

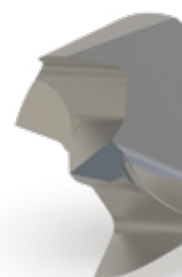
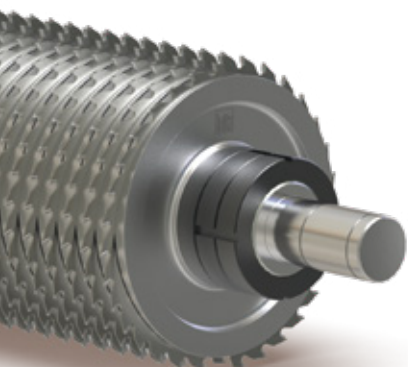
# Mineral wool

Tool and processing solutions  
for experts



# Content

Introduction	3
Mineral wool processing	
Stone and glass wool	4
Sizing	
Cutting with circular sawblades	6
Chipless cutting with circular knives	10
Overview of cutting parameters	
Mineral wool processing	11
Profiling	
Grooving and shredding with cutters and hogsers	12
Drilling	
Perfect bores	14
Special solutions	
Perfect chip collection with extraction hoods	15
Leitz Service	
Tool service in manufacturer quality	16
Leitz worldwide	
Partner in your market	18



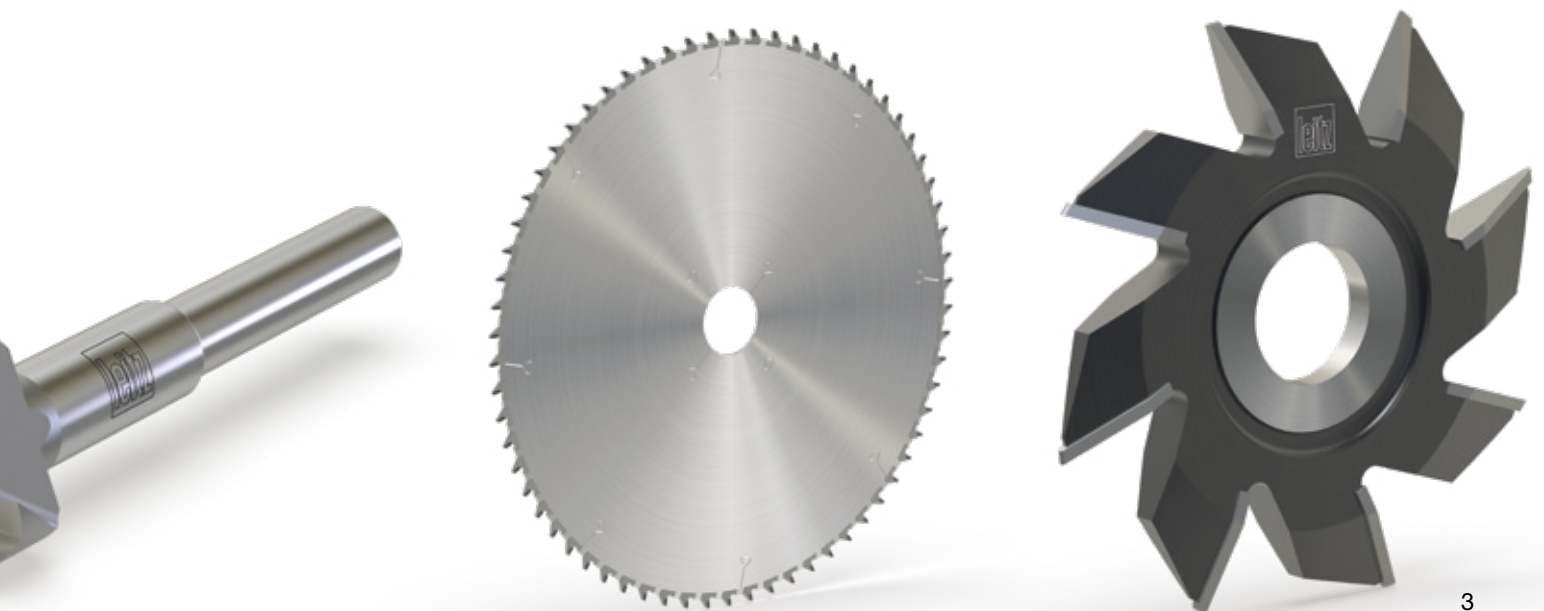
# Introduction

**Insulating materials – a term that is reflected in numerous products that surround us in our daily lives. As ordinary as these products appear, as challenging is their manufacture.**

For manufacturing and processing industries, precisely this aspect is of key importance, therefore makes them absolute specialists. The more specialized the knowledge of materials such as stone and glass wool, the higher the demands on the tooling and processing solutions used. Particularly with regard to existing quality specifications to the finished product, the comprehensive consideration of tool solutions, technical conditions and processes is the basis for economic success.

