BAND SAW BLADES

INTELLIGENT SOLUTIONS
MADE BY

Eberle

PRECISION FROM THE WORD GO.

Bandsaw cutting has evolved into a sophisticated high-technology. J. N. Eberle & Cie. GmbH rises to the challenge thanks to its highly skilled team, modern and reliable manufacturing facilities and many years of experience. The combination of experience and specialized technical knowledge ensures high performance blades that are perfectly adapted to meet your specific requirements.

Quality is not a matter of chance, but the result of intensive groundwork. High quality strip steel is the prerequisite for precision band saw blades. Right from the start, Eberle sets the highest standards of quality. We roll our strip steel and have perfected the welding procedure to combine the backing material and HSS-wire.

We can therefore guarantee that our customers will receive consistent, reliable performance from Eberle products – a standard as yet unequalled worldwide.

Our corporate policy:
top quality and total customer satisfaction

FOR OUR CUSTOMERS, THIS MEANS IN PARTICULAR:
> consistent reliability and performance
> precise cuts
> outstanding cutting results

PRODUCTS

01 | PREMIUM LINE

02 | PROFESSIONAL LINE

CUSTOMER SERVICE

TECHNICAL DATA

01

PREMIUM LINE

SUCCESS: DYNAMICS AND PRECISION.

Eberle PREMIUM band saw blades are characterized by their extreme hardness and durability. They are particularly engineered to increase productivity when cutting hard-to-cut materials.The PREMIUM line contains the following high-tech saw blades for extreme cutting requirements:

COATED CARBIDE AND COATED BIMETAL

The strong wear resistant TiAlN-coating provides a protective barrier for added blade life and performance. Our CT-flex® nano has coated carbide teeth, its technology and performance sets a new benchmark in band saw cutting.

CARBIDE

CT-flex® 3000 and CT-flex® 4000 enable high performance for general high-speed cutting and extended blade life in Inconel, Titanium, stainless and other alloyed steels. Case hardened and chrome plated materials can be cut effectively with our specially engineered CT-flex® CHM. CT-flex® ALU XL is developed for high-efficient sawing of large Aluminum blocks.

BIMETAL M51

duoflex® GT has a precision ground tooth geometry and wider dimensions are equipped with a M51 cutting edge to efficiently cut large work pieces.

dimensions in	teeth per inch (tpi)							dimensions mm
***CT-flex*® nano** | coated carbide-tipped blades								
	.75/1.25	1/1.3	1.4/2	2	2/3	3	3/4	
1 1/2 x .050			TR ●	TR ❍	TR ●	TR ❍	TR ❍	41 x 1,30
2 x .063		TR ❍	TR ●	TR ❍	TR ❍			54 x 1,60
2 5/8 x .063	TR ❍	TR ●	TR ●					67 x 1,60
3 1/8 x .063	TR ●		TR ●					80 x 1,60
***CT-flex*® 3000** | carbide-tipped blades								
	.75/1.25	1/1.3	1.4/2	2	2/3	3		
1 x .035					TR			27 x 0,90
1 1/4 x .042				TR	TR	TR		34 x 1,10
1 1/2 x .050			TR	TR	TR	TR		41 x 1,30
2 x .063	TR	TR	TR	TR				54 x 1,60
2 5/8 x .063	TR	TR	TR					67 x 1,60
3 1/8 x .063	TR		TR					80 x 1,60
***CT-flex*® 4000** | carbide-tipped blades								
	.75/1.25	1/1.3	1.4/2	2	2/3	3	3/4	
3/4 x .035						TR		20 x 0,90
1 x .035					TR	TR	TR	27 x 0,90
1 1/4 x .042				TR	TR	TR	TR	34 x 1,10
1 1/2 x .050			TR	TR	TR	TR	TR	41 x 1,30
2 x .063	TR	TR	TR	TR	TR			54 x 1,60
2 5/8 x .063	TR	TR	TR					67 x 1,60
3 1/8 x .063	TR		TR					80 x 1,60
***CT-flex*® Alu XL** | carbide-tipped blades								
		.75/1.25	1/1.3	1.4/2	2	2/3		
1 1/2 x .050				TR	TR	TR		41 x 1,30
2 x .063		TR	TR	TR				54 x 1,60
2 5/8 x .063		TR	TR	TR				67 x 1,60
3 1/8 x .063		TR						80 x 1,60
***CT-flex*® CHM** | carbide-tipped blades								
			3	3/4				
1 x .035			TRN	TRN				27 x 0,90
1 1/4 x .042			TRN	TRN				34 x 1,10
1 1/2 x .050			TRN	TRN				41 x 1,30
***nanoflex*® Black** | coated bimetal blades								
		.75/1.25	1/1.3	1.4/2	2/3	3/4		
1 1/2 x .050				DCS	DCS	DCS		41 x 1,30
2 x .063			DCS	DCS	DCS	DCS		54 x 1,60
2 5/8 x .063		DCS	DCS	DCS				67 x 1,60
3 1/8 x .063		DCS	DCS	DCS				80 x 1,60
***duoflex*® GT** | bimetal blades								
		.75/1.25	1/1.3	1.4/2				
2 x .063		DCS	DCS	DCS				54 x 1,60
2 5/8 x .063		DCS	DCS	DCS				67 x 1,60
3 1/8 x .063		DCS	DCS	DCS				80 x 1,60

Please refer to page 22 for an explanation of DCS, TR and TRN.

• standard ❍ on request

CT-flex® nano

This TiAlN coated carbide-tipped blade combined with a MultiChip® geometry is specially engineered for high strength and heat treated materials as well as nickel based alloys. The coating adds heat and wear resistance to the cutting edge that provides extraordinary cutting performance and longer blade life. Break-in procedure can be reduced substantially due to the pre-honed tooth edges.

