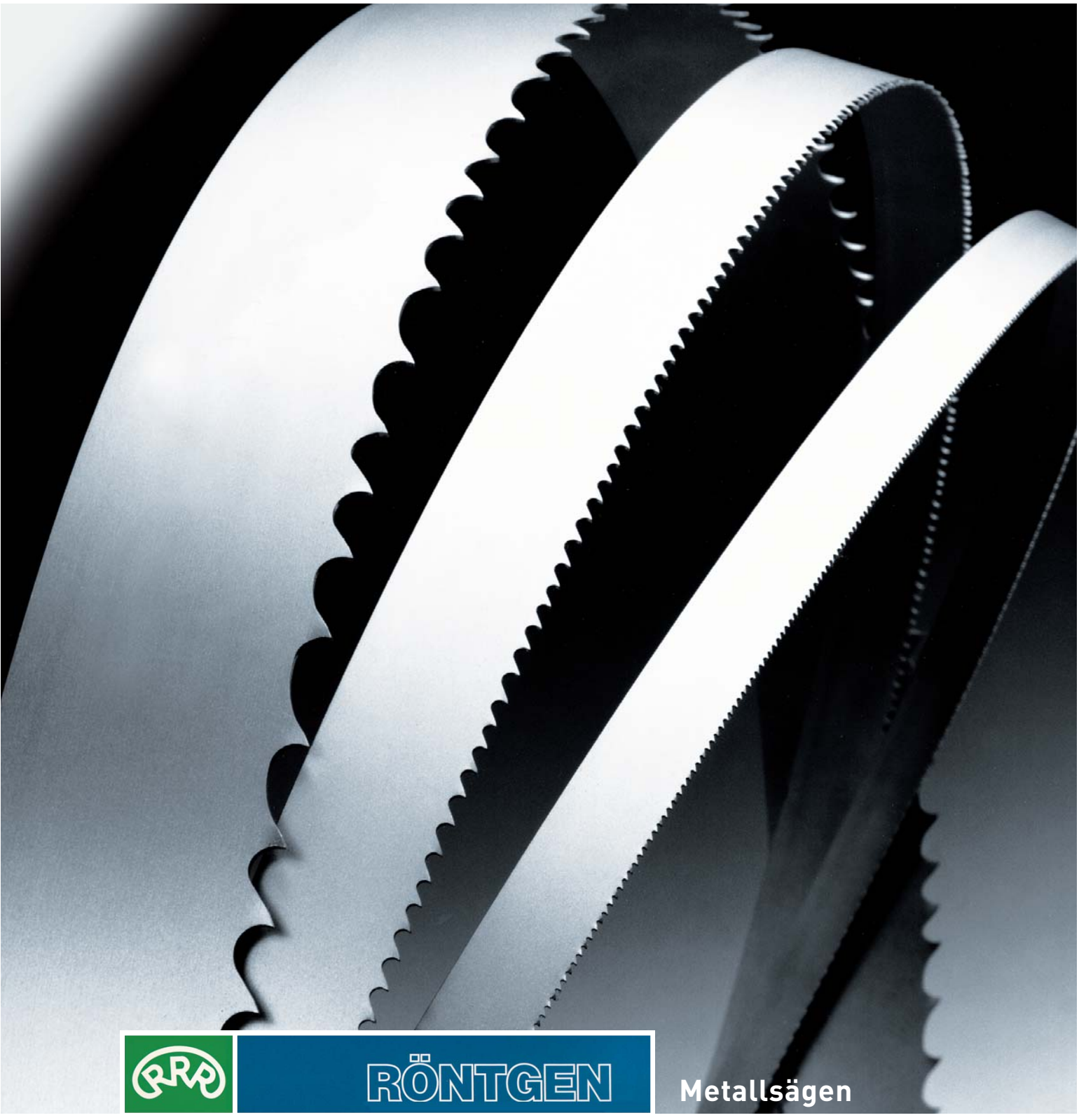
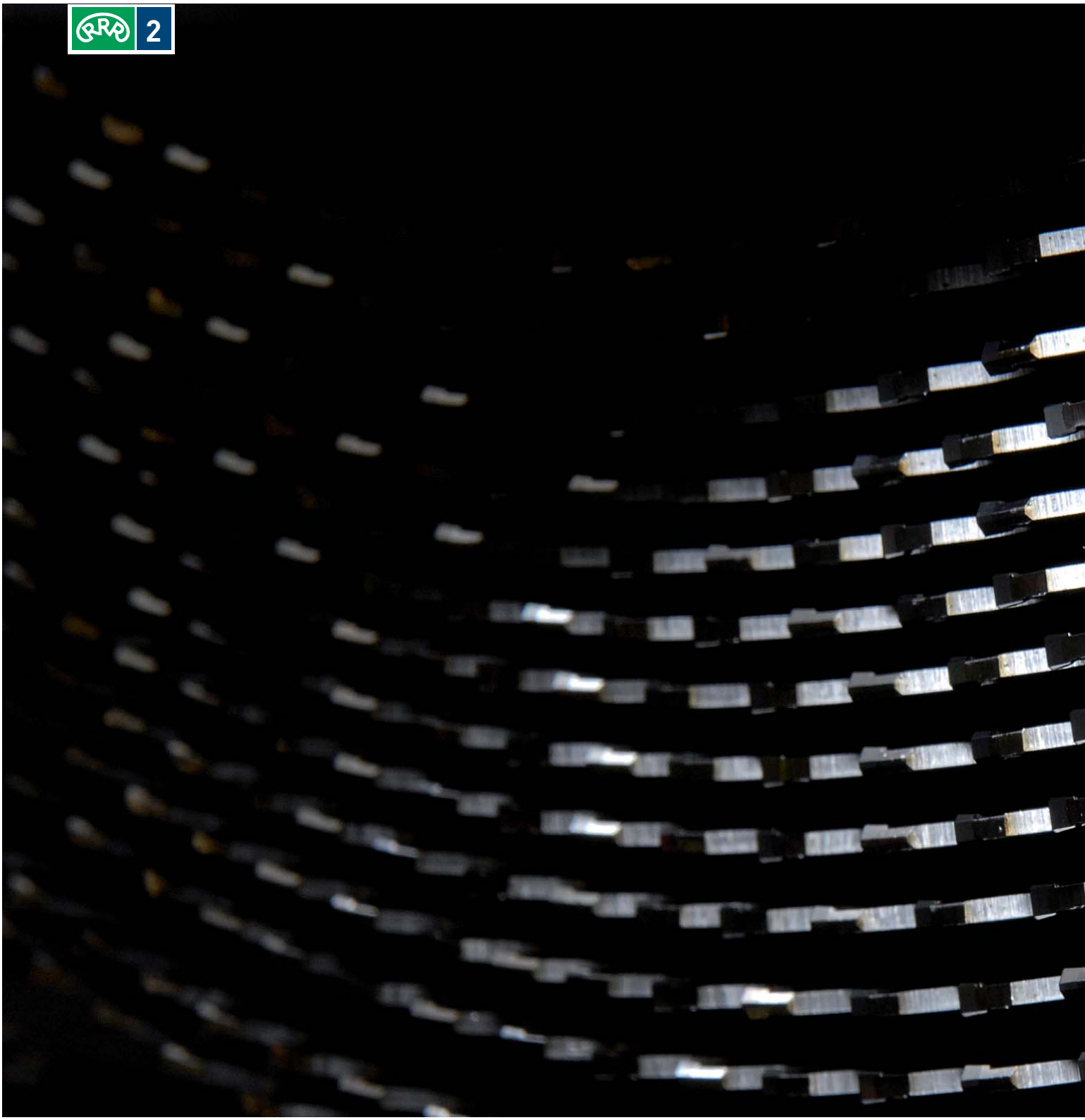
RÖNTGEN
Quality and Innovation with Tradition