However, this success can only be ensured in the long term by using individually adapted technology and service concepts.

For Leitz, the success of its customers and a long-term partnership is the main focus. As a leading supplier of technically high-quality tool solutions, it is our goal to increase efficiency, productivity, quality and sustainability for our customers. This is made possible by our more than 140 years of experience in tool manufacturing and our particularly deep knowledge of our customers needs and that of the market. All of this and a worldwide Leitz service network with more than 100 of our own service stations as well as our certified quality promise, make Leitz the partner for your success.



# Mineral wool processing

Stone and glass wool



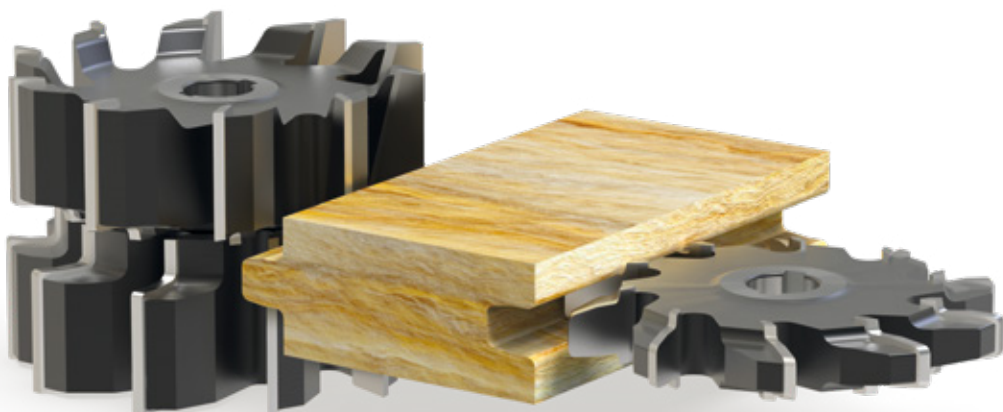
## Density as defining criterion

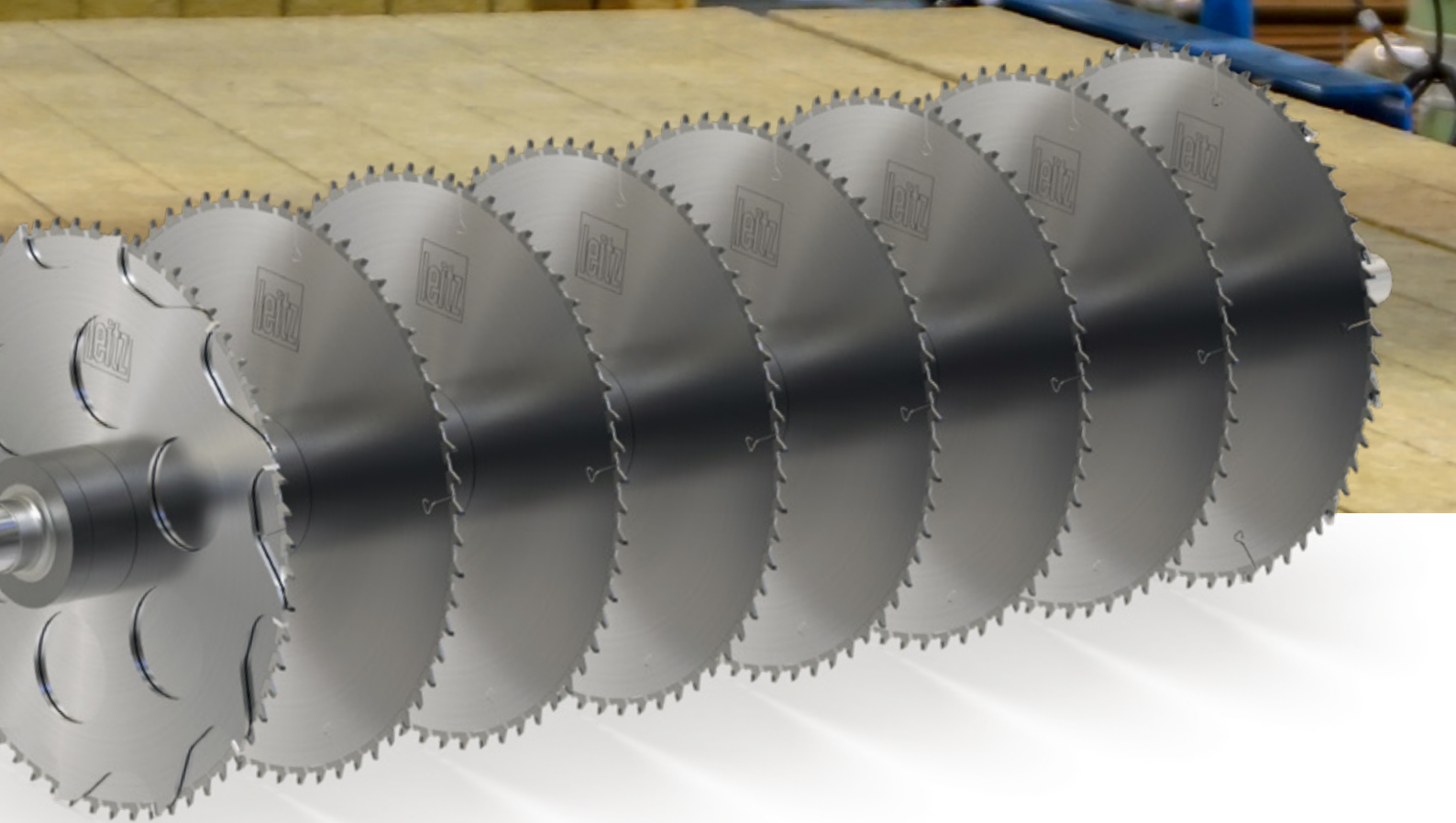
**Due to the extremely abrasive properties of rock wool and glass wool, specific tool solutions are required for their machining. Depending on the density and composition of the material to be machined, consistently perfect results must be maintained over long-term use. The challenge in sizing, profiling or even drilling is therefore always to maximize the lifetime and performance of the tools used and thus to make the overall process as efficient as possible.**