PRODUCTIVITY					+	
WEAR RESISTANCE					+	
SHOCK RESISTANCE						
BLADE LIFE					+	

MATERIAL GROUP	1	2	3	4	5	
	6	7	8	9	10	
	11	12	13	14	15	16

MATERIAL HARDNESS	≤ 65 HRC

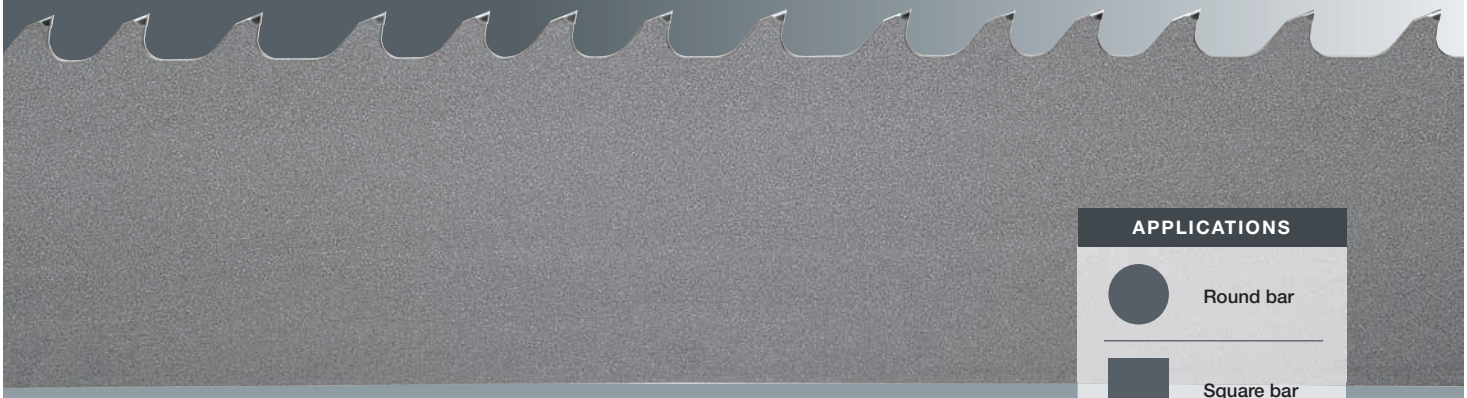
APPLICATIONS

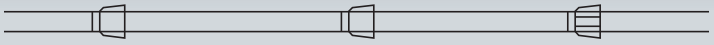
- Round bar
- Square bar
- Flat bar

Please refer to the fold-out page on the left for a table of dimensions and tooth pitches.

CT-flex® 3000

The carbide-tipped blades with CT3 geometry are especially suited to sawing hard-to-cut materials such as Ttitanium alloys, Inconel or nickel-based alloys. Moreover, in comparison to bimetal, a considerable improvement in performance is evident. Combined with our reliable 4% chromium backing material, this sophisticated blade attains the top-quality standard of the premium line.





PRODUCTIVITY					
WEAR RESISTANCE					
SHOCK RESISTANCE					
BLADE LIFE					

MATERIAL GROUP	1	2	3	4	5
	6	7	8	9	10
	11	12	13	14	15

MATERIAL HARDNESS	≤ 65 HRC

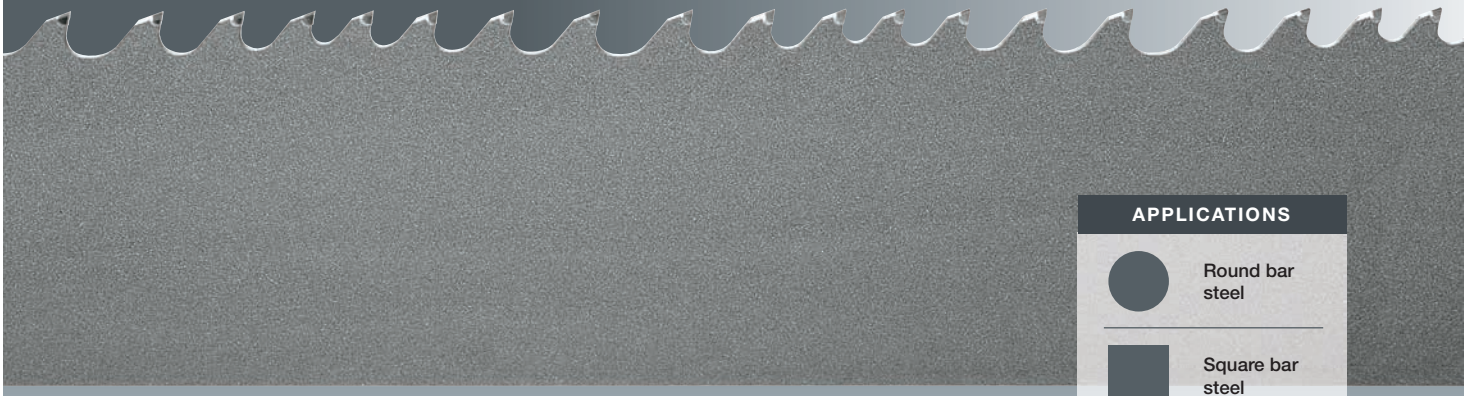
APPLICATIONS

- Round bar
- Square bar
- Flat bar

Please refer to the fold-out page on the left for a table of dimensions and tooth pitches.

CT-flex® 4000

The carbide-tipped blades with CT4 geometry cut a variety of materials with low machinability including Titanium alloys, Inconel, and nickel-based alloys. Additionally, the range extends to cutting Aluminum and other non-ferrous metal applications where short cycle times are required. The teeth are engineered to divide the cutting area over several cutting teeth, so the blade runs extremely smoothly.



PRODUCTIVITY	■■■■■
WEAR RESISTANCE	■■■■■
SHOCK RESISTANCE	■■□□□
BLADE LIFE	■■■■■

MATERIAL GROUP					
	1	2	3	4	5
	6	7	8	9	10
	11	12	13	14	15

MATERIAL HARDNESS	≤ 65 HRC

APPLICATIONS

- Round bar steel
- Square bar steel
- Flat bar steel

Please refer to the fold-out page on the left for a table of dimensions and tooth pitches.

CT-flex® ALU XL

This carbide-tipped blade with a specially designed MultiChip® geometry is developed for cutting large plates and large blocks of Aluminum. The special tooth geometry improves chip formation resulting in minor material loss, more efficient chip removal and significant cost savings.

PRODUCTIVITY	■
WEAR RESISTANCE	■
SHOCK RESISTANCE	■
BLADE LIFE	■

MATERIAL GROUP	14

APPLICATIONS

- Round bar steel
- Square bar steel
- Flat bar steel

Please refer to the fold-out page on the left for a table of dimensions and tooth pitches.

CT-flex® CHM

Carbide MultiChip® geometry is engineered for cutting case hardened and chrome plated materials. The negative rake angle combined with MultiChip tooth geometry provides excellent cutting performance, toughness and wear resistance.

PRODUCTIVITY	■■■■■
WEAR RESISTANCE	■■■■■
SHOCK RESISTANCE	■■□□□
BLADE LIFE	■■■■■

	2	3	4	5	
6	7				MATERIAL GROUP

MATERIAL HARDNESS	≤ 65 HRC

APPLICATIONS

- Bundle, single-layer
- Tubing
- Round bar

Please refer to the fold-out page on the left for a table of dimensions and tooth pitches.

nanoflex® Black

The high degree of coating hardness and red hardness of nanoflex® Black coated with TiAlN, combined with the shock resistance of bimetal, results in an extremely efficient, versatile band saw blade. Breaking-in process can be omitted due to prehoned teeth.

