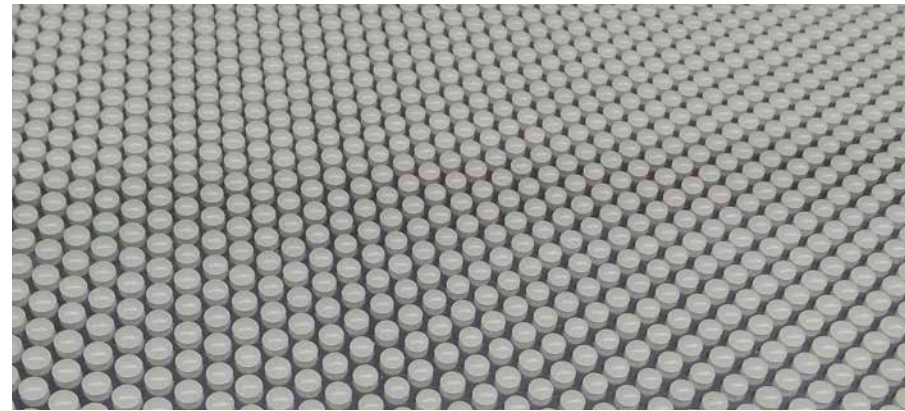
### Service that never stops

To ensure that your operations run at the highest productivity possible, the Berndorf Band Group offers extensive services and pioneering service equipment centered around the steel belt under the quality brand **berntfixx**<sup>®</sup>. Our service network performs such tasks as steel belt installations, repairs, inspections, maintenance and training for all types of belts worldwide. Apart from comprehensive training classes, we also offer you innovative service equipment that reflects the cumulative expertise of our experienced engineers and technicians. Our foremost objective is to provide you with the service and technical tools you need to handle such problems as belt damages or other process disruptions and, thus, restore optimum productivity.

# Steel belts for the chemical industry

Choosing the right belt material is of crucial importance for sectors like the chemical industry. Thanks to extensive research and development, special steels, which withstand the high requirements of the chemical industry, were developed. The steel belts are state of the art in regards to mechanical, physical and geometric properties. So they can withstand constant dynamic loads for a long period.

As your total solution provider, Berndorf Band Group offers complete packages to meet your demands. For the chemical industry we offer steel belts, process equipment and worldwide service to provide turnkey installations.



## ADVANTAGES

- » High-alloyed steel materials for corrosion resistance
- » High dynamic fatigue strength offers resistance to deformations
- » Perfect flatness guarantees uniform cooling and a precise product transport