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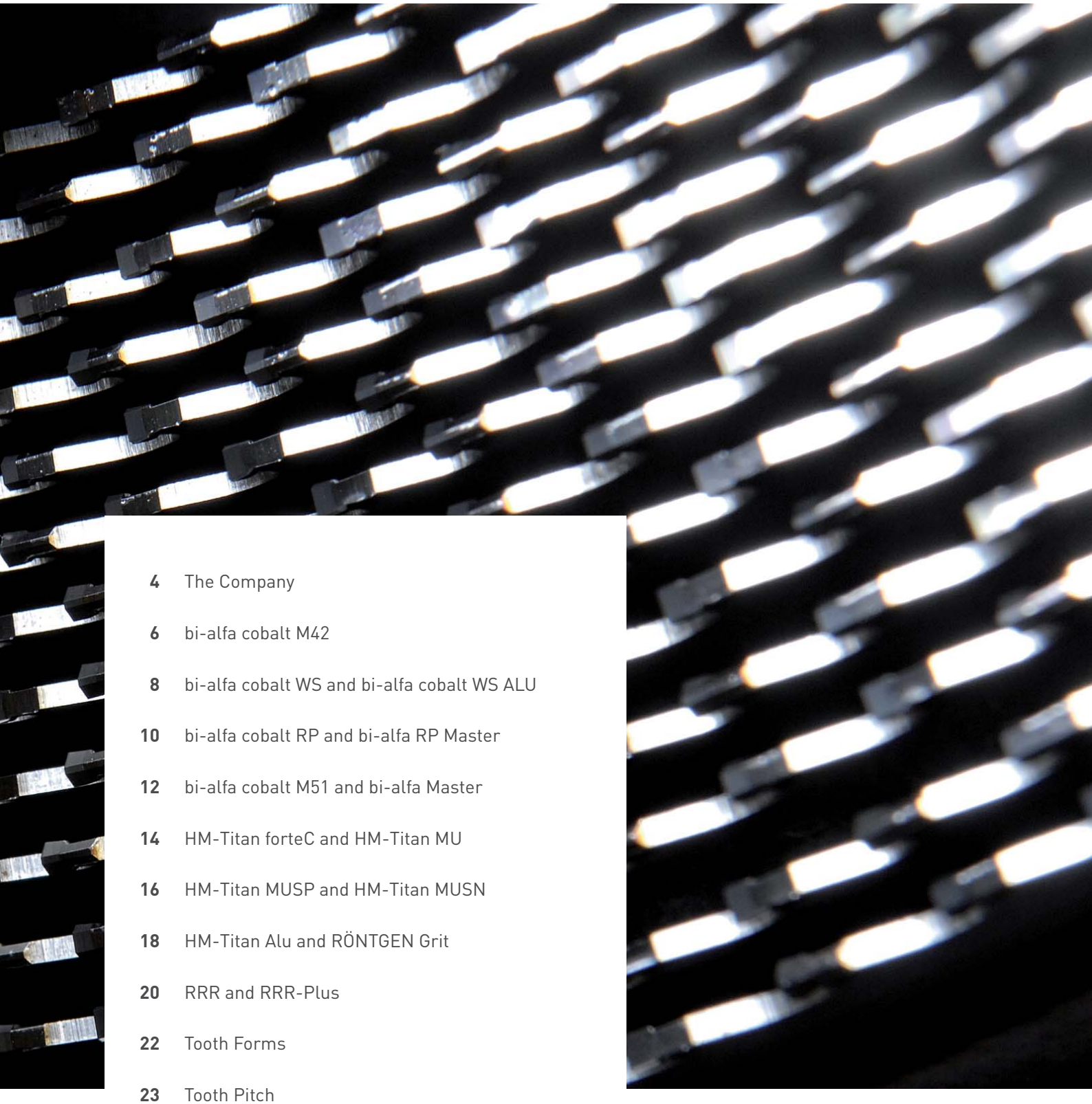
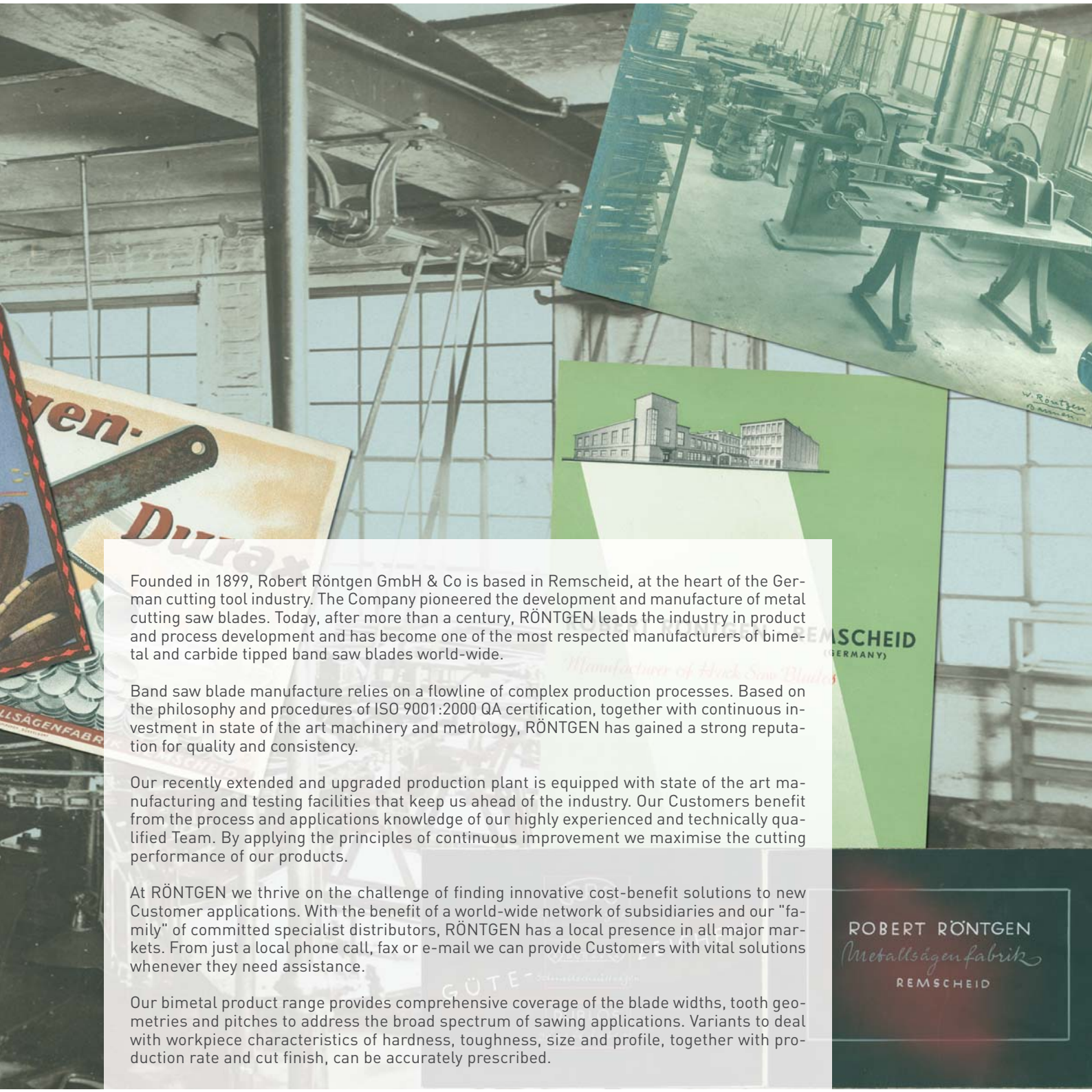



Remscheid, den 7 Juli 1902
Bau-Erlaubniß.
Chiedere sempre le insuperabili
Seghette da metallo
DURAX
Una sola
seghetta
ROBERT RÖNTGEN
Metallsägen-Fabrik
REMSCHEID
Prüfungs-Zeugnis
über Metall-Sägeblätter
schwedischen und deutschen Ursprungs
DURAX
Cuts all
metals, even
the hardest
unannealed
Cast
Steel
ROBERT RÖNTGEN

The company



Founded in 1899, Robert Röntgen GmbH & Co is based in Remscheid, at the heart of the German cutting tool industry. The Company pioneered the development and manufacture of metal cutting saw blades. Today, after more than a century, RÖNTGEN leads the industry in product and process development and has become one of the most respected manufacturers of bimetal and carbide tipped band saw blades world-wide.

Band saw blade manufacture relies on a flowline of complex production processes. Based on the philosophy and procedures of ISO 9001:2000 QA certification, together with continuous investment in state of the art machinery and metrology, RÖNTGEN has gained a strong reputation for quality and consistency.

Our recently extended and upgraded production plant is equipped with state of the art manufacturing and testing facilities that keep us ahead of the industry. Our Customers benefit from the process and applications knowledge of our highly experienced and technically qualified Team. By applying the principles of continuous improvement we maximise the cutting performance of our products.

At RÖNTGEN we thrive on the challenge of finding innovative cost-benefit solutions to new Customer applications. With the benefit of a world-wide network of subsidiaries and our "family" of committed specialist distributors, RÖNTGEN has a local presence in all major markets. From just a local phone call, fax or e-mail we can provide Customers with vital solutions whenever they need assistance.

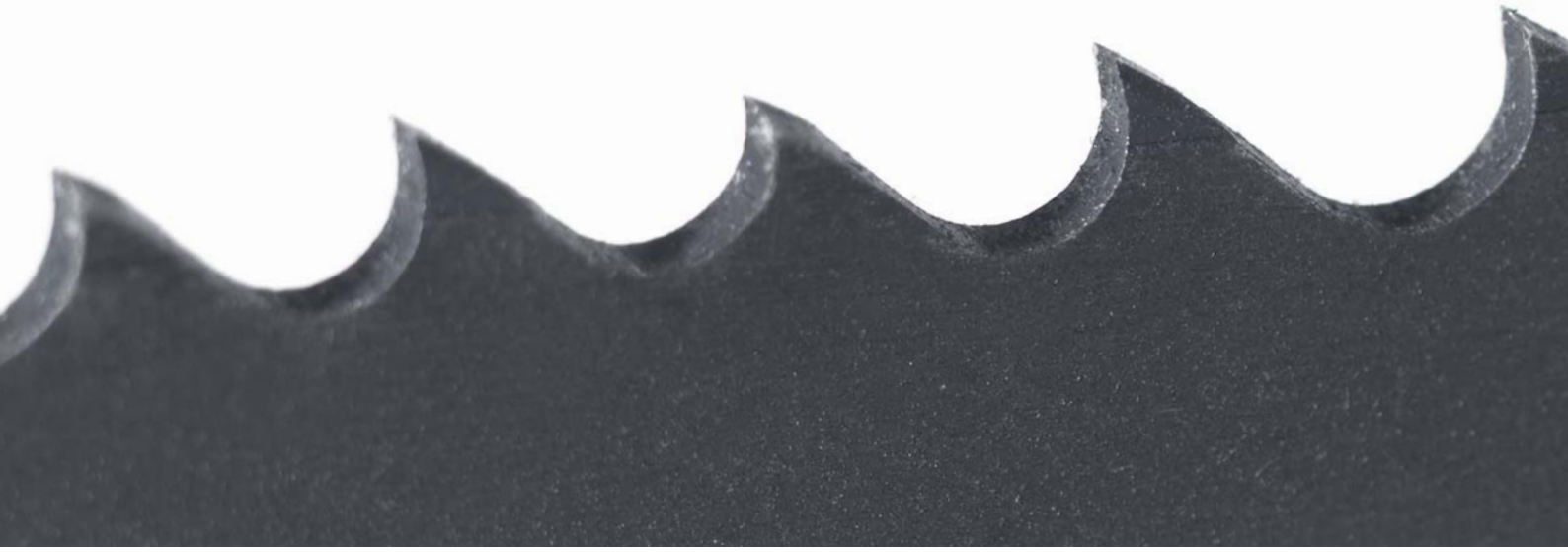
Our bimetal product range provides comprehensive coverage of the blade widths, tooth geometries and pitches to address the broad spectrum of sawing applications. Variants to deal with workpiece characteristics of hardness, toughness, size and profile, together with production rate and cut finish, can be accurately prescribed.

For more demanding applications, particularly where high cutting rates on difficult materials are involved, RÖNTGEN manufactures HM-Titan, a precision ground multi chip Tungsten Carbide tipped band saw blade range. The successful application of carbide sawing technology requires support from experienced specialists and a consistent high precision product. RÖNTGEN has recently made major investments in the most advanced production technology which, added to their comprehensive applications know-how, provides Customers with unrivalled productivity solutions.

There are some applications where the use of toothed saw blades is not appropriate. Glass, tyres, ceramics and other non chip forming materials can be successfully sawn with the RÖNTGEN Grit range. We can supply blade widths and grit sizes to suit most machines and material applications.

To complete out the RÖNTGEN programme, we manufacture a full range of the traditional carbon steel band saw blades. Type RRR (flexback) for non-ferrous and wood cutting and type RRR-Plus (hardback) for steel cutting.