PRODUCTIVITY	■
WEAR RESISTANCE	■
SHOCK RESISTANCE	■
BLADE LIFE	■

MATERIAL GROUP					
	1	2	3	4	5
	6	7	8	9	10
			13		

MATERIAL HARDNESS	≤ 50 HRC

APPLICATIONS

- Bundle, single-layer
- Tubing
- Special profiles
- Round bar
- Square bar
- Flat bar
- Beams

Please refer to the fold-out page on the left for a table of dimensions and tooth pitches.

duoflex® GT

The bimetal blade duoflex® GT is designed to cut large to very large work pieces. Due to its specially ground toothing and the M51 cutting edge of wider dimensions, this blade is characterized by long blade life and extremely clean cutting surface.

PRODUCTIVITY	■	■	■	■	
WEAR RESISTANCE	■	■	■		
SHOCK RESISTANCE	■	■	■		
BLADE LIFE	■	■	■		

MATERIAL GROUP				4	5
	6	7	8	9	10
	11	12	13	14	

MATERIAL HARDNESS	≤ 50 HRC

APPLICATIONS

- Round bar
- Square bar
- Flat bar
- Beams

Please refer to the fold-out page on the left for a table of dimensions and tooth pitches.

02

PROFESSIONAL LINE

SUCCESS: ENDURANCE AND POWER.

Our established PROFESSIONAL LINE is characterized by its high versatility with regard to application. We are constantly optimizing our standard of quality by investing in the process chain and in new production techniques. When using these quality blades for standard applications, excellent cutting performance is achieved. A range of special tooth geometry and extremely symmetrical tooth sets are the major reason for its top performance in a wide range of applications.

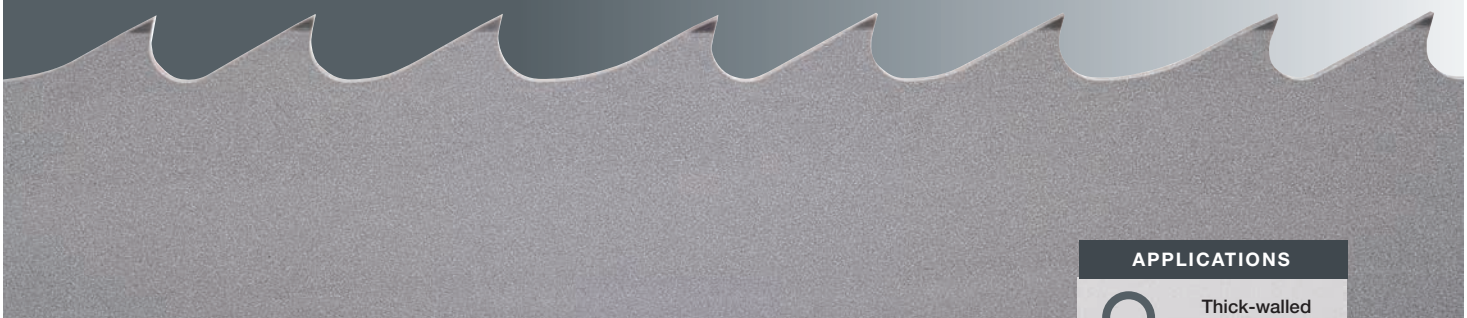
dimensions in	teeth per inch (tpi)																	dimensions mm
***duoflex*® SP | bimetal blades**																		
				.75/1.25	1/1.3	1.4/2	2/3	3/4										
1 x .035								CSP										27 x 0,90
1 1/4 x .042							CSP	CSP										34 x 1,10
1 1/2 x .050						CSP	CSP	CSP										41 x 1,30
2 x .063					CSP	CSP	CSP											54 x 1,60
2 5/8 x .063				CSP	CSP	CSP	CSP											67 x 1,60
3 1/8 x .063				CSP	CSP													80 x 1,60
***duoflex*® M51 | bimetal blades**																		
				.75/1.25	1/1.3	1.4/2	2/3	3/4	4/6									
1 x 0.35							DCS	DCS	CS									27 x 0,90
1 1/4 x 0.42							DCS	DCS	CS									34 x 1,10
1 1/2 x 0.50							DCS	DCS										41 x 1,30
2 x 0.63						DCS	DCS	DCS										54 x 1,60
2 5/8 x 0.63				DCS		DCS	DCS											67 x 1,60
3 1/8 x 0.63				DCS	DCS	DCS												80 x 1,60
***duoflex*® M42 | bimetal blades**																		
		3	4	6	8	10	14	.75/1.25	1/1.3	1.4/2	2/3	3/4	4/6	5/8	6/10	8/12	10/14	
1/4 x .035			CW	CW		N	N										N	6 x 0,90
3/8 x .035			CW	CW		N	N										N	10 x 0,90
1/2 x .025			CW	CW		N	N								N	N	N	13 x 0,65
1/2 x .035		CW	CW	CW	N	N	N								N	N	N	13 x 0,90
3/4 x .035						N	N						N/CS	N	N	N	N	20 x 0,90
1 x .035		DCS	CS	N							DCS	N/DCS	N/CS DCS	N/CS	N	N	N	27 x 0,90
1 1/4 x .042				CS							DCS	N/DCS	N/CS DCS	N/CS	N	N		34 x 1,10
1 1/2 x .050				CS						DCS	DCS	N/DCS	N/CS DCS	N/CS				41 x 1,30
2 x .050											DCS	DCS	CS					54 x 1,30
2 x .063								DCS	DCS	DCS	DCS	DCS	CS					54 x 1,60
2 5/8 x .063								DCS	DCS	DCS	DCS	DCS						67 x 1,60
3 1/8 x .063								DCS	DCS	DCS								80 x 1,60
***duoflex*® PT | bimetal blades**																		
				2/3	3/4	4/6	5/8	8/12										
3/4 x .035								CST										20 x 0,90
1 x .035				CST	CST	CST	CST	CST										27 x 0,90
1 1/4 x .042				CST	CST	CST	CST											34 x 1,10
1 1/2 x .050				CST	CST	CST	CST											41 x 1,30
2 x .063				CST	CST	CST												54 x 1,60
2 5/8 x .063				CST	CST													67 x 1,60

Available in wide set upon request.

Please refer to page 22 for an explanation of CS, CSP, CST, CW, DCS and N.

duoflex® SP

The variable positive tooth geometry of duoflex® SP reduces cutting force and heat generated in the cut. This blade is especially suited to cutting austenitic steels as well as nickel-based alloys.