## Steel belts for the chemical industry - physical and mechanical properties. Typical values.

Material			NICRO 12.1	NICRO 22	NICRO 31	NICRO 52	NICRO 52.6	NICRO 70	NICRO 85	NICRO 94	TITANIUM
Type			CrNi 17 7	CrNiMo 17 12 2	CrNiTi 13 4	CrNiCuTi 15 7	CrNiCuTi 15 7	NiCr 22 Mo 9 Nb	CrNiMoN 25 7 4	CrNiMoN 22 5 3	Grade 2
Similar material		DIN AISI	1.4310 301	1.4401 316	1.4313 -	- -	- -	2.4856 -	1.4410 -	1.4462 -	3.7035 -
Tensile Strength	at 20 °C at 68 °F	N/mm <sup>2</sup> psi	1,150 166,800	1,100 159,500	1,080 156,600	1,150 166,800	1,550 224,800	870 126,200	1,350 195,800	1,400 203,100	390 56,600
0,2%-yield offset strength	at 20 °C at 68 °F	N/mm <sup>2</sup> psi	950 137,800	970 140,700	1,050 152,300	1,100 159,500	1,500 217,600	570 82,700	1,250 181,300	1,050 152,300	275 39,900
Hardness		Rockwell HRC Vickers HV 10	37.0 360	33.0 330	33.0 330	37.0 360	48.0 480	24.0 260	39.0 380	36.0 350	- 160
Elongation 50 mm/1,97 inch		%	18	12	5	8	6	25	6	9.5	20
Welding factor			0.70	0.65	0.95	0.95	0.80	0.75	0.70	0.65	0.95
Fatigue strength under reversed bending stress*	at 20 °C at 68 °F	N/mm <sup>2</sup> psi	480 69,600	440 63,800	480 69,600	500 72,500	700 101,500	475 68,900	385 55,900	450 65,300	250 36,300
Modulus of elasticity	at 20 °C	N/mm <sup>2</sup>	200,000	200,000	205,000	200,000	200,000	205,000	200,000	200,000	106,000
	at 200 °C	N/mm <sup>2</sup>	180,000	180,000	-	188,000	188,000	200,000	186,000	184,000	-
	at 68 °F bei 392 °F	kpsi kpsi	29,000 26,100	29,000 26,100	29,700 -	29,000 27,300	29,000 27,300	29,700 29,000	29,000 27,000	29,000 26,700	15,400 -
Density		kg/dm <sup>3</sup> lbm/in <sup>3</sup>	7.90 0.29	7.95 0.29	7.70 0.28	7.74 0.28	7.74 0.28	8.44 0.30	7.80 0.28	7.80 0.28	4.53 0.16
	20-100 °C 20-200 °C 20-300 °C 20-400 °C	10 <sup>-6</sup> m/m°C 10 <sup>-6</sup> m/m°C 10 <sup>-6</sup> m/m°C 10 <sup>-6</sup> m/m°C	16.0 17.0 - -	16.5 17.5 - -	10.8 11.2 11.7 -	10.9 11.5 11.7 -	10.9 11.5 11.7 -	12.8 13.1 13.3 -	13.0 13.5 14.0 -	13.3 13.8 14.2 -	8.5 8.9 - -
Mean coefficient of thermal expansion	68-212 °F	10 <sup>-6</sup> in/in°F	8.9	9.2	6.0	6.0	6.0	7.1	7.2	7.4	4.7
	68-392 °F	10 <sup>-6</sup> in/in°F	9.4	9.7	6.2	6.4	6.4	7.3	7.5	7.7	4.9
	68-572 °F	10 <sup>-6</sup> in/in°F	-	-	6.5	6.5	6.5	7.4	7.8	7.9	-
	68-752 °F	10 <sup>-6</sup> in/in°F	-	-	-	-	-	-	-	-	-
Specific heat		J/g°C BTU/lb°F	0.50 0.12	0.50 0.12	0.46 0.11	0.50 0.12	0.50 0.12	0.41 0.10	0.50 0.12	0.50 0.12	0.52 0.12
	at 20 °C at 68 °F	W/m°C BTU/hr ft°F	15 8.7	15 8.7	21 12.1	16 9.2	16 9.2	9.8 5.7	15 8.7	15 8.7	20 11.6
Specific electric resistance	at 20 °C	Ω mm <sup>2</sup> /m	0.73	0.75	0.60	0.80	0.80	1.29	0.80	0.80	0.78
	at 68 °F	Ω mil <sup>2</sup> /in°F	28.74	29.53	23.62	31.50	31.50	50.79	31.50	31.50	30.71
Min. permissible operating temperature		°C °F	-196 -321	-196 -321	- -	- -	- -	-196 -321	-50 -58	-50 -58	- -
		°C °F	250 480	250 480	350 660	350 660	350 660	300 570	250 480	250 480	250 480
Tensile strength at max. permissible operating temperature		N/mm <sup>2</sup> psi	940 136,300	870 126,200	970 140,700	900 130,500	1,250 181,300	770 111,700	1,070 155,200	1,130 163,900	225 32,600
		N/mm <sup>2</sup> psi	770 111,700	770 111,700	930 134,900	830 120,400	1,180 171,100	420 60,900	1,020 147,900	990 143,800	135 19,600

Special materials available upon request.

\*50 % of the test specimens withstand 2,000,000 load cycles. If not otherwise specified, the values given apply at room temperature. Subject to change due to technological progress. Errors and omissions excepted.