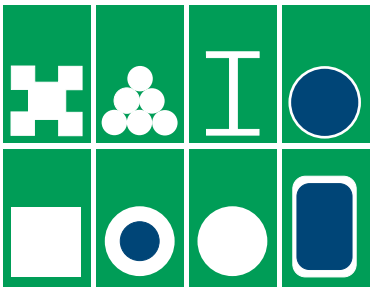
With more than 100 years of experience in the application and manufacture of metal cutting band saw blades worldwide, and our investment in the most advanced plant, and qualified people, we are at the forefront of our industry.



bi-alfa cobalt M42

The RÖNTGEN bi-alfa cobalt band saw blade has HSS M42 cutting tips. The high wear resistance of the saw blade results from the very hard and evenly distributed carbides in the tooth tips, formed during the hardening and tempering process. The martensitic structure of the cutting tips and high cobalt content create excellent hot hardness and toughness reducing wear rates at high sawing speeds. With a steel backing strip containing around 4% chromium, the saw blade can withstand the considerable flexing stresses, tension and blade guide pressure present in modern sawing machines.

Recommended applications



» All materials with a tensile strength up to 1400 N/mm^2 (44 HRc)

Supply options

» Up to 13 mm band width - optional coil length of 30 m packed in a plastic box
» Standard coil length either 50, 75 or 100 m, dependant on blade width, and packed in wooden boxes
» Welded loops
» For alternative coil lengths and packing options please contact us directly

Teeth per inch (normal toothing)

	0.75	1.25	2	3	4	6	8	10	14	18
6 x 0.6						■				
6 x 0.9						■		■	■	
10 x 0.6						■				
10 x 0.9					■	■	■	■	■	
13 x 0.6						■		■	■	
13 x 0.9				■	■	■	■	■	■	
20 x 0.9				■	■				■	■
27 x 0.9			■	■ / ■	■ / ■	■ / ■	■	■	■	
34 x 1.1		■	■	■ / ■	■ / ■	■	■	■		
41 x 1.3		■	■	■	■					
54 x 1.3		■								
54 x 1.6		■	■	■						
67 x 1.6		■	■							
80 x 1.6	■									

Width x Thickness (mm)

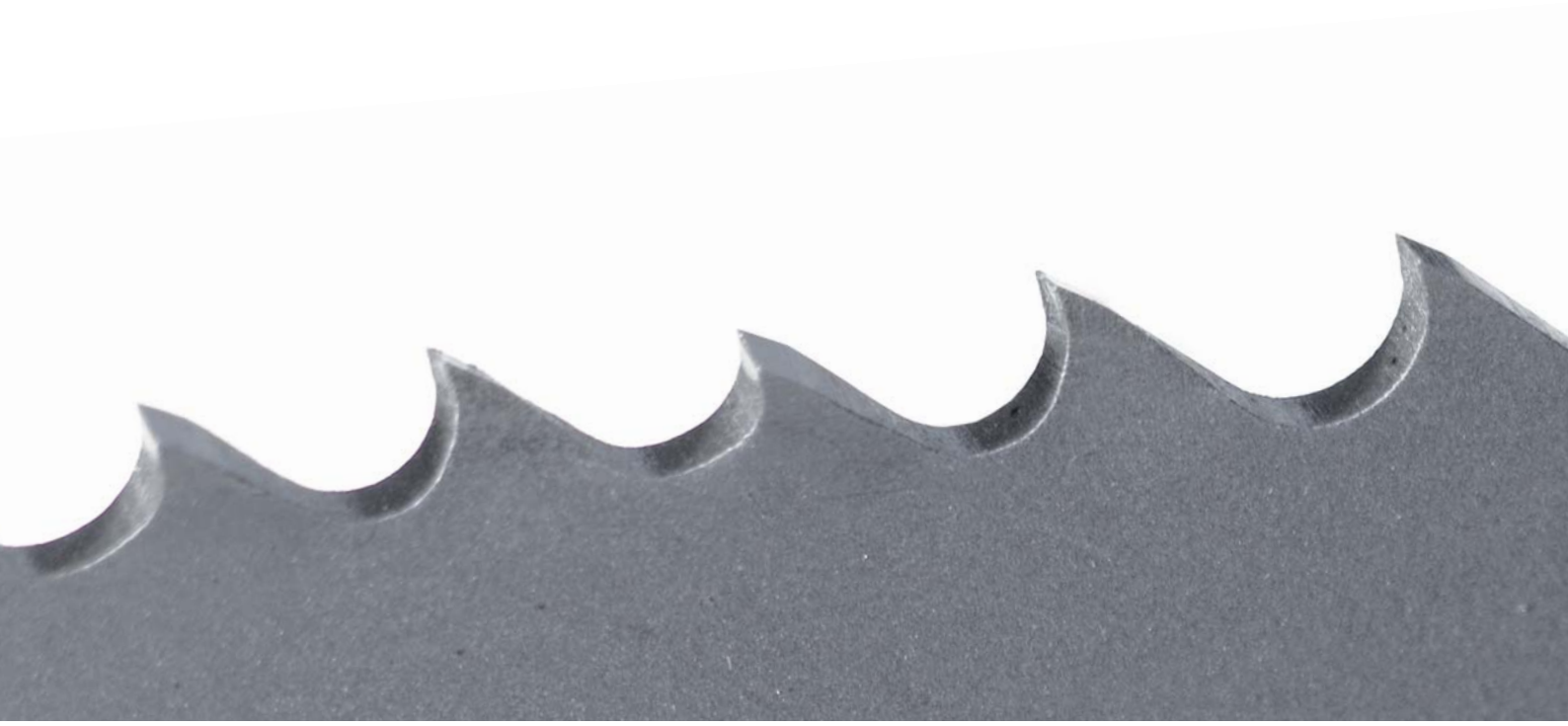
■ = Hook tooth ■ = Normal tooth

Teeth per inch (combi toothing)

	0.75 / 1.25	1.1 / 1.6	1.5 / 2	2 / 3	3 / 4	4 / 5	4 / 6	5 / 6	5 / 8	6 / 10	8 / 12	10 / 14
6 x 0.6												■
6 x 0.9												■
10 x 0.6												■
10 x 0.9												■
13 x 0.6										■	■	■
13 x 0.9												■
20 x 0.9							■		■	■	■	■
27 x 0.9				■	■ / ■	■	■ / ■	■	■	■	■	■
34 x 1.1				■	■ / ■	■	■ / ■	■	■	■	■	
41 x 1.3			■	■	■ / ■	■	■ / ■		■	■	■	
54 x 1.3		■	■	■	■	■	■					
54 x 1.6	■	■	■	■	■	■	■	■				
67 x 1.6	■	■	■	■	■							
80 x 1.6	■	■	■	■								

Width x Thickness (mm)

■ = Hook tooth ■ = Normal tooth



bi-alfa cobalt WS

The RÖNTGEN bi-alfa cobalt WS Profile band saw blade is produced with HSS M42 cutting tips for abrasion resistance. The saw blade features a wider than normal set to create more clearance through the cut. The wider cutting channel helps to prevent the blade from binding and stalling in the cut, a common feature of structural steels.

Recommended applications

» All work pieces - especially structural steels - with high tension.

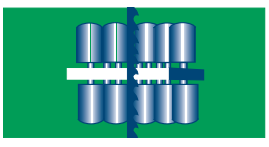
Supply options

» Coil length of 50-100 m in wooden boxes dependant on the blade width
» Welded loops

bi-alfa cobalt WS ALU

The RÖNTGEN bi-alfa cobalt WS Alu band saw blade is produced with HSS M42 cutting tips for abrasion resistance. The saw blade features a wide kerf and a more aggressive cutting angle. This facilitates a more efficient chip flow, reduces binding and clogging, and promotes longer blade life for all non-ferrous metals.

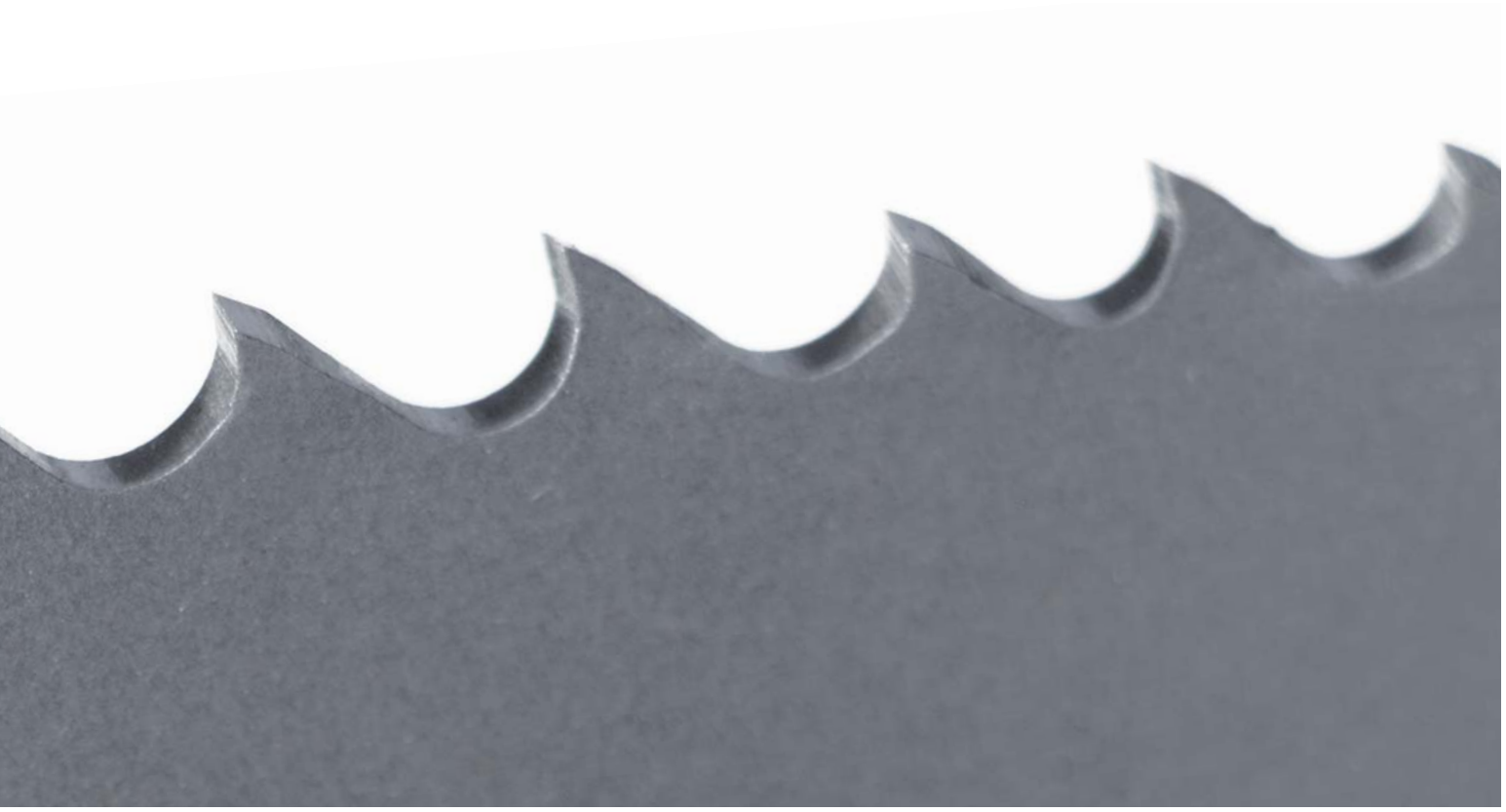
Recommended applications



» Cutting of non-ferrous plate, bar and gates and risers on castings. For aluminium with a silicon content below 7%.