PRODUCTIVITY					
WEAR RESISTANCE					
SHOCK RESISTANCE					
BLADE LIFE					

MATERIAL GROUP				4	5
	6	7	8	9	10
	11	12		14	

MATERIAL HARDNESS	≤ 49 HRC

APPLICATIONS

- Thick-walled tubing
- Round bar
- Square bar
- Flat bar
- Beams

Please refer to the fold-out page on the left for a table of dimensions and tooth pitches.

duoflex® M51

duoflex® M51 is engineered for use in heavy cutting applications. The cutting performance of the high speed steel teeth is substantially increased through alloying elements such as Cobalt and Tungsten.

PRODUCTIVITY					
WEAR RESISTANCE					
SHOCK RESISTANCE					
BLADE LIFE					

		3	4	5
6	7	8	9	10
11	12		14	

MATERIAL GROUP

MATERIAL HARDNESS	≤ 49 HRC

APPLICATIONS

- Bundle of round bar
- Bundle of thick-walled tubing
- Batches, single-layer
- Thick-walled tubing
- Round bar
- Square bar
- Flat bar
- Beams

Please refer to the fold-out page on the right for a table of dimensions and tooth pitches.

duoflex® M42

duoflex® M42 is a high-performance, multi-functional bimetal band saw blade that is characterized by its high wear resistance and long blade life. The blade is suited to cutting almost all steel grades in workshops and serial production.

PRODUCTIVITY	■ ■ ☐ ☐ ☐
WEAR RESISTANCE	■ ■ ■ ☐ ☐
SHOCK RESISTANCE	■ ■ ■ ■ ☐
BLADE LIFE	■ ■ ■ ☐ ☐

MATERIAL GROUP	1	2	3	4	5
	6	7	8	9	10
				14	

MATERIAL HARDNESS	≤ 44 HRC

APPLICATIONS

- Bundle of round bar
- Bundle, multiple-layer
- Bundle of thick-walled tubing
- Bundle, single-layer
- Tubing
- Special profiles
- Round bar
- Square bar
- Flat bar
- Beams

Please refer to the fold-out page on the right for a table of dimensions and tooth pitches.

duoflex® PT

duoflex® PT stands for highest cutting performance and blade life in interrupted cuts. Its special tooth geometry significantly reduces vibration and tooth breakage in applications, such as pipes and tubes.

PRODUCTIVITY	■	■	■		
WEAR RESISTANCE	■	■	■		
SHOCK RESISTANCE	■	■	■		
BLADE LIFE	■	■	■	■	

MATERIAL GROUP	1	2	3	4	5
	6	7	8	9	10
				14	

MATERIAL HARDNESS	≤ 44 HRC

APPLICATIONS

- Bundle of round bar steel
- Bundle, multiple-layer
- Bundle of thick-walled tubing
- Bundle, single-layer
- Tubing
- Special profiles
- Beams

Please refer to the fold-out page on the right for a table of dimensions and tooth pitches.

SUCCESS: INNOVATION AND PERSISTENCE.

The increasing requirements of newly designed materials drive our engineering to produce innovative saw blade solutions. Our state-of-the-art “in house” lab and cutting center, allows us to develop and test our newly developed blade technologies.

It goes without saying that outstanding performance, long-lasting blade life and an excellent surface finish are our key objectives when engineering a new band saw blade – in the past, now and in the future.

CUSTOMER SERVICE – YOUR BENEFIT.

Put your trust in our experience

Our international distribution network is based on long-standing partnerships with top-notch sawing specialists who help solve your specific questions regarding various applications.

We are always available to help you select the optimum blade and cutting parameter. To assist you better please provide the following data:

> band saw machine, blade size
> material type and grade
> size and shape of work piece
> type of cut (single, piece or bundle)

To place an **order**, please contact either your regional Eberle Distribution Center (EDC), local distributor/salesman or get in touch with our headquarters in Augsburg.

Training

We offer band saw blade training to your company upon request. Just contact your Authorized Eberle Distributor or get in touch with our headquarters.

Technical advice

Should you have any questions about band saw applications or ways to optimize sawing processes, Eberle's expert team will provide competent support.

Tel.: **+1 (314) 406-1102**
Fax: **+1 (636) 240-6155**
Email: **info@eberleblades.com**

We look forward to your call.

Eberle Cutting Data App

The Eberle Cutting Data App for bimetal and carbide band saws can be downloaded from our homepage www.eberleslidechart.com or from:

Download on the App Store GET IT ON Google play

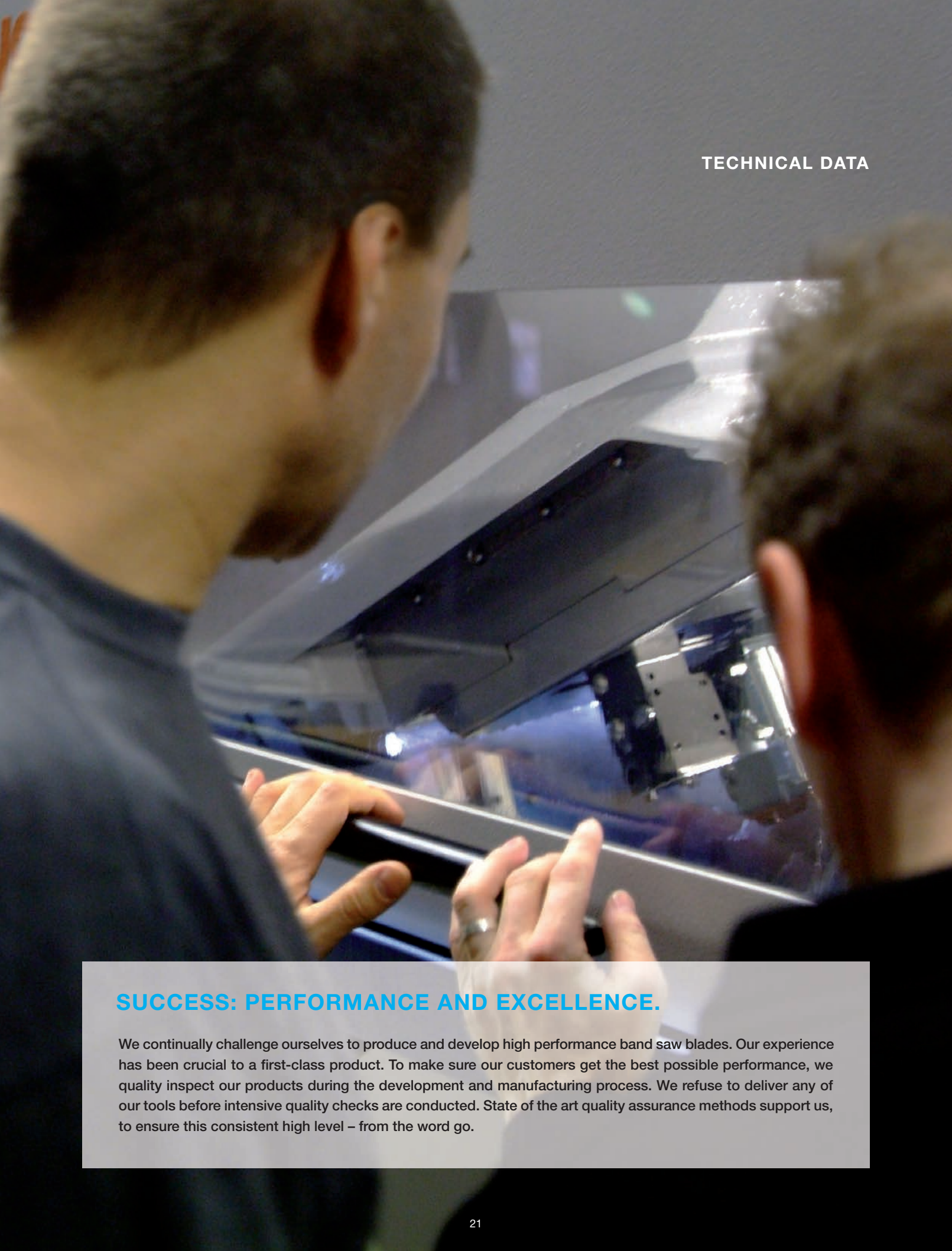
This free digital resource is the easiest way for users to determine the optimal cutting data for individual cutting applications. App size: 8.1. MB