## Sizing

Mineral wool, which has a material density of more than  $120 \text{ kg/m}^3$ , is mainly sized using circular sawblades. However, the “washing out” of the tool body and the resulting rapid breakage of the saw tooth must be avoided. For such requirements special circular sawblades with gullet area protection are used. This is absolutely necessary for long production runs due to their excellent tool life.

Circular knives have the advantage of cutting the material almost without any chips and bringing it to the required size. The different densities of the material are decisive for whether knives with smooth cutting edges or with serrated grinding or discontinuous cutting are used.





## Profiling

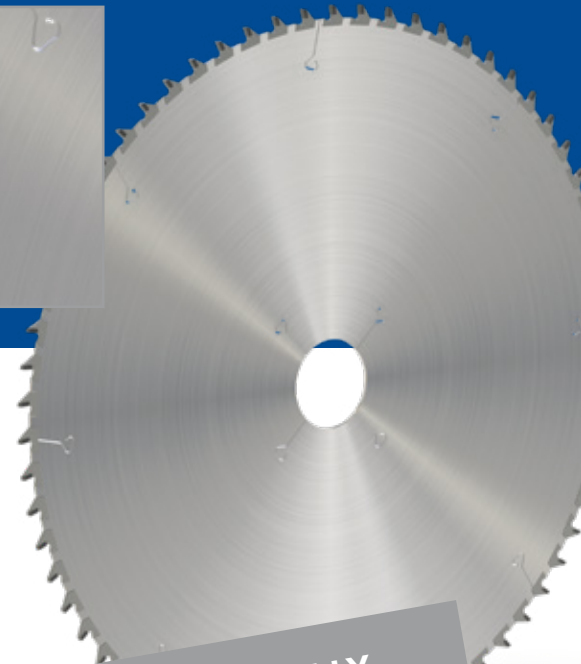
High feed rates with perfect cutting quality are the requirements for profiling mineral wool products. Tool solutions with carbide-tipped cutters make it possible to keep the machining process during profiling particularly short and efficient while significantly extending tool life compared to conventional tools.

## Drilling

Drilling holes in mineral wool places the highest demands on the cutting quality of the tools used. The resulting boreholes must be absolutely clean and free of protrusions or residues for optimum functionality of the end product. Especially for these demanding machining operations, solutions are required that are characterized by long tool life and perfect cutting results.

# Sizing

## Cutting with circular sawblades



### HW tipped circular sawblade; teeth with protected gullet

Solid material – cutting

Due to the teeth and gullet areas being solid carbide, the damage to the tool body is reduced and a maximum tool life is guaranteed. This special circular sawblade is ideally suited for solid material and is used on shafts or spindles due to its tool life.

**SPECIALLY  
SUITABLE FOR**  
material density > 120 kg/m<sup>3</sup>

#### HW tipped circular sawblade; teeth with protected gullet

D mm	SB mm	TDI mm	BO mm	Z	ZF	ID
300	3.5	2.5	65	36	WZ	166661
400	4.0	2.8	65	48	WZ	166662
450	4.0	2.8	65	54	WZ	166663
500	4.0	2.8	65	66	WZ	166664
550	4.0	2.8	65	72	WZ	166665
600	4.5	3.1	65	78	WZ	166666

Other dimensions available on request.