Supply options

» Coil length approx. 100 m, packed in wooden boxes
» Welded loops



teeth per inch

	2 / 3	3 / 4	4 / 6
27 x 0.9		■	■
34 x 1.1	■	■	■
41 x 1.3	■	■	■
54 x 1.6	■	■	■
67 x 1.6			■

Width x Thickness (mm)

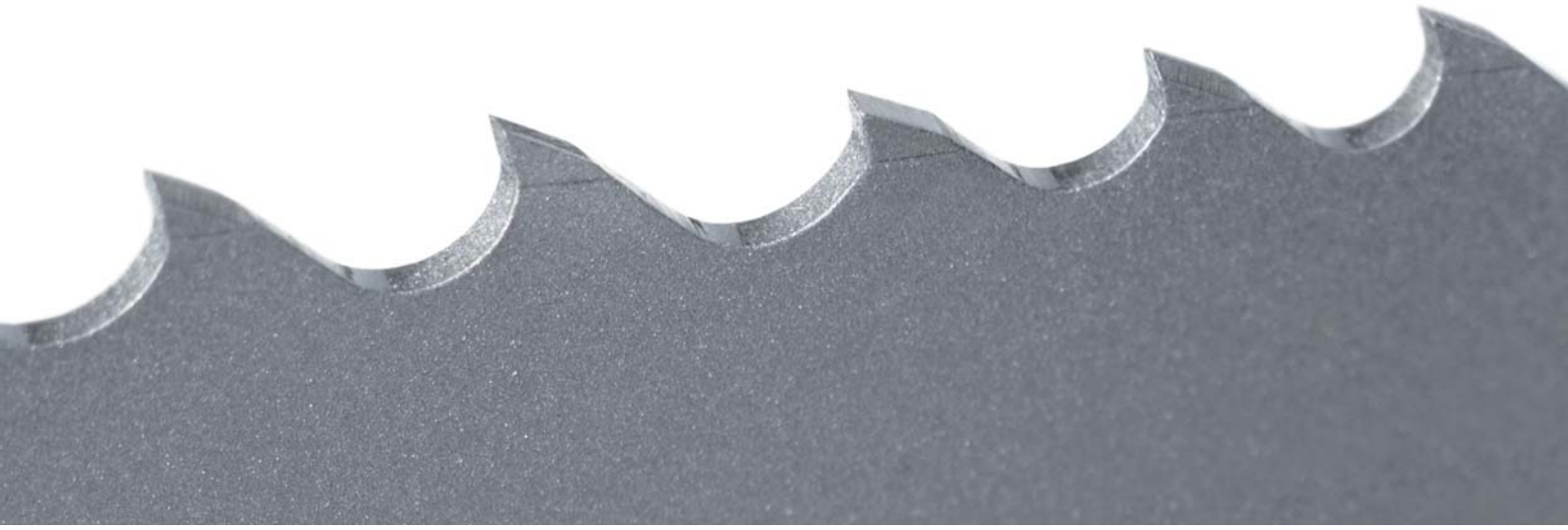
■ = Hook tooth

teeth per inch

	1.25	2	3	4
13 x 0.9			■	■
20 x 0.9			■	
27 x 0.9		■	■	■
27 x 1.1		■		
34 x 1.1	■	■	■	

Width x Thickness (mm)

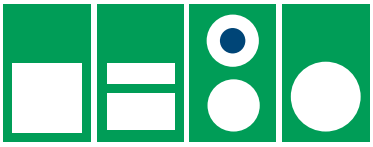
■ = Hook tooth



bi-alfa cobalt RP

RÖNTGEN bi-alfa cobalt RP is an extension of the highly successful bi-alfa M42 range. The tooth shape is produced with a cutting angle of 16° without any loss in tooth strength. This aggressive tooth form is ideal for hard materials, improving chip flow and blade life.

Recommended applications



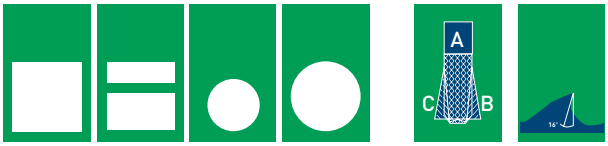
» Long chipping materials

Supply options
» Coil length of 50-100 m in wooden boxes dependant on the blade width
» Welded loops

bi-alfa RP Master

RÖNTGEN bi-alfa RP Master combines the precision sawing capabilities of the Master blade with the aggressive 16-degree cutting angle of the RP-tooth. The CBN ground finish linked to the triple chip tooth geometry guarantees fast and square sawing, and excellent cut finish even on the most difficult-to-cut materials.

Recommended applications



» Heat resistant steels, exotic alloys and stainless steel.
» Titanium, nickel base alloys
» Nickel based super alloys

Supply options
» Coil length of 50-100 m in wooden boxes dependant on the blade width
» Welded loops

Teeth per inch

	0.75 / 1.25	1.1 / 1.6	1.5 / 2	2 / 3	3 / 4
27 x 0.9					■
34 x 1.1				■	■
41 x 1.3			■	■	■
54 x 1.6		■	■	■	■
67 x 1.6	■	■	■	■	
80 x 1.6	■	■			

Width x Thickness (mm)
RP tooth

Teeth per inch

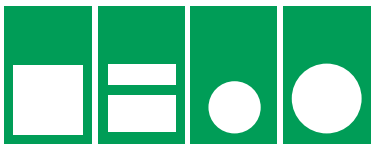
	0.75 / 1.25	1.1 / 1.6	1.5 / 2	2 / 3	3 / 4
34 x 1.1				■	■
41 x 1.3			■	■	■
54 x 1.6		■	■	■	■
67 x 1.6	■	■	■		
80 x 1.6	■	■			

Width x Thickness (mm)
Master tooth

bi-alfa cobalt M51

The RÖNTGEN bi-alfa cobalt M51 band saw blade has an alloyed steel backing with about 4% chromium content and an HSS M51 cutting edge. Due to the cobalt and tungsten content of the cutting tips, the blade has high thermal and mechanical wear resistance.

Recommended applications



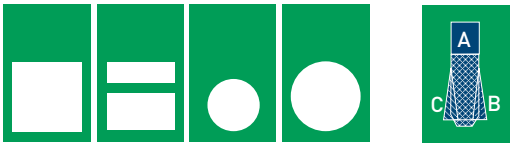
» Hard and abrasive steels at high cutting speeds
» Typically heat, corrosion and acid resistant steels particularly with a hardness up to 50HRc.
» Higher cutting speeds will not compromise blade life or cut finish.

Supply options
» Coil length of 50-100 m in wooden boxes dependant on the blade width
» Welded loops

bi-alfa Master

The RÖNTGEN bi-alfa Master band saw blade harnesses the benefits of "triple chip" tooth geometry, widely recognised as the optimal form for production sawing. The teeth are CBN precision ground to form a chamfered high tooth (A) and a pair of lower finishing teeth (B & C). Cutting faces are ground parallel to the back edge ensuring absolutely straight cutting. The M42 tooth tips have a height difference calculated to suit the typical chip load characteristics of each blade width/pitch combination. High cutting rates can be achieved without compromising blade life or cut finish.

Recommended applications



» Heat resistant steels,
» Titanium
» Exotic alloys and stainless steel.
» Heat resistant steels and titanium

Supply options
» Coil length of 50-100 m in wooden boxes dependant on the blade width
» Welded loops

Teeth per inch

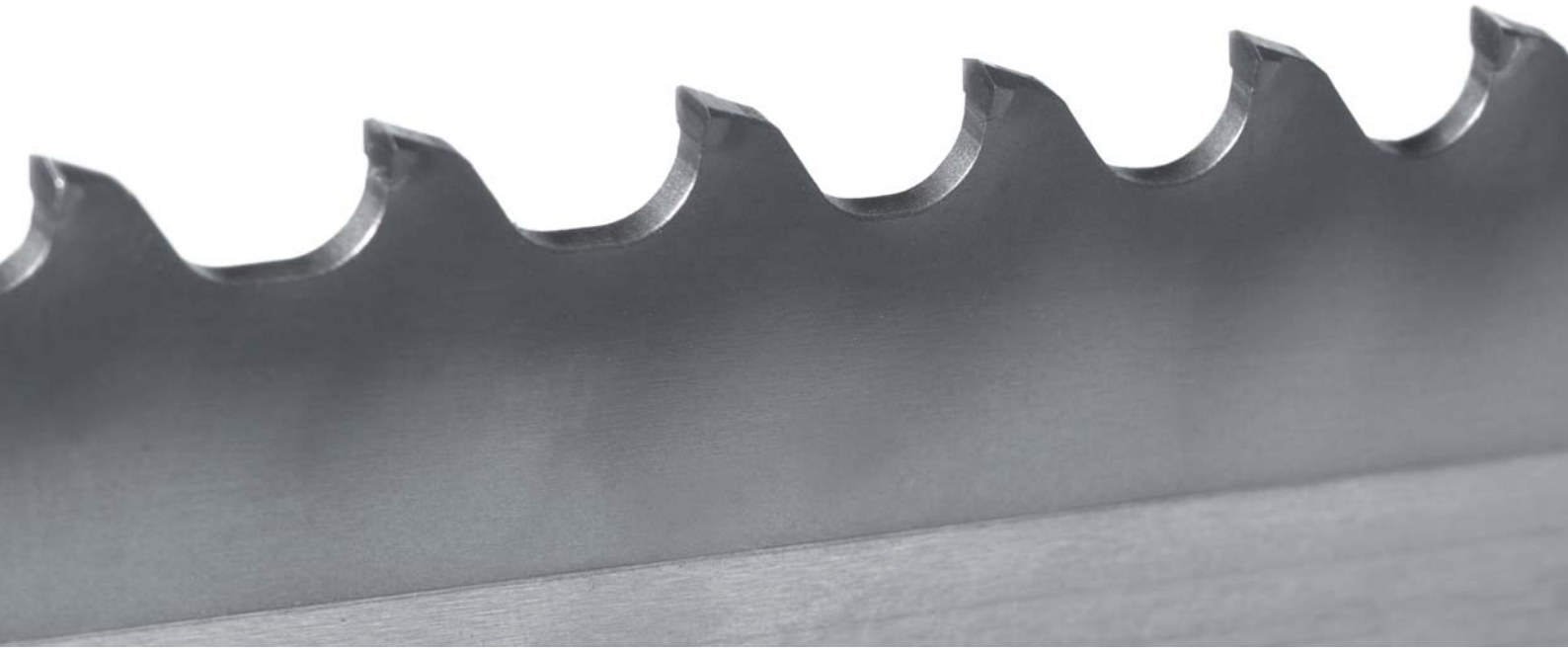
	0.75 / 1.25	1.1 / 1.6	1.5 / 2	2 / 3	3 / 4	4 / 6
27 x 0.9					■	■
34 x 1.1				■	■	■
41 x 1.3			■	■	■	■
54 x 1.6			■	■	■	■
67 x 1.6	■	■	■	■		
80 x 1.6	■					