Eberle Metalworking Fluids

A comprehensive product range of metalworking fluids for all mechanical applications can be directly ordered from Eberle Fluid Technolgoy, LLC. Closer details are available at: www.eberlefluidtechnology.com

Logistics

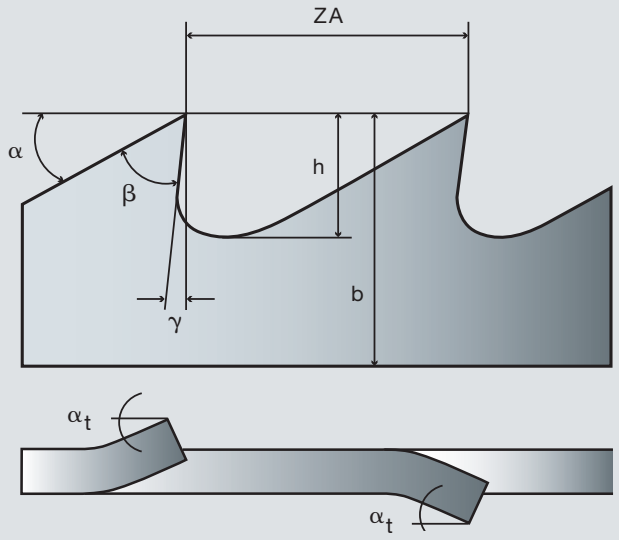
Reliability and flexibility are the key objectives of our logistics services. Experienced partners handle the transport logistics competently and rapidly between our Augsburg production site and customers' premises. Our AEO-Certification simplifies customs clearance at air- and seaports since we are an Authorized Economic Operator. For our customers, this certification saves valuable time.

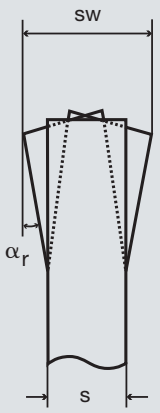


SUCCESS: PERFORMANCE AND EXCELLENCE.

We continually challenge ourselves to produce and develop high performance band saw blades. Our experience has been crucial to a first-class product. To make sure our customers get the best possible performance, we quality inspect our products during the development and manufacturing process. We refuse to deliver any of our tools before intensive quality checks are conducted. State of the art quality assurance methods support us, to ensure this consistent high level – from the word go.

BAND SAW BLADE GEOMETRY

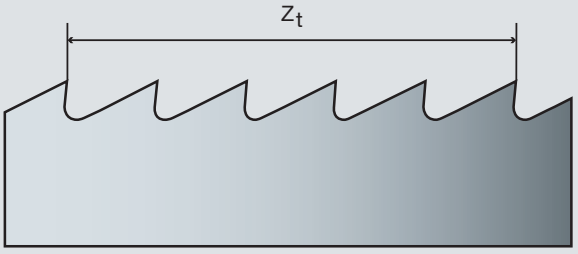




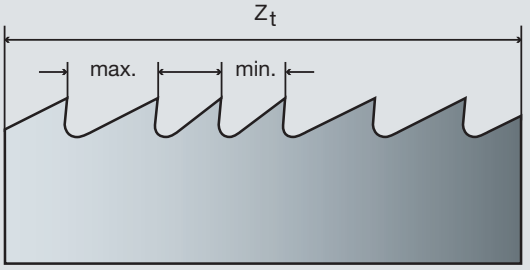
Rake angle — γ
Relief angle — α
Rad., tang. relief angle — α_r, α_t
Wedge angle — β
Set width — sw
Blade thickness — s
Blade width — b
Tooth interval — ZA
Tooth pitch — z_t
Tooth height — h

TOOTH PITCH

Tooth pitch Zt (tpi) describes the number of teeth per inch (1 inch = 25.4 mm).
With band saw blades, a distinction is drawn between constant and variable tooth pitch.



constant tooth pitch

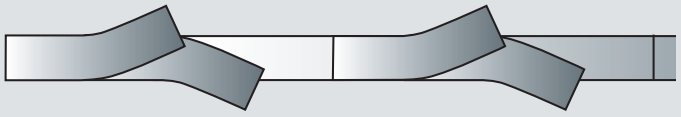


variable tooth pitch

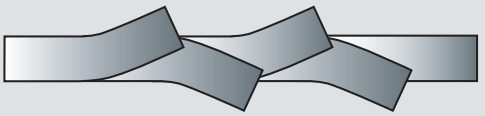
TOOTH SET

During the setting process the teeth will be bowed side ways to free the blade from chip load.
Depending on the application, we offer the following set patterns:

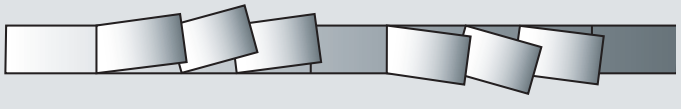
raker set R - L - S - R - L - S



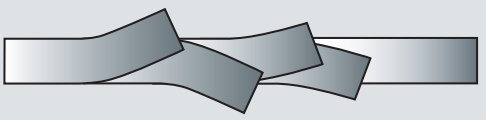
constant set R - L - R - L - S



wave set

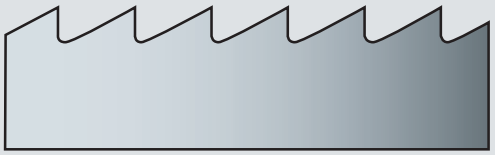


variable set R+ - L+ - R - L - S

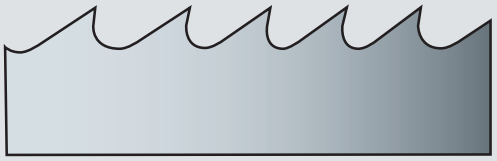


Special sets and special set widths are available upon request.