#### YOUR BENEFITS

- Long tool life
- Fewer tool changes
- High cutting quality
- Proven sawing technology

#### AT A GLANCE

- Carbide block teeth (gullet area protection)
- Resharpenable
- Individual dimensions
- Designed for mineral material machining



## HW tipped circular sawblade with protected gullet, flange mounted

For trimming mineral wool

The circular sawblade with protected gullet and flange mounted is particularly suitable for long production runs due to its long tool life.



### HW tipped circular sawblade with protected gullet, flange mounted

D mm	SB mm	H mm	BO mm	ID
480	4.0	80	28 DKN	742812



### HW tipped circular sawblade with protected gullet

D mm	SB mm	TDI mm	BO mm	Z	ZF	ID
480	4.0	2.8	80	60	WZ	166667



### Flange

D mm	l mm	H mm	BO mm	ID
198	7.9	80	28 DKN	063972



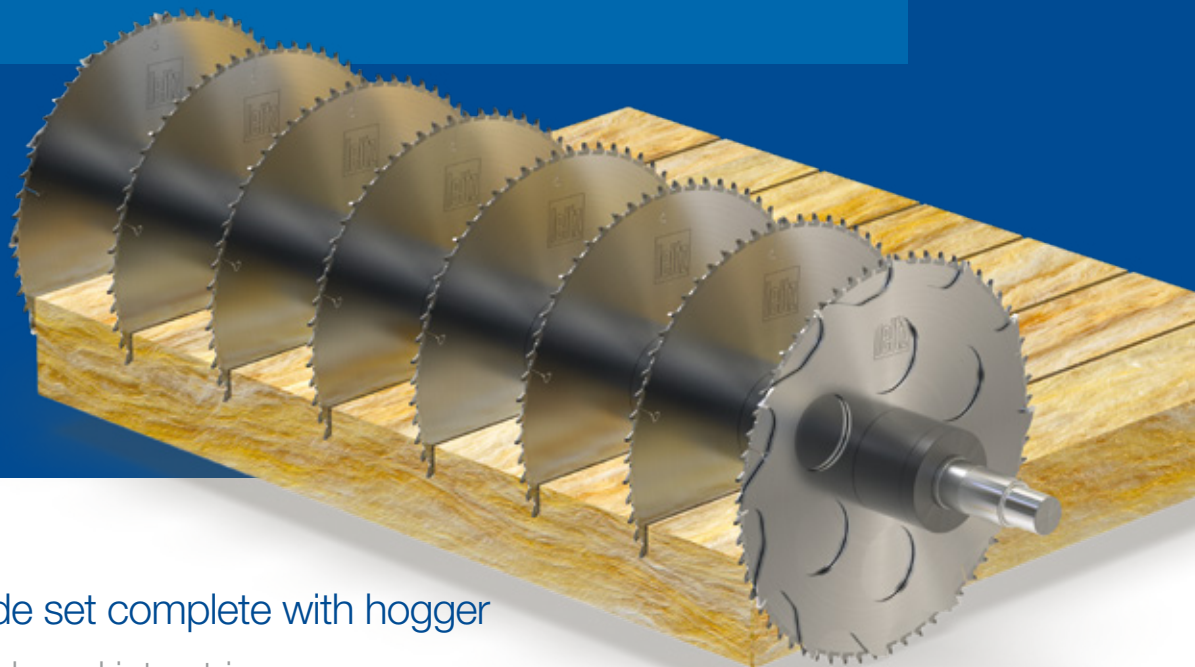
### Spacer

D mm	B mm	BO mm	NLA mm	ID
198	5.6	80	6/8.5/160	028688

Other dimensions available on request.

# Sizing

## Cutting with circular sawblades



### Circular sawblade set complete with hogger

For cutting mineral wool into strips

Mineral wool is cut into uniform strips using the special blades mounted on a spindle. For this operation the sawblades used have protected gullets. The residual pieces of mineral wool are shredded with the hogger sawblade and fed back into the manufacturing process.



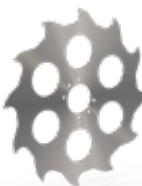
#### Circular sawblade set

D mm	GL mm	SB mm	A mm	Z	ZF	ID
480	1631	1231.9	169.7	60/12	WZ/FZ	742813



#### HW tipped circular sawblade with protected gullet

D mm	SB mm	TDI mm	BO mm	Z	ZF	ID
480	4.0	2.8	80	60	WZ	166668



#### HW tipped hogging circular sawblade

D mm	SB mm	TDI mm	BO mm	Z	ZF	ID
478	6.5	4.5	80	12	FZ	166669

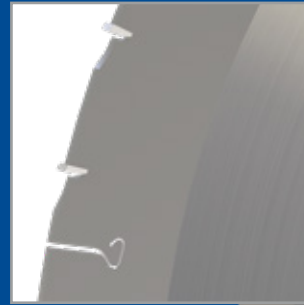


#### Spacer

D mm	B mm	BO mm	NLA mm	ID
120	170.9	80	2/10/100	028689

Other dimensions available on request.