Width x Thickness (mm)
Hook tooth

Teeth per inch

	0.75 / 1.25	1.1 / 1.6	1.5 / 2	2 / 3	3 / 4
27 x 0.9					■
34 x 1.1				■	■
41 x 1.3			■	■	■
54 x 1.3			■		
54 x 1.6		■	■	■	■
67 x 1.6	■	■	■		
80 x 1.6	■				

Width x Thickness (mm)
Master tooth



HM-Titan forteC

The high-performance band saw blade HM-Titan forteC benefits from carbide tips secured by electronic controlled welding into a spherical milled pocket formed in the special alloy backing strip.

The special coating over the tooth tips allows a significantly higher cutting performance along with an increased service life.

The HM-Titan forteC has an immediate contribution to efficiency and productivity right from the beginning as a break-in procedure at lower cutting parameters is not necessary.

Recommended applications

» Tool Steels, hardened and high-speed steels, stainless steels, chromium-nickel-steels, nickel-based alloys

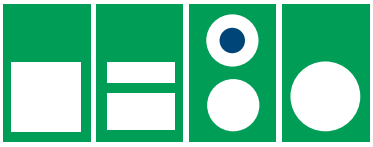
Supply options

» Coil length approx. 50 m supplied in wooden boxes
» Teeth protected with plastic capping
» Welded loops

HM-Titan MU

The high performance band saw blade Röntgen HM-Titan MU was developed to cut a wide range of materials. The special designed tooth geometry produces better chip separation with low noise and very high cutting rates. This results in significantlly reduced cutting times combined with an excellent cut finish.

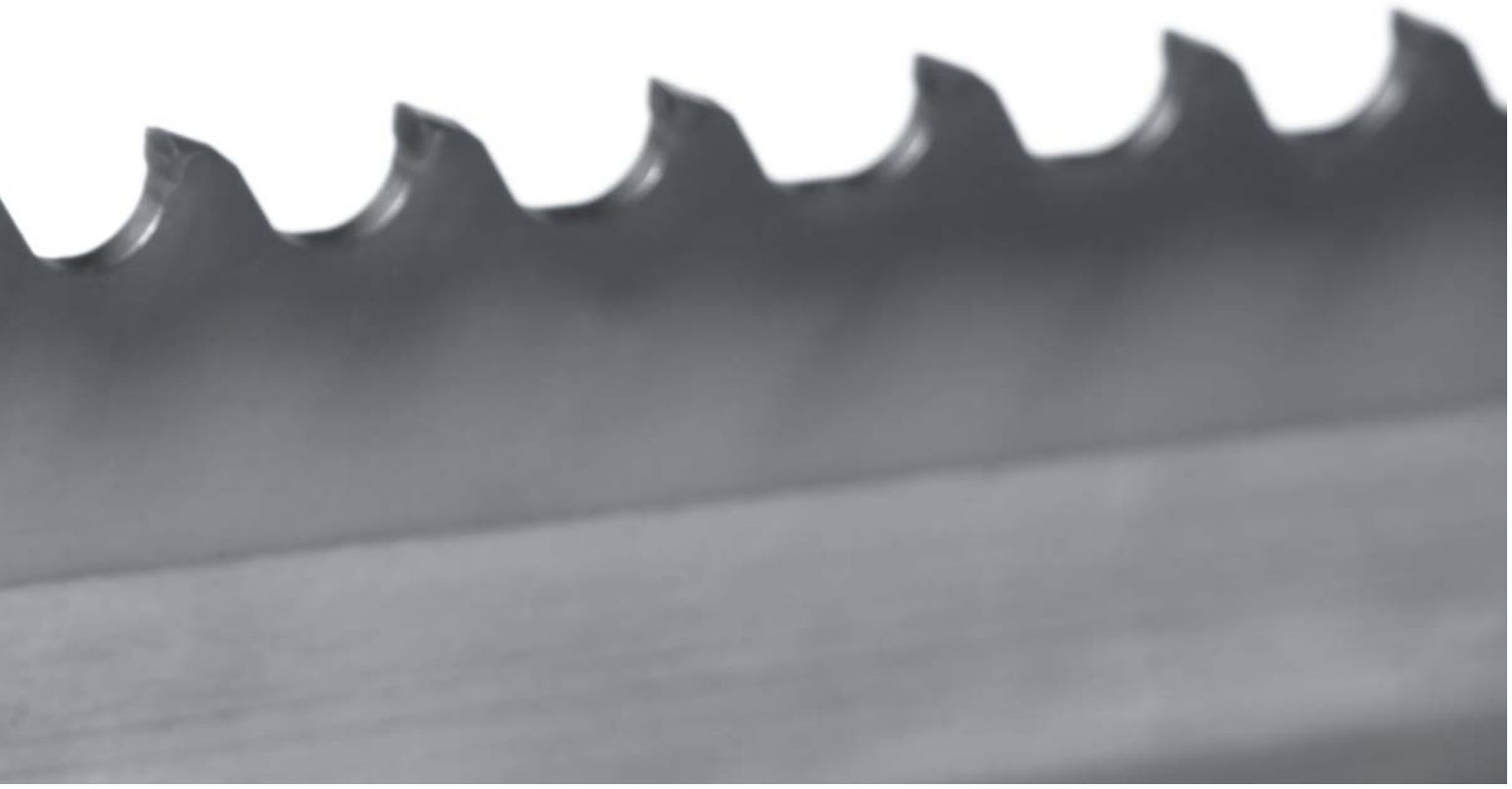
Recommended applications



» Tool steels, stainless steels and high-speed steels

Supply options

» Coil length approx. 50 m supplied in wooden boxes
» Teeth protected with plastic capping
» Welded loops



Teeth per inch

	1.1 / 1.6	1.5 / 2	2 / 3	3 / 4
41 x 1.3		■	■	■
54 x 1.6		■	■	
67 x 1.6	■			

Width x Thickness (mm)

Teeth per inch

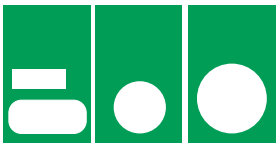
	0.85 / 1.15	1.1 / 1.6	1.5 / 2	2 / 3	3 / 4
27 x 0.9				■	■
34 x 1.1			■	■	■
41 x 1.3			■	■	■
54 x 1.3	■		■	■	
54 x 1.6	■	■	■	■	
67 x 1.6	■	■	■		
80 x 1.6	■	■			

Width x Thickness (mm)

HM-Titan MUSP

The Röntgen HM-Titan MUSP carbide tipped band saw blade is ideal for cutting long chipping materials. The MUSP provides the ideal solution to cutting hard and tough materials, especially nickel-based alloys and titanium.

Recommended applications



» Chromium-nickel steels, nickel-based alloys and Titanium

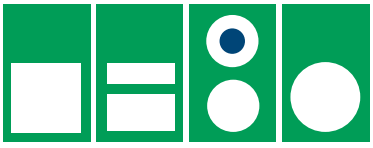
Supply options

» Coil length approx. 50 m supplied in wooden boxes
» Teeth protected with plastic capping
» Welded loops

HM-Titan MUSN

The Röntgen HM-Titan MUSN carbide tipped band saw blade has been designed to cut hardened and tempered or induction-hardened materials with a hardness higher than 50 HRc.