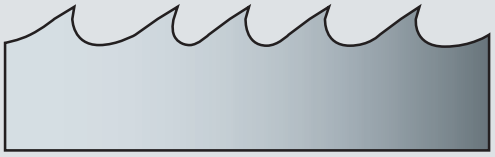
TOOTH FORMS



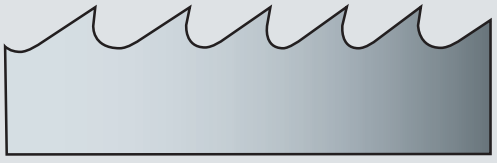
N-TOOTH | neutral rake angle
> short-chip materials
> small work pieces



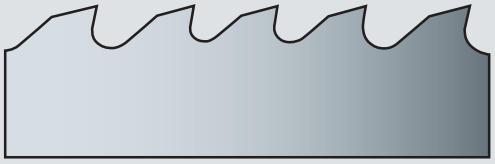
CS-TOOTH | positive rake angle
> long-chip, tough materials
> universal application



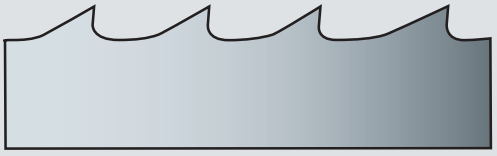
DCS-TOOTH | positive rake angle
> heavy duty, high alloyed work pieces
> large cross-sections



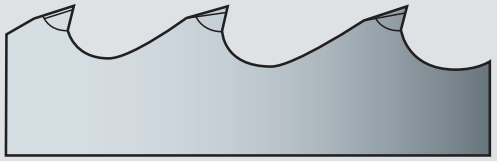
CSP-TOOTH | positive rake angle
> austenitic materials
> nickel-based alloys



CST-TOOTH | positive rake angle
> short-chip materials
> profiles, tubes, bundles

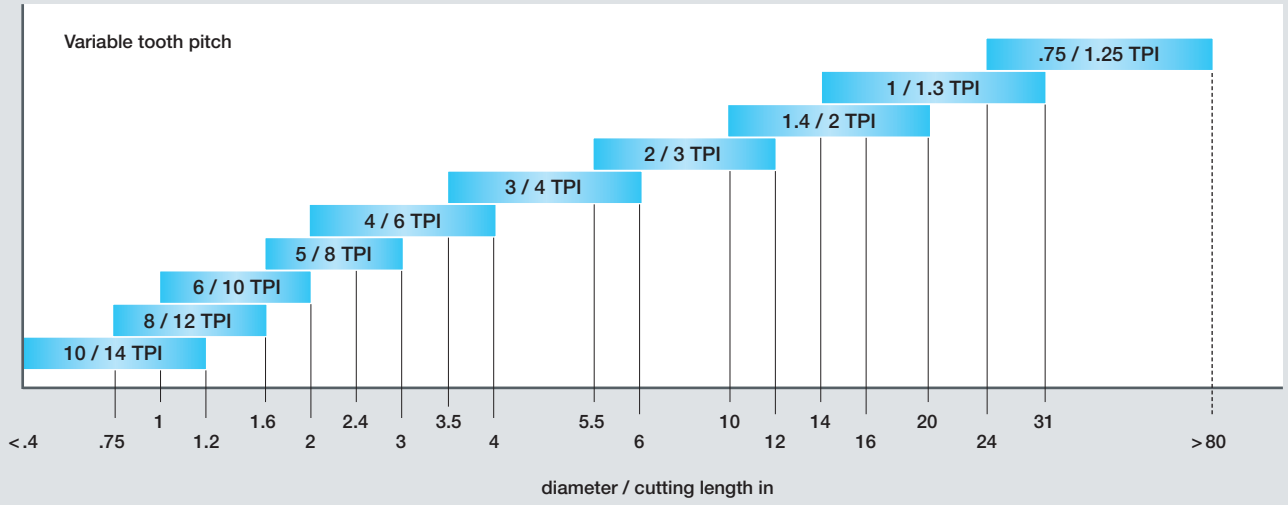


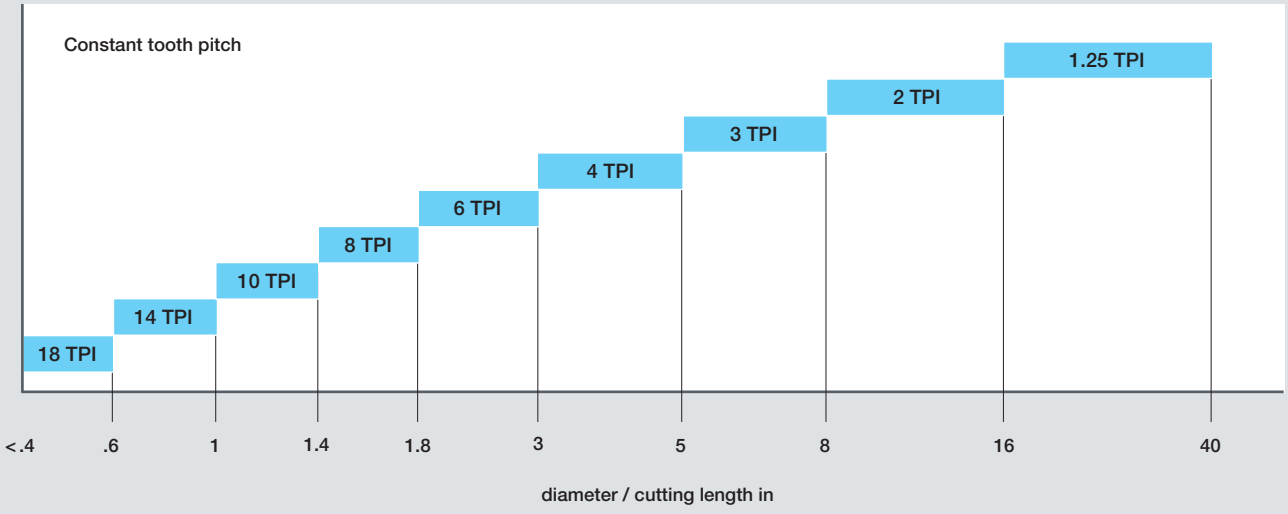
CW-TOOTH | positive rake angle
> low-alloy materials, Aluminum
> mold construction, contours