## HW tipped circular sawblade with tungsten carbide ware protection

Long tool life, thinner cutting width

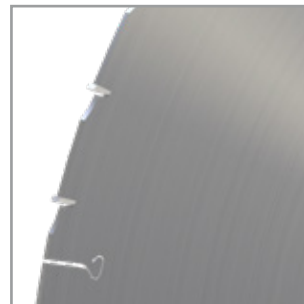
This special circular sawblade is best suited for solid material (> 120 kg/m<sup>3</sup>) where thin cuts are needed.

A tungsten carbide coating is applied onto the main blade to protect the tool body from wear, therefore increasing the overall tool life.

## Alternative: Un-coated HW tipped circular sawblade

For solid material – conventional splitting

This special circular sawblade is suitable for solid materials (> 120 kg/m<sup>3</sup>) where thin cuts are needed and for low volume production.



**SPECIALLY  
SUITABLE FOR**  
material density > 120 kg/m<sup>3</sup>

**SPECIALLY  
SUITABLE FOR**  
material density > 120 kg/m<sup>3</sup>

# Sizing

## Chipless cutting with circular knives

### Circular knives

#### Soft material – chipless cutting

Soldered carbide segments on the basic body result in a very long lifetime of these circular knives.

The circular knives are available in three different types:



#### **Plain version – type 1**

This tool is especially suitable for very soft materials (20-60 kg/m<sup>3</sup>).



#### **With serrated edge – type 2**

This tool is especially suitable for soft materials (50-80 kg/m<sup>3</sup>).



#### **Open cut – type 3**

This tool is especially suitable for medium-strength materials (80-120 kg/m<sup>3</sup>).



#### YOUR BENEFITS







- Long tool-life
- Fewer tool changes
- High cutting quality

#### AT A GLANCE

- Matched cutting edge geometry
- Tipped with HW segments
- Resharpenable
- Individual dimensions

# Overview of cutting parameters

## Mineral wool processing

Product illustration	Tool design	Density $\rho$ [kg/m <sup>3</sup> ]	Processing	Cutting speed $v_c$ [m/s]	Tooth feed $f_z$ [mm]	Direction of rotation
	HW tipped circular sawblade with protected gullet	> 120	Cutting	20-30	0.2-0.3	Preferably with feed
	HW tipped circular sawblade with tungsten carbide ware protection	> 120	Cutting	20-30	0.2-0.3	Preferably with feed
	Un-coated HW tipped circular sawblade	> 120	Cutting	20-30	0.2-0.3	Preferably with feed
	Circular knife plain version type 1	20-60	Chipless cutting	30-40	–	Preferably with feed
	Circular knife with serrated edge type 2	50-80	Chipless cutting	30-40	–	Preferably with feed
	Circular knife open cut type 3	80-120	Chipless cutting	30	0.2-0.3	Preferably with feed

The above information are parameters for the optimal machining of the specified materials. The information on tools and machining parameters are standard values without any claim to completeness and general validity. Machine-related or process-related boundary conditions can lead to deviating application parameters.