Recommended applications



» Induction hardened chromium steels and hardened materials between 50 - 62 HRc

Supply options

» Coil length approx. 50 m supplied in wooden boxes
» Teeth protected with plastic capping
» Welded loops

Teeth per inch

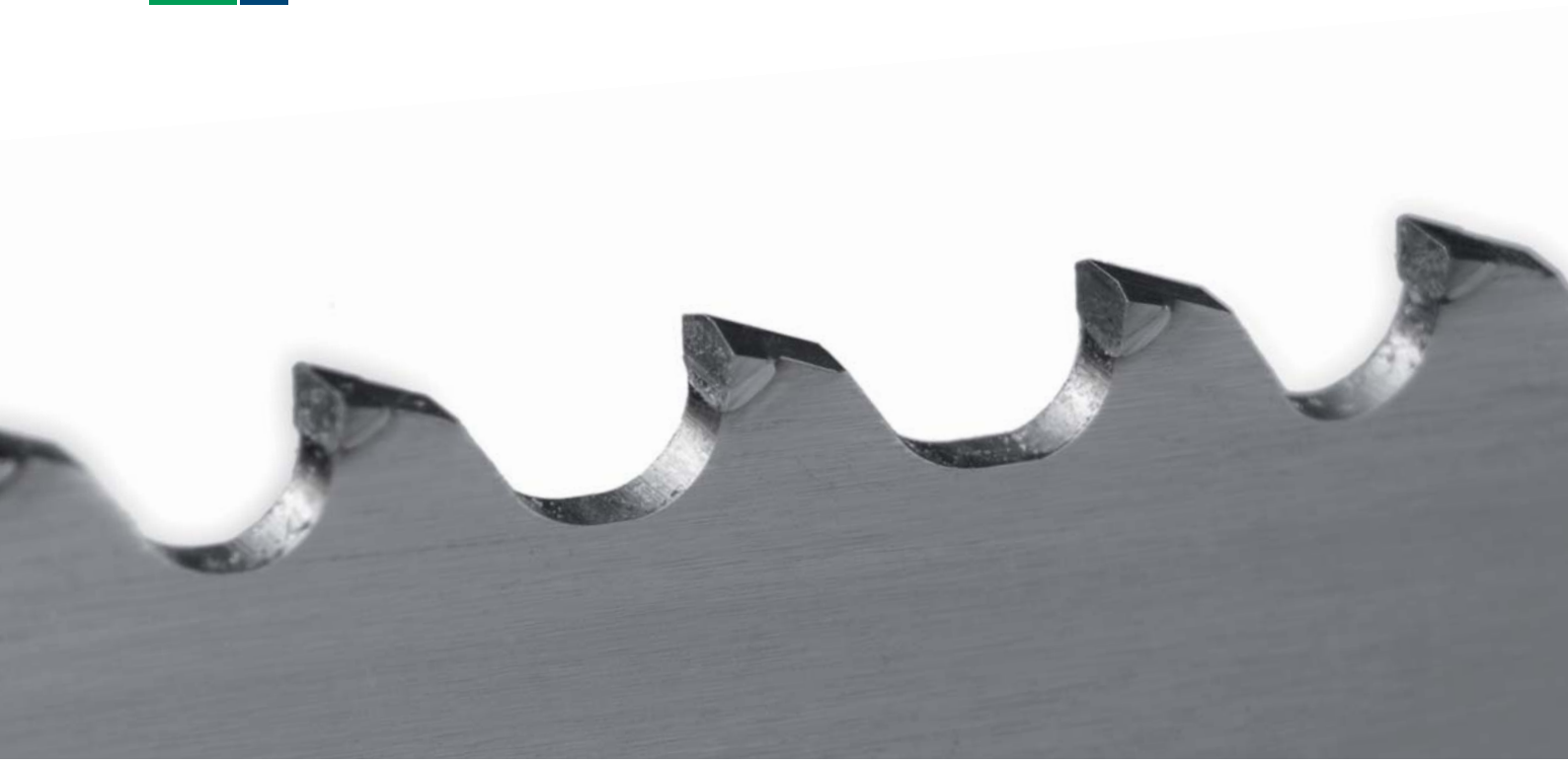
	0.85 / 1.15	1.1 / 1.6	1.5 / 2	2 / 3
34 x 1.1			■	■
41 x 1.3			■	■
54 x 1.3	■		■	
54 x 1.6	■	■	■	■
67 x 1.6	■	■	■	
80 x 1.6	■	■		

Width x Thickness (mm)

Teeth per inch

	2 / 3	3 / 4
27 x 0.9		■
34 x 1.1	■	■
41 x 1.3	■	■

Width x Thickness (mm)

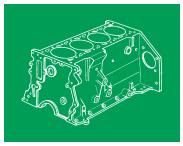


HM-Titan ALU

The RÖNTGEN HM-Titan ALU carbide tipped band saw blade has been developed specially for sawing non-ferrous metals, and particularly aluminium. This saw blade provides the ideal cutting solution for gates and risers on castings, as well as plates and bars.

A special tooth geometry protects the carbide tips from vibration damage on this demanding application The fatigue resistant alloyed steel backing withstands the severe mechanical stresses affecting the blade through the elevated cutting speeds and feeds associated with this application, and ensures high productivity and extended blade life.

Recommended applications



» Aluminium castings, plates and bars

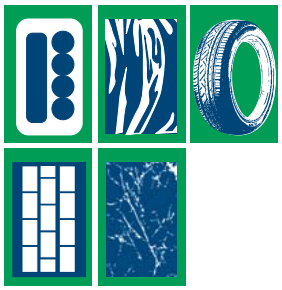
Supply options

» Coil length approx. 50 m supplied in wooden boxes
» Teeth protected with plastic capping
» Welded loops

Röntgen Grit

RÖNTGEN grit edged band saw blades are generally applied on materials which will not form a chip. The process is based on abrasive cutting, requiring relatively high band speeds and benefits from the flexible fatigue strength of the backing strip. The faceted carbide granules are very sharp and wear resistant and the band cut direction can be reversed to optimise the use of the cutting faces. A range of grit sizes is available to suit the material application and required cut speed and finish.

Recommended applications



» For very hard and brittle materials that will not form a chip with toothed blades
» Glass filled composites, ceramics, brake pads and linings.
» Cast metals with cavities and thin walls.
» Graphite, stone, wire reinforced rubber (tyres and hoses)

Supply options

» Coil length 30 – 75 m supplied in wooden boxes
» Welded loops

Teeth per inch

	2	3	0.85 / 1.15	1.1 / 1.6	1.5 / 2
20 x 0.9		■			
27 x 0.9		■			
34 x 1.1	■	■			■
41 x 1.3					■
54 x 1.3			■		■
54 x 1.6			■	■	■

Width x Thickness (mm)

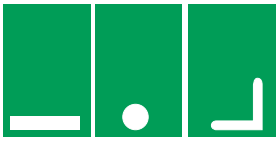
	Continuously gritted	Gulleted	Segment distance in mm
6 x 0.50	■	■	8
10 x 0.65	■	■	12
13 x 0.50	■	■	12
13 x 0.65	■	■	12
20 x 0.80	■	■	12
25 x 0.90	■	■	12
25 x 1.10	■	■	12
32 x 0.90	■	■	14
32 x 1.10	■	■	14
38 x 1.10		■	14

Width x Thickness (mm)

RRR

RÖNTGEN RRR flexback carbon band saw blades have a pin-point carbide structure of 30 - 50 grains per μm^2. The presence of hard iron carbides produces outstanding tooth edge wear resistance, together with high flex strength in the backing steel material.

Recommended applications



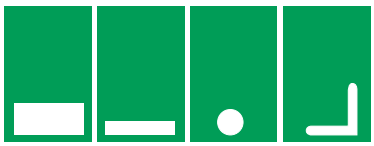
» Freecutting materials, timber and particle boards

Supply options
» Coil length 30 m packed in plastic boxes
» Coil length approx. 100 m
» Welded loops

RRR-Plus

RÖNTGEN RRR-Plus hardback carbon band saw blades have a pin-point carbide structure of 30 - 50 grains per μm^2 and precision milled tooth profiles. A special heat treatment process increases the tensile strength of the steel backing material and the wear resistance of the tooth edge. These features result in a premium quality, long-life carbon band saw blade.

Recommended applications



» Low alloyed materials with a tensile strength up to 800 N/mm^2

Supply options
» Coil length 30 m packed in plastic boxes
» Coil length approx. 100 m
» Welded loops

Teeth per inch

	2	3	4	6	8	10	14	18	24
6 x 0.65			■	■ / ■	■	■	■	■	■
8 x 0.65			■	■ / ■	■	■	■	■	■
10 x 0.65		■	■	■ / ■	■	■	■	■	■
13 x 0.65		■	■	■ / ■	■	■	■	■	■
16 x 0.80		■	■ / ■	■	■	■	■	■	■
20 x 0.80		■	■	■	■	■	■	■	■
25 x 0.90	■	■	■ / ■	■	■	■	■		■

Width x Thickness (mm)

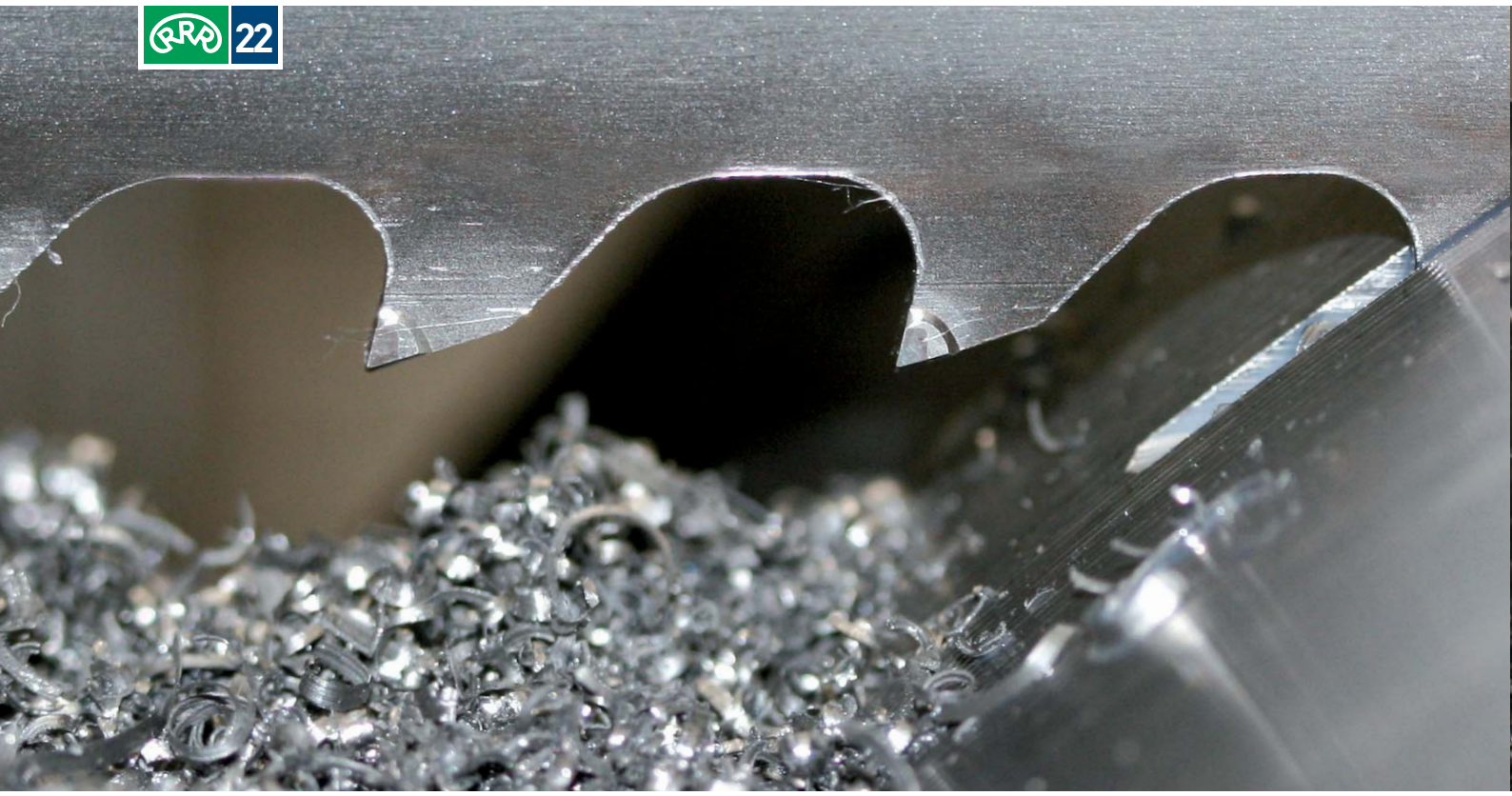
■ = Hook tooth ■ = Normal tooth

Teeth per inch

	3	4	6	8	10	14	18	24
6 x 0.65		■	■ / ■	■	■	■	■	■
8 x 0.65			■ / ■	■	■	■	■	■
10 x 0.65		■	■ / ■	■	■	■	■	■
13 x 0.65	■	■	■ / ■	■	■	■	■	■
16 x 0.80	■	■ / ■	■	■	■	■		■
20 x 0.80		■	■	■	■	■	■	■
25 x 0.90	■	■ / ■	■ / ■	■	■	■		