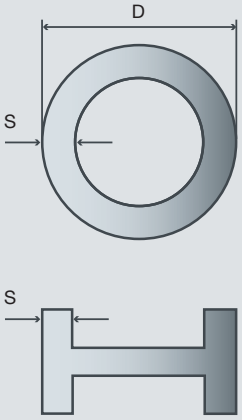
TR/TRN-TOOTH | variable rake angle
> heavy duty work pieces
> high cutting performance

CUTTING RECOMMENDATIONS FOR SOLID MATERIAL





CUTTING RECOMMENDATIONS FOR TUBES AND PROFILES



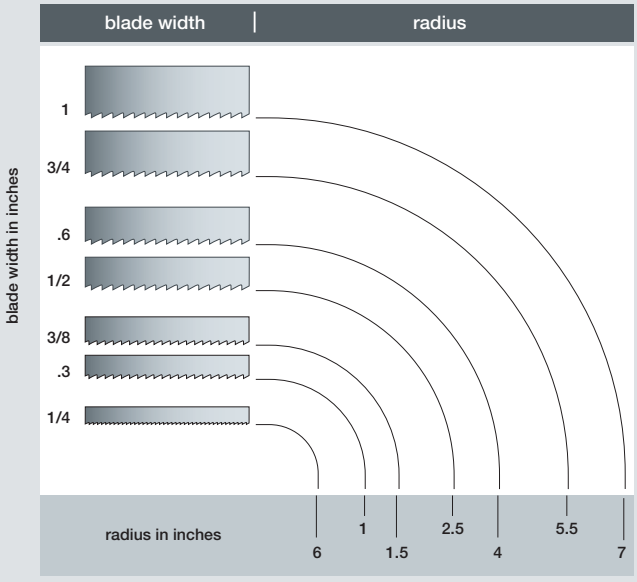
D in	.75	1.5	2.4	3	4	6	8	12	16	20	> 28
S in	teeth per inch										
.08	14	14	14	14	10/14	10/14	10/14	10/14	8/12	8/12	6/10
.12	14	10/14	10/14	8/12	8/12	8/12	6/10	6/10	6/10	6/10	6/10
.15	14	10/14	10/14	8/12	8/12	6/10	6/10	5/8	5/8	4/6	4/6
.20	14	10/14	10/14	8/12	6/10	6/10	5/8	4/6	4/6	4/6	4/6
.25	14	10/14	8/12	8/12	6/10	5/8	5/8	4/6	4/6	4/6	4/6
.3	14	8/12	6/10	6/10	6/10	5/8	5/8	4/6	4/6	4/6	4/6
.4		6/10	6/10	5/8	5/8	4/6	4/6	4/6	4/6	3/4	3/4
.5		6/10	5/8	4/6	4/6	4/6	4/6	3/4	3/4	3/4	3/4
.6				4/6	4/6	3/4	3/4	3/4	3/4	2/3	2/3
.75				4/6	4/6	3/4	3/4	3/4	3/4	2/3	2/3
1.2				3/4	3/4	3/4	2/3	2/3	2/3	2/3	1.4/2
2						2/3	2/3	2/3	2/3	1.4/2	1.4/2
3							2/3	1.4/2	1.4/2	1.4/2	1/1.3
4								1.4/2	1.4/2	1/1.3	.75/1.25
6										.75/1.25	.75/1.25
> 10										.75/1.25	.75/1.25

Setting the tension of band saw blades

Correct tension significantly affects the blade's cutting accuracy. When blades are manually tensioned in sawing machines, the tension should be checked after breaking-in and corrected where necessary. The Eberle tension meter can be used to set the optimum blade tension.

Contour sawing

The graph below depicts the optimum ratio between saw blade width and the radius to be cut. By adhering to this data, clamping or twisting of the blade can be avoided.



Band saw guides

Blade beam strength is responsible for accurate cuts. The closer the guides are to the materials being cut, the more accurate the cuts will be.

Blade break-in

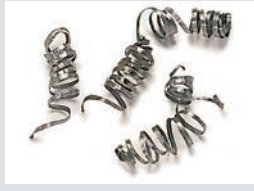
By breaking-in the saw blade, it is possible to achieve optimum durability. With uncoated saw blades, Eberle recommends breaking-in at a 40% reduced feed rate. If vibration occurs during break-in, a slight reduction in cutting speed will increase cutting pressure to stabilize blade. Break-in should last approx. 15 minutes or cut a minimum of 100 sq/inches of material.

Chip formation

The shape and color of the chips provide information about cutting pressure and thermal load on the saw blade.

Very fine or pulverized chips indicate that cutting pressure is too low.

Thick, heavy or bluish chips signal overstressing of the saw blade.



Loosely coiled chips are a sign of ideal cutting conditions.

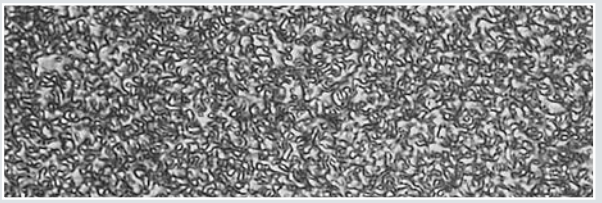
Cooling lubricant

With most metal materials, cooling lubricant is indispensable. With Aluminum and Aluminum alloys, it also helps keep the gullets free of chips and achieve improved cutting surfaces. No lubricant is necessary for cast iron, brass and some non-metallic materials such as plastics, graphite etc.

Safety information

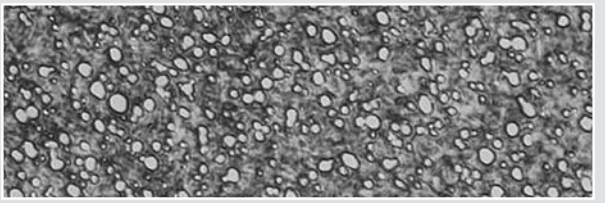
To avoid injury, protective gloves, safety goggles and protective shoes should be worn when using band saw blades.

CARBIDE AND BIMETAL MICROSTRUCTURE



Carbide

Eberle uses carbide exclusively for its products in the carbide sector, which are characterized by their extreme shock and wear resistance. Sub-micrograin types with a homogeneous microstructure are used.



Bimetal M51

The heat treatment of the HSS and the backing material is crucial for the hardness and shock resistance of the band saw blades. The quality of Eberle band saw blades is largely due to the size, number and distribution of the carbides.

FEED RATE CALCULATION IN (LINEAR INCHES PER MINUTE)

1.) Determine Number of Teeth in 12" Section of Blade.
(Note: Use Optimum Tooth Pitch Based on Effective Material Width)

2.) (Blade Speed For Material Grade & Width) X (Number of Teeth in 12") = Number of Teeth per Minute
(Note: Band speed equals machinability. Determining proper speed relative to material hardness is crucial.)