# Profiling

Grooving and shredding with cutters and hogs



## HW profile cutters

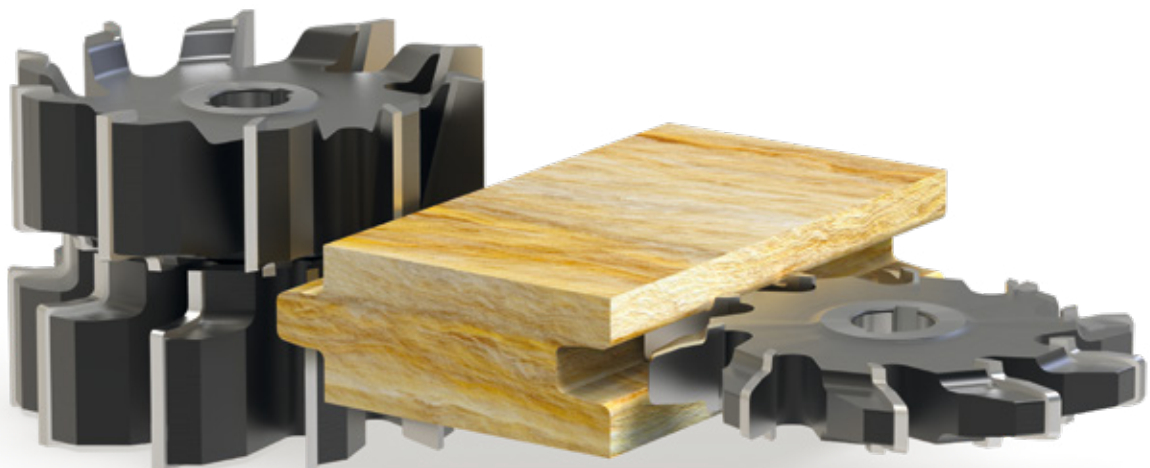
For pipe insulation and V-grooves

These HW tipped profile cutters make it possible to keep the profiling machining process quick and efficient. In order to significantly extend tool life compared to conventional tools, it is possible to coat the tool body with tungsten carbide. Furthermore, the chip flow can be directed into the extraction system by means of DFC® (Dust Flow Control) gullet areas. In combination, this optimizes the life cycle of the tool.

## HW tipped cutters

The specialists for lateral profiling

A wide variety of joints, such as tongue-and-groove, smooth-edged or stepped rebates, are applied on so-called continuous machines. These tool solutions are individually adapted to the respective process.



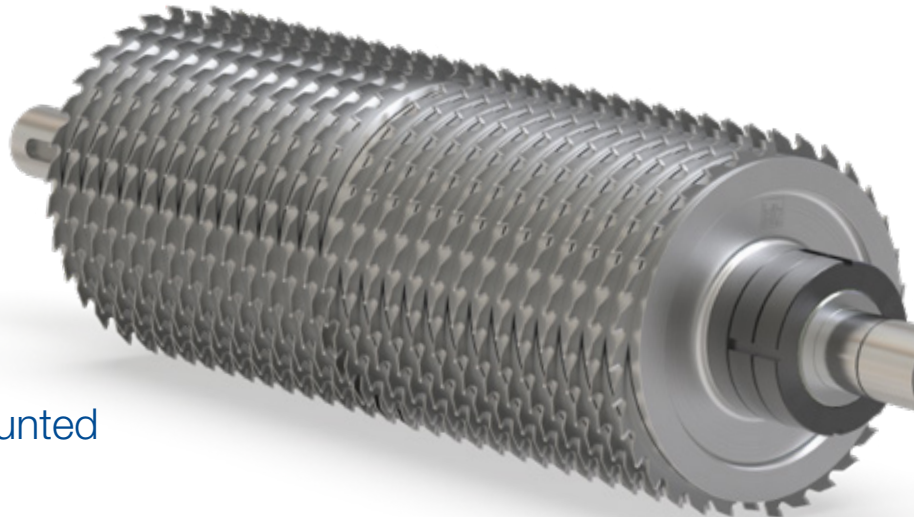


## HW grooving cutterset, spindle mounted

The perfect system for individual grooving

The grooving set mounted on a spindle is particularly suitable for grooving in defined sizes, i.e. widths and depths in mineral wool. The groove distances can be varied by means of using spacers.

For this purpose, the tool solutions are individually adapted to the overall process.



## Hogging cutterset, spindle mounted

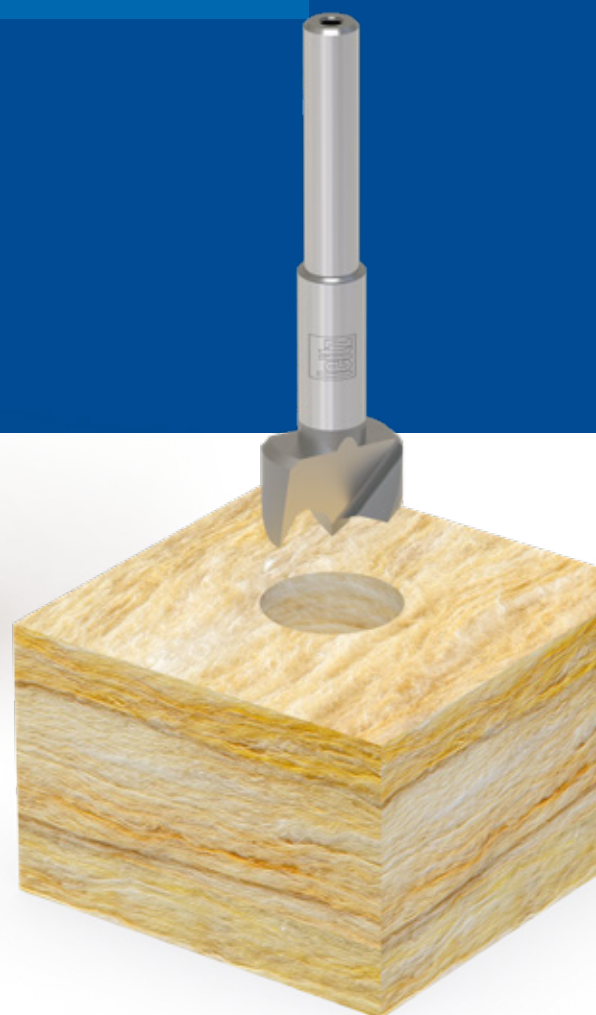
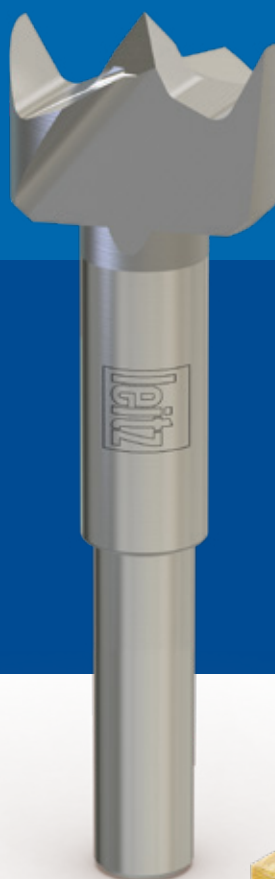
Shredding for recycling