Width x Thickness (mm)

■ = Hook tooth ■ = Normal tooth



Tooth Forms

Normal tooth (N)
The normal tooth has a cutting angle of 0°. It is suitable for cutting material with a high carbon content (such as cast iron), for material with small cross sections and for thin-wall profiles and tubes.

Hook tooth (H)
The hook tooth has a positive cutting angle of 10°. This tooth form is particularly suitable for cutting solid, thick-walled tubes and all higher-grade alloy material.

RP Tooth (RP)
The RP tooth has a positive cutting angle of 16°. Due to its aggressive cutting characteristics, it is most suitable for cutting high-end and exotic alloys and for non-ferrous metals.

Master tooth (M)
The Master tooth is based on a high-low triple chip design recognised as one of the most efficient in engineering cutting technology. To cope with the demands of a wide range of difficult steel and exotic alloys the teeth are available with cutting angles of both 10° and 16° degrees.

Tooth Pitch

Tooth pitch is measured in number of teeth per inch. For Combi (variable) tooth pitches, the two figures represent the highest and lowest possible number of teeth per inch in each group of teeth.

Regular Tooth Pitch
The distance between the teeth is constant throughout the blade. Suitable for cutting solid materials on sawing machines with efficient clamping.

Combi (variable) Tooth Pitch
Combi tooth pitch is based on groups of different pitches being repeated at regular intervals throughout the blade. The reduction of vibrations through resonance during cutting is the major advantage of this pitch. Sawing thin-wall hollow sections and material in bundles or with weak clamping are typical applications for this tooth pitch configuration.

Set Patterns

1 Raker Set
Teeth are set in groups of 3, left, right, straight. This is the most popular set pattern for regular tooth pitches.

2 Combi Set (Group Set)
Teeth are set left and right, predominantly in groups of 5 or 7, with one straight tooth per group. This set pattern is most popular on variable/combi tooth pitches. The number of teeth in a group is determined by the characteristics of the variable pitch pattern repeat.

3 Pairs Set
For some specialised non-ferrous cutting applications the teeth are set in pairs to the left then to the right with the 5th tooth straight. This is the least popular of the 4 set patterns.

4 Wavy Set
This set pattern is used on very fine pitches where the saw blade teeth are too small to be set individualy. The degree of the set changes incrementally throughout the blade in waves from left to right.

Cutting conditions for solid steels for bimetal bandsaw blades based on selected cross sections and blade widths

Material	DIN	USA	JIS	bi-alfa cobalt	bi-alfa cobalt RP	bi-alfa Master	bi-alfa RP Master	bi-alfa cobalt M51	Blade sizes (mm) 27 x 0.9 to 34 x 1.1		Blade sizes (mm) 41 x 1.3 to 54 x 1.6		Blade sizes (mm) 67 x 1.6 to 80 x 1.6	
				Recommended blade					Vc (m/min) solid ø 50-350 mm	Vz(cm²/min)	Vc (m/min) solid ø 100-500 mm	Vz(cm²/min)	Vc (m/min) solid ø 400-2000 mm	Vz(cm²/min)
1.0060	St 60-2	A 572 Gr.65	SM 58	X					65-70	35-40	60-65	40-45	40-50	20-30
1.0401	C15	1016	S 15C	X					65-70	35-40	60-65	40-45	40-50	20-30
1.0503	C45	1045	S 45C	X					68-74	40-45	65-70	45-50	40-55	20-35
1.0570	St 52-3	A 572 Gr.50	SM 490	X					68-74	40-45	65-70	45-50	40-55	20-35
1.1158	Ck25	1025	S25C	X					68-74	40-45	60-70	45-50	40-55	20-30
1.1221	Ck60	1060	S58C	X					68-74	40-45	60-70	40-45	35-45	15-25
1.2080	X210Cr12	D3	SKD 1	X	X				33-37	10-18	25-35	15-20	15-20	5-10
1.2312	40CrMnMoS 8-6			X	X				49-53	22-30	45-50	28-32	25-30	10-15
1.2343	X38CrMoV5-1	H11	SKD 6	X	X				41-45	18-24	36-40	22-26	22-30	10-20
1.2363	X100CrMoV5-1	A2	SKD 12	X	X				38-42	15-20	30-36	18-22	20-26	8-14
1.2379	X155CrVMo12-1	D2	SKD 11	X	X				33-37	10-18	25-35	15-20	15-20	5-10
1.2510	100 MnCrW4	O1	SKS 3	X	X				42-46	18-24	36-42	22-26	26-30	12-18
1.2606	X37CrMoW 5-1	H12	SKD 62	X	X				42-46	18-24	36-42	22-26	20-28	8-16
1.2714	56 NiCrMoV7	L6	SKT 4	X	X				42-46	20-26	40-45	25-30	26-34	12-18
1.2842	90 MnCrV 8	O2		X	X				42-45	18-24	36-42	24-28	24-32	12-18
1.3343	S 6-5-2	M2	SKH 51	X	X				36-40	16-20	30-35	16-20	26-30	12-18
1.3247	S 2-20-1-8	M42	SKH 59	X	X				36-40	16-20	30-35	16-20	26-30	12-18
1.3965	X8CrMnNi 18-8	Nitronic 50		X	X	X	X	X	30-32	8-12	26-28	12-18	12-18	4-8
1.4006	X10Cr13	410	SUS410	X	X	X	X	X	32-34	12-16	30-34	16-22	20-26	8-14
1.4028	X 20 Cr 13	420	SUS 420J1	X	X	X	X	X	36-38	15-20	32-36	18-22	26-30	6-10
1.4125	X105CrMo17	440	C SUS 440C	X	X	X	X	X	34-37	12-18	28-32	16-18	16-22	6-10
1.4301	X5CrNi 18-10	304	SUS 304	X	X	X	X	X	36-38	15-20	32-36	18-22	16-22	6-10
1.4401	X5CrNiMo 17-12-2	316	SUS 316	X	X	X	X	X	34-36	14-18	28-32	16-18	16-22	6-10
1.4462	X2CrNiMoN 22-5-3	2205	SUS 329J3L	X	X	X	X	X	32-34	10-14	28-32	16-20	16-22	6-10
1.4571	X6 CrNiMoTi17-12-2	316 Ti	SUS 316	X	X	X	X	X	32-34	10-14	28-32	16-20	16-22	6-10
1.4841	X15CrNiSi 25-20	314	SUH 310		X	X	X	X	28-32	8-12	26-30	12-16	14-20	4-8
1.4864	X12NiCrSi 36-16	330	SUH 330		X	X	X	X	28-32	8-12	26-30	12-16	14-20	4-8
1.4923	X22 CrMoV 12-1				X	X	X	X	28-32	8-12	26-30	12-16	14-20	4-8
1.4980	X5 NiCrTi 26-15	A286	SUH 660		X	X	X	X	28-32	8-12	26-30	12-16	14-20	4-8
1.5710	36 NiCr6	(X)3140		X	X				48-52	22-28	44-48	28-32	26-34	12-18
1.5755	31 NiCr14	3415	SNC 815	X	X				50-54	24-30	46-52	30-36	30-36	14-20
1.6310	20 MnMoNi-5			X	X				48-52	22-28	44-48	28-32	26-34	12-18
1.6523	20 NiCrMo2	8620	SNCM 220	X	X				50-54	24-30	44-50	30-34	26-34	14-20
1.6546	40 NiCrMo 2-2	8640	SNCM 240	X	X				50-54	24-30	44-50	30-34	30-34	10-18
1.6562	40 NiCrMo7	E4340	SNB24-1-5	X	X				50-54	24-30	44-50	30-34	30-34	10-18
1.6749	23 CrNiMo 7-4-7			X	X				50-54	24-28	44-50	28-32	30-34	10-16
1.6985	28 CrMoNiV 4-9			X	X				54-58	28-34	48-54	32-38	36-40	16-22
1.7147	20 MnCr5	5120	SMnC420H	X	X				58-62	28-36	52-56	32-38	38-46	18-26
1.7225	42 CrMo4	4140	SCM 440	X	X				54-58	28-34	48-54	32-38	36-40	16-22
1.7228	50 CrMo4	4150	SCM 445	X	X				56-60	30-36	52-56	34-40	34-40	16-20
1.7335	13CrMo 4-4	A387 Gr. 12	SFVA F 12	X	X				62-64	32-38	56-60	36-44	40-46	18-26
1.7707	30 CrMoV9			X	X				54-58	28-34	44-50	28-34	28-34	16-20
1.8159	50 CrV4	6150	SUP10	X	X				52-54	24-30	52-48	32-38	32-40	12-20
1.8509	41 CrAlMo 7	A 355 Cl. A	SACM 645	X	X				42-45	18-24	36-40	22-26	18-24	8-14

Recommendations for Tooth Selection

Solid Material

Normal-Toothing		Combi-Toothing			Röntgen HM-Titan		
Cross section	Pitch	Cross section	Pitch		Cross section	Toothing	
< 10 mm	14 tpi	< 25 mm	10/14	tpi	50 - 120 mm	3/4	tpi
10 – 30 mm	10 tpi	15 – 40 mm	8/12	tpi	100 - 250 mm	2/3	tpi
30 – 50 mm	8 tpi	25 – 50 mm	6/10	tpi	150 - 400 mm	1.5/2	tpi
50 – 80 mm	6 tpi	35 – 70 mm	5/8	tpi	350 - 600 mm	1.1/1.6	tpi
80 – 120 mm	4 tpi	40 – 90 mm	5/6	tpi	> 500 mm	0.85/1.15	tpi
120 – 200 mm	3 tpi	50 – 120 mm	4/6	tpi *			
200 – 400 mm	2 tpi	80 – 180 mm	3/4	tpi *			
300 – 700 mm	1.25 tpi	130 – 350 mm	2/3	tpi			
> 600 mm	0.75 tpi	150 – 450 mm	1.5/2	tpi			
		200 – 600 mm	1.1/1.6	tpi			
		500 mm	0.75/1.25	tpi			

* Please notice that it is also possible to choose our Combi pitch 4/5 for these cross sections.