3.) (Number of Teeth Per Minute) X (*Tooth Penetration .0002") = Feed Rate in Linear Inches Per Minute

*Determining Tooth Penetration		
	Tooth Penetration	**Result**
High Production	.0004" per tooth	Parts Per Hour & Poor Blade Life
Good Production	.0002" - .0003" per tooth	Good Blade Life & Good Production
Low Production	.0001" per tooth	Low Production & Poor Blade Life

***Note:**
Carbide blades can operate in .0002" - .0004" (depending on material hardness) achieving good blade life and exceptional production.

NON-HEAT TREATED MATERIAL EXAMPLE:

Example Scenario 1: (4" Diameter) Material 4140 - 3/4 Tooth
1.) 3/4 Tooth - 12" Section has 40 Teeth
2.) Blade Speed 225 SFM X 40 Teeth = 9000 Number of Teeth per Minute
3.) 9000 T/Min. X .0002" Tooth Penetration = 1.8 Linear Inches on Feed Rate Control

HEAT TREATED MATERIAL EXAMPLE:

Note: Refer to the following chart if material is heat treated.

For Heat Treated Materials:			
Reduce Band Speed	**Rockwell C**	**Brinell**	***See Example Scenario #2**
10%	20-24	226-247	
20%	24-28	247-271	
30%	28-32	271-301	
40%	32-38	301-353	
50%	38+	353+	

Example Scenario 2: (4" Diameter) Material 4140 - Heat Treated to 32 RC - 3/4 Tooth
1.) 3/4 Tooth - 12" Section has 40 Teeth
2.) Blade Speed 135 SFM X 40 Teeth = 5400 Number of Teeth per Minute
3.) 5400 T/Min. X .0002" Tooth Penetration = 1.08 Linear Inches on Feed Rate Control

MATERIAL GROUPS AND STANDARDS

MATERIAL GROUP	MATERIAL	SYMBOL EN	MATERIAL-NO.	USA AISI / SAE	JAPAN JIS	RUSSIA GOST	FRANCE AFNOR
Group 1	free cutting steel, structural steel, deep drawing steel	10 S 20 35 S 20 St 37 St40 C15	1.0721 1.0726 1.0037 1.0040 1.0401	1108 1140 1015 1016	 STKM 12A; C S 15 C	 Ст3сп 15	10 F 2 35 MF 6 E 24-2 C 18
Group 2	structural steel, tempered steel	St 50 St 60 C35 C45 14Mn4	1.0050 1.0060 1.0501 1.0503 1.1157	A 572 (50) A 572 (65) 1035 1045 1039	SS 490 SM 570 S 35 C S 45 C	Ст5пс Ст6пс 35 45 40Г	A 50-2 A 60-2 C35 C45 40 M 5
Group 3	tempered steel case-hardened steel	42CrMo4 41Cr4 34CrNiMo6 16MnCr5 50CrV4	1.7225 1.7035 1.6582 1.7131 1.8159	4140 5140 4340 5115 6150	SCM 440 (H) (M) SCr 440 (H) (M) SNCM 431 SUP 10	38ХМА 40Х 38Х2Н2МА 18ХГ 50ХГФА	42 CrMo4 41 Cr 4 34 CrNiMo 6 16 MnCr 5 50 CrV 4
Group 4	tool-steel, ball bearing steel	C125W 75Cr1 100Cr6 100CrMn6	1.1663 1.2003 1.3505 1.3520	W 112 8670 52100	SK 2 SUJ 2 - SUJ4	У13 9ХФ ШХ15 ШХ15СГ	 100 Cr 6
Group 5	high-speed steel	S6-5-2 S2-10-1-8 S10-4-3-10 S18-1-2-5	1.3343 1.3247 1.3207 1.3255	M 2 M 42 T4	SKH 51 SKH 59 SKH 57 SKH 3	R6M5 P2M10K8-МП P10M4Ф3K10-МП P6M5K5	HS6-5-2 HS2-9-1-8 HS10-4-3-10 HS18-1-1-5
Group 6	cold working steel	X210Cr12 X155CrVMo12-1 90MnCrV8 X165CrMoV12	1.2080 1.2379 1.2842 1.2601	D3 D2 O2 D5	SKD 1 SKD 11 STD 11	X12 X12МФ 9Г2Ф X12M	X200 Cr12 X160CrMoV12 90MnV8 Z160CDU12
Group 7	nitriding steel, high-alloy tempered steel	55NiCrMoV6 34CrAl6 40CrMnNiMo7 X40CrMoV5 1 40CrMnNiMo	1.2713 1.8504 1.3211 1.2344 1.2738	L 6 H 13 P 20	SKT 4 SKD 61	5ХНМ 4Х5МФ1С	55NiCrMoV7 Z40CDU5
Group 8	corrosion and acid-resistant steel (austenitic)	X5CrNi18 10 X6CrNiMoTi17 12 2 X46CiNiTi18 10	1.3401 1.4571 1.4541	A 128 (A) 316 Ti 321	SCMn H 11 SUS 316 Ti SUS 321	110Г13Л 10Х17Н13М2Т 06Х18Н10Т	Z 120 M 12 Z 6 CNDT 17-12 Z 6 CNT18-10
Group 9	corrosion and acid-resistant steel (ferritic)	X90CrMoV18 X35CrMo17 X110CrMo17	1.4112 1.4122 1.4126	440 B		20Х17Н2 95Х18	
Group 10	heat-resistant steel	X2CrNiMoN22 5 3 X15CrNiSi25 4 X15CrNiSi25 20 X12CrNi25 21	1.4426 1.4821 1.4841 1.4854	 314 310	 SUH 310 SUH 310S	 20Х25Н20С2 20Х25Н20С2	 Z 15 CNS 25-20
Group 11	nickel-based alloys	NiMo16Cr16Ti NiCr20Co18Ti NiCr19Fe19Nb5Mo3	2.4610 2.4632 2.4668	Hastelloy Nimonic Inconel 718			
Group 12	titanium alloys	Ti Grade 1 Ti-6Al-4V	3.7025 3.7164	CP Titanium Ti-6Al-4V		ВТ1-0 ВТ6	
Group 13	cast iron (lamellar, globular)	GG15 GG30 GGG50 GGG70	0.6015 0.6030 0.7050 0.7070	 A48-45B 65-45-12		СЧ15 СЧ30	
Group 14	brass, copper, aluminum						
Group 15	aerated concrete, graphite, composite material						
Group 16	precipitation hardening martensitic stainless steel	X5CrNiCuNb17-4-4 X5CrNiCu15-5	1.4542/1.4548 1.4545	17/4 PH 15/5 PH	SUS630		Z6CNU17-04 X5CrNiCu15-4

11/2014

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