During the machining of mineral wool, residual pieces accumulate which are crushed with a hogging cutterset on the spindle. This is in order to return it to the production process.

The desired cutting width can be achieved in a 30 mm raster by adding additional hoggers. In the hogger set shown above, for example, 14 hoggers are mounted on the spindle to achieve a cutting width of 420 mm. A special HW coating on the individual segments and a basic body made of steel with additional HW coating, protect this tool against the abrasive wear from mineral wool.

# Drilling

Perfect bores



## Solid HW boring bit

For perfect boreholes in mineral wool

When boring mineral wool, the highest demands are placed on the tool and the resulting cutting quality.

The exchangeable solid carbide drill head offers long tool life and excellent cutting results.

### Solid HW boring bit

D mm	GL mm	Z	S	ID
20.5	118	2	12x32	744007
25.5	118	2	12x32	744008
30.5	118	2	12x32	744009
40.5	118	2	12x32	744010

Other dimensions available on request.

#### YOUR BENEFITS

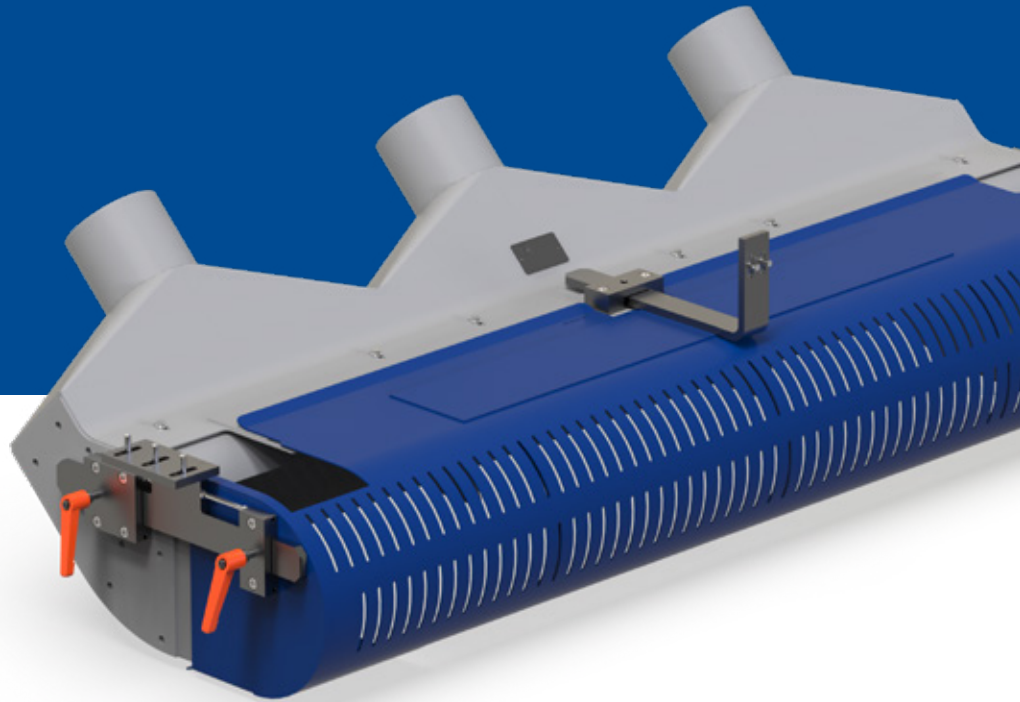
- Long tool life
- Fewer tool changes
- High cutting quality

#### AT A GLANCE

- Tuned cutting edge quality
- Exchangeable solid carbide drill head
- Multiple times resharpenable
- Designed for drilling mineral wool