## Vee-ropes & retaining strips

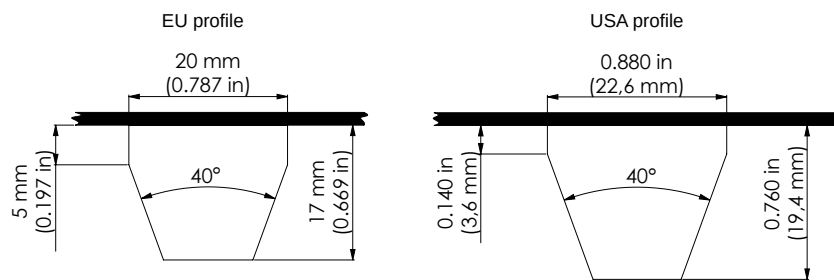
Steel belts can be equipped with vee-ropes and/or product retaining strips. A special developed gluing process ensures optimal adhesion even under difficult production conditions.

### Temperature resistant vee-ropes to enable the forced guidance of the steel belt

Vee-rope-material	Operating temperatures
Nitrile rubber	-20 °C to +100 °C   -4 °F to +212 °F
Natural rubber	-60 °C to +60 °C   -76 °F to +140 °F
Stainless steel spiral vee-rope	exceeding +100 °C   exceeding +212 °F

### Product retaining strips to prevent leakage

Retaining strip-material	Operating temperatures
Nitrile rubber	-20 °C to +100 °C   -4 °F to +212 °F
Natural rubber	-60 °C to +60 °C   -76 °F to +140 °F
Silicone rubber	-80 °C to +300 °C   -112 °F to +572 °F



## Belt tracking, guiding & supporting sheaves

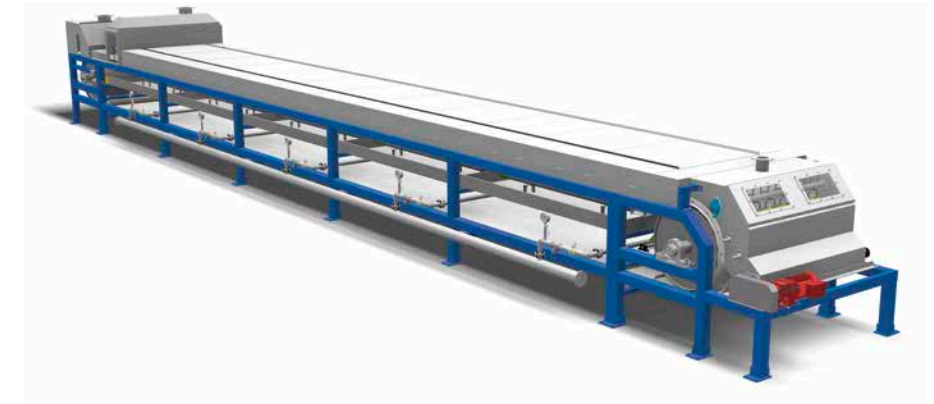
A wide range of guiding and supporting sheaves as well as alternative belt tracking systems are available to keep the belt tension constant. For further information including an overview of the belt tracking solutions please contact your Berndorf Band Group representative or visit

[www.berndorfband-group.com](http://www.berndorfband-group.com).



## Process equipment

As a full-service provider, we offer complete packages and support you in all phases of your project. Berndorf process equipment includes the implementation, construction, installation and maintenance of steel belt solidification- and cooling systems. Process equipment is mainly applied to the chemical and petrochemical industries, but many branches like sulphur or powder paint profit from our technology.



## Cooling systems

Berndorf cooling systems include single- and double belt coolers, which are used in numerous production processes to cool down melted products. Which cooling system is used mainly depends on the viscosity of the material to be processed. Products with low to medium viscosity, density and specific heat are usually processed by the single belt cooler. Raw materials with medium to high viscosity are handled by double belt coolers.


## Feeding devices

The variety of Berndorf feeding devices has been developed to meet different process requirements for a wide range of products. The versatile application possibilities enable the production of materials from low to high viscosities and a melting temperature of up to 300 °C | 572 °F as well as the production of pastilles in different sizes simply by exchanging the outer shell and nozzle bar, with or without refeed bar. Available Berndorf feeding devices are **berndrop®** and **bernflow®**.





The application areas for steel belts and belt systems of Berndorf Band Group are as broad and individual as your requirements. Give us the opportunity to discuss your goals in a personal meeting. Together we will find the right solution for your requirements.

## Our worldwide sales and service network available on [www.berndorfband-group.com](http://www.berndorfband-group.com)

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