Tubes

Wall-Thickness S [mm]	Outside diameter in mm D [mm] Tooth selection (tpi)									
	20	40	60	80	100	120	150	200	300	500
2	14	10/14	10/14	10/14	10/14	8/12	8/12	8/12	8/12	5/8
3	14	10/14	10/14	8/12	8/12	8/12	8/12	6/10	6/10	5/8
4	10/14	10/14	8/12	8/12	8/12	6/10	6/10	5/8	5/8	4/6
5	10/14	10/14	8/12	8/12	6/10	6/10	5/8	4/6	4/6	4/6
6	10/14	8/12	8/12	6/10	6/10	5/8	5/8	4/6	4/6	4/6
8	10/14	8/12	8/12	6/10	5/8	5/8	4/6	4/6	4/6	4/6
10	-	8/12	6/10	5/8	4/6	4/6	4/6	4/6	4/6	4/5
12	-	8/12	6/10	4/6	4/6	4/6	4/6	4/6	4/6	4/5
15	-	8/12	6/10	4/6	4/6	4/6	4/6	4/5	4/5	4/5
20	-	-	4/6	4/6	4/6	4/6	4/5	4/5	4/5	3/4
30	-	-	-	4/6	4/6	4/5	4/5	4/5	4/5	2/3
50	-	-	-	-	-	-	4/5	3/4	2/3	2/3
80	-	-	-	-	-	-	-	3/4	2/3	2/3
>100	-	-	-	-	-	-	-	-	2/3	1.5/2

For thin tubes (up to 8 mm wall-thickness) it is advisable to choose the toothing with 0° cutting angle.

Our application engineers would be glad to assist you in selecting the right band saw blade and provide reliable cutting parameters for your specific sawing application.

Cutting parameters for Röntgen Band Saw Blades

☐ **M42** ☐ **M51** ☐ **HM-Titan**

Machine Manufacture / Machine Type

Blade Dimension (L x W x T in mm)

Cooling Lubrication
Emulsion ? % / Dry / MSA

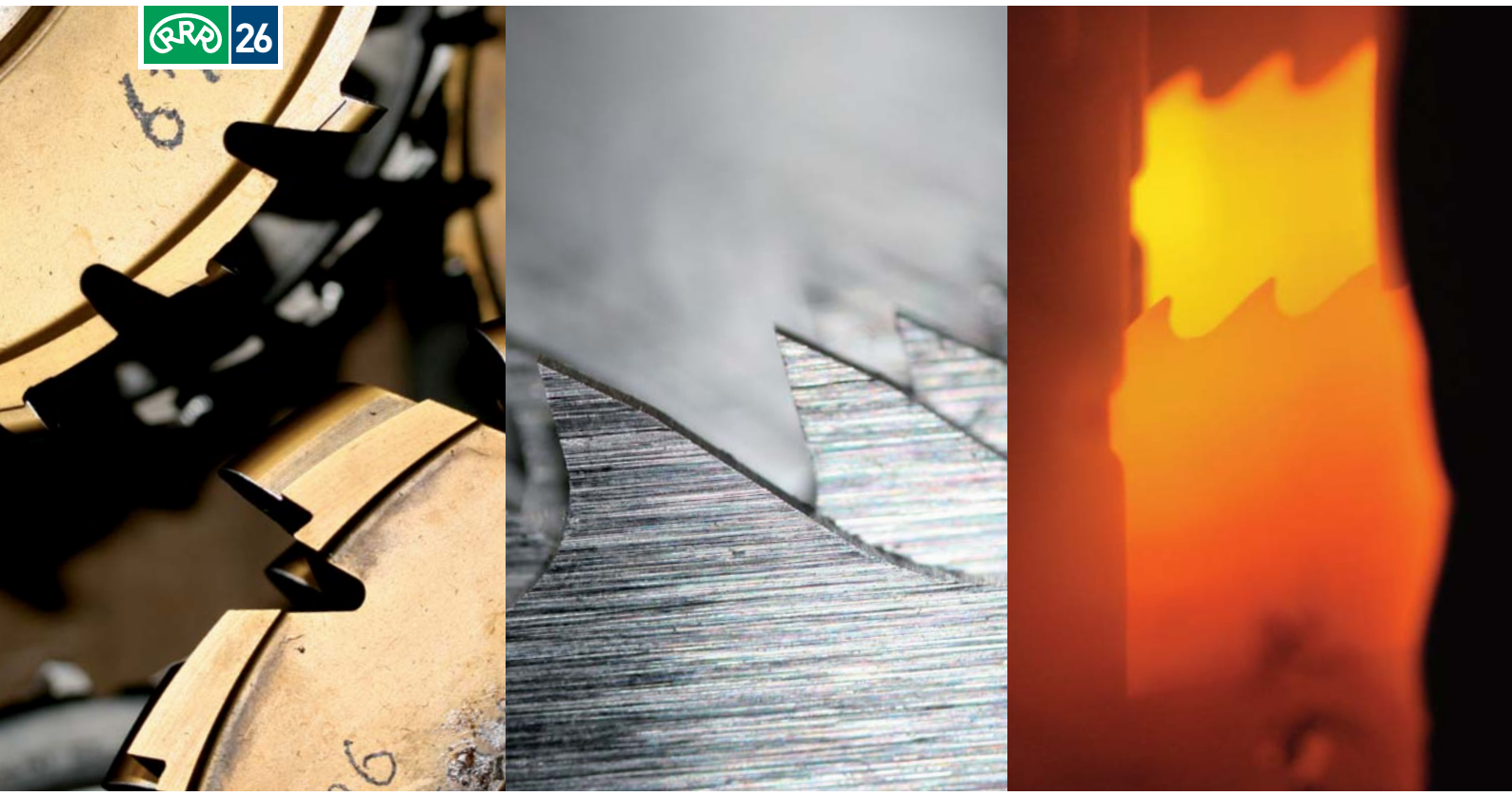
Chip brush
yes / no

Cutting Application:

1. Material
German material No. / DIN / USA / JIS etc.

2. Workpiece
Tube / Profile / Beam
Solid round / square

3. Workpiece Dimension
Tubes with wall thickness/
Profiles with edge length



Break-in Procedure for new Band Saw Blades

The life of a band saw blade can be increased significantly by following the recommended break-in procedure. A new saw blade benefits from a short period of cutting at reduced band speed and cutting feed rate. The recommended maximum production band speed and feed rate can be selected from the chart below. The break-in rates should be set at 70% of band speed and 50% of feed. After approximately 500 cm^2 of cross sectional area has been sawn, the band speed should be gradually increased to maximum, followed by the feed rate.

General Information

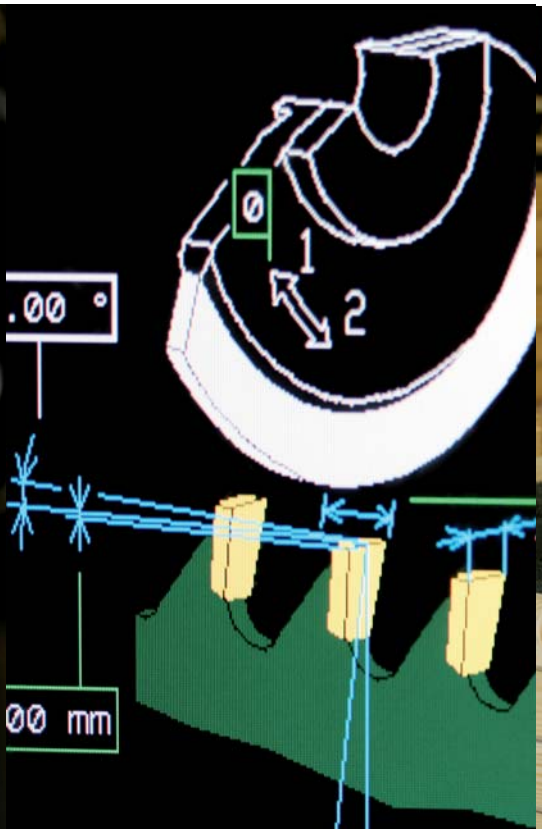
Following variables are decisive for an optimal cutting result and a long service life of the band saw blade:
» Selection of cooling and lubrication
» Chip brush
» Saw blade tension (recommended 300 N/mm^2)

Safety Instructions

RÖNTGEN band saw blades supplied in welded loops are packed under tension. Great care is necessary when unpacking and preparing the blade for mounting on the sawing machine.

» wear safety glasses
» wear work gloves
» wear safety boots

For detailed safety instructions, please refer to the machine manufacturers operating instructions or contact RÖNTGEN.



Accessories

Band Saw Blade Tension Gauge

Correct band tension is vital to ensure cut straightness. The RÖNTGEN tension gauge quickly and simply measures the exact blade tension while it is mounted on the band wheels. An optimal tension of 300 N/mm^2 is recommended for RÖNTGEN bi-metal blades with 4% chrome backing strip. This will help to avoid off-square cutting through low tension or blade breakage and machine damage through excessively high tension.

Refractometer

Soluble oil coolant makes and important contribution to extended blade life. It lubricates tooth tips to reduce wear and removes excessive heat from the blade and workpiece. At a recommended oil concentration of 8% – 12%, the emulsion will perform both the lubrication and cooling tasks. The oil to water ratio is measured by the RÖNTGEN refractometer and can be read off a scale visible through the eyepiece.

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