# Special solutions

Perfect chip collection with extraction hoods

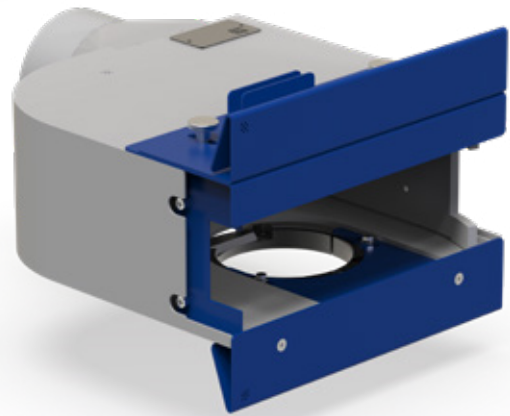


## DFC®-Extraction hoods

The specialists for efficient chip extraction

Extraction hoods are often considered to be of secondary importance, but in machining they have an enormous influence on quality, economy and safety in the machining process. For maximum efficiency, it is important that the tool and the extraction hood are correctly designed and adjusted to each other.

Leitz DFC®-Extraction hoods are individually designed and precisely adapted to the application. Thereby, all processing options such as profile variants or different material thicknesses are taken into account. Costs can be saved, machine cleaning becomes easier and the workpieces remain free of dust and chips.



*Example DFC®-Extraction hood for lateral machining*

### YOUR BENEFITS

- Minimum cleaning effort
- No chips on the workpiece
- Longer tool life times
- Easy handling
- Less noise and lower energy consumption

### AT A GLANCE

- Individually adapted extraction hoods
- Quick mounting on site
- Dust Flow Control Technology (DFC®)
- Easy changing of wear parts
- For almost all industries and machining tasks

# Leitz Service

Tool service in manufacturer quality

## Arguments for your success

**Tools as good as new – this is based on the philosophy of maximum tool life and perfect machining quality throughout the entire life cycle of Leitz products. The Leitz tool service plays a decisive role in this. Taking the highest quality standards into account, Leitz is able to regrind tools of all types and from all manufacturers and deliver them back to the customer in manufacturer quality for use again – and that means around the globe in over 150 countries.**

## Your benefits due to ...



### QUALITY

... in good hands

- Uniform service and quality standards worldwide
- Absolute precision throughout the whole service process
- Handling by qualified Leitz personnel
- Complete service process documentation



### RELIABILITY

... with us as your partner

- Local personal contact partner
- Reliable tool collection and delivery
- Transparent pricing



### KNOWLEDGE

... through our know-how

- Our own service education center for international employee and customer training
- Continuous updating of qualifications for our employees with special focus on technology and production
- Consultation service in almost all areas of the wood and wood-based materials processing industries



### PRODUCTIVITY

... is our incentive

- Quick accessibility, fast reactivity
- Understanding of your production processes
- Short set-up times due to programming aids and application data (Plug-and-Play)
- Optimal use from your tools over their entire life cycle





**100**

Service locations worldwide



**1000**

Service employees worldwide



**15 Mio**

Tools per year



**FLEXIBILITY**

**... through our solutions**

- Most modern machines and technologies
- Individual customer care through various service models (e.g. Complete Care)
- Re-grinding tooling from all manufacturers
- Flexible pricing models (square meters, running meters, number of products, ...)



**EFFICIENCY**

**... through our processes**

- Simple and short administration processing
- State-of-the-art electronic data collection systems via smartphone or tablet
- Comprehensive and transparent working steps



**SUSTAINABILITY**

**... for the environment**

- Raw material and optimized wear – as little as possible, as much as necessary
- Paperless administration and production
- Careful handling of valuable resources

# Leitz worldwide

Partner in your market



**38**

National companies



**100**

Service locations worldwide



**150000**

Satisfied customers



**3000**

Employees



## NORTH- & CENTRAL AMERICA

- 3 national companies
- 7 service locations



## SOUTH AMERICA

- 1 national company
- 1 production plant
- 3 service locations



### EUROPE

- 24 national companies
- 5 production plants
- 65 service locations



### ASIA

- 8 national companies
- 1 production plant
- 19 service locations



### AUSTRALIA / OCEANIA

- 2 national companies
- 5 service locations

A = dimension A  
B = width  
BO = bore diameter  
D = cutting circle diameter  
DFC = Dust Flow Control  
(optimised chip clearance)  
 $f_z$  = tooth feed  
GL = total length

H = height  
HW = tungsten carbide (TCT)  
ID = ident number  
NL = cutting length  
NLA = pinhole dimensions  
 $\rho$  (Rho) = density  
S = shank dimension

SB = cutting width  
l = clamping length  
TDI = thickness of tool  
 $v_c$  = cutting speed  
VHM = solid tungsten carbide  
Z = number of teeth  
ZF = tooth shape (cutting edge shape)



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