Processing recommendation

EGGER Eurodekor and Eurodekor Plus boards

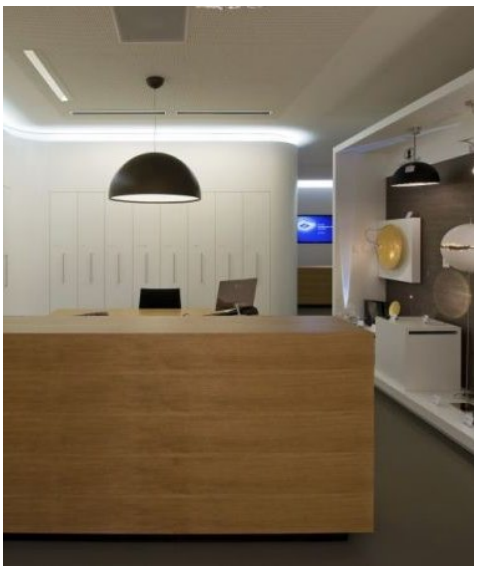
Machining of EGGER Eurodekor and Eurodekor Plus boards

Introduction
EGGER Eurodekor melamine resin-coated panels (in accordance with EN 14322) consist of wood-based materials that are covered on both sides with decorative paper. They are used in horizontal and vertical areas in furniture and interior design, for example for fronts, shelves, wardrobes or wall panelling. EGGER Eurodekor Plus ML meets increased requirements for impact resistance thanks to special multiple-layer structures up to 1 mm thick. Multi-layer structures are both very resistant to bending and stable and are therefore well suited for constructions with large spans. On request, an additional overlay (Eurodekor Plus HR) can be added for special abrasion requirements. In the proven EGGER quality in decor and material composite, EGGER Eurodekor offers a contemporary and aesthetically sophisticated solution.

General machining guidelines
When machining EGGER Eurodekor boards, the reference values from the table for the selection of the cutting speed (v_c) and the tooth feed rate (f_z) should be observed, depending on the machining method.

Machining method	Cutting speed v_c [m/s]
Sawing	60 - 90
Hogging	60 - 80
Cutting	50 - 70
Boring	0.5 - 2.0

Machining method	Tooth feed rate f_z [mm]
Sawing	0.05 - 0.15
Hogging	0.15 - 0.25
Cutting	0.50 - 0.80
Boring	0.05 - 0.25



These parameters are in relation to the tool diameter (D), number of teeth (Z), RPM (n) and feed speed (v_f) used on the processing machine. The right selection of these factors is responsible for a good machining result.

The following formulas apply to the calculation of cutting speed, tooth feed rate and feed speed:

v_c – Cutting speed [m/s]
$v_c = D \cdot \pi \cdot n / 60 \cdot 1000$
D – Tool diameter [mm]
n – RPM of tool [min^{-1}]

f_z – Tooth feed rate [mm]
$f_z = v_f \cdot 1000 / n \cdot z$
v_f – Feed speed [m/min]
n – RPM of tool [min^{-1}]

z – Number of teeth

v_f – Tooth feed rate [m/min-1]
$v_f = f_z \bullet n \bullet z / 1000$
f_z – Feed speed [mm]
n – RPM of tool [min^{-1}]
z – Number of teeth

Cutting material
Basically, both tools with carbide cutting edges (HW) and diamond cutting edges (DP diamond polycrystalline) can be used. The use of tools with diamond cutting edges (DP) is recommended in order to extend the tool life at high cutting volume.

Processing recommendation

EGGER Eurodekor and Eurodekor Plus boards

Cutting the panels with circular sawblades

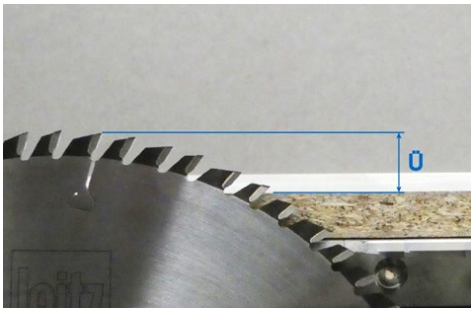
General note:

- Visible side (decorative side with foil) upwards
- Make sure that the sawblade protrudes correctly (see table)
- Adjust RPM and number of teeth to feed speed
- The use of a scoring sawblade is recommended for precise cuts on the bottom side of the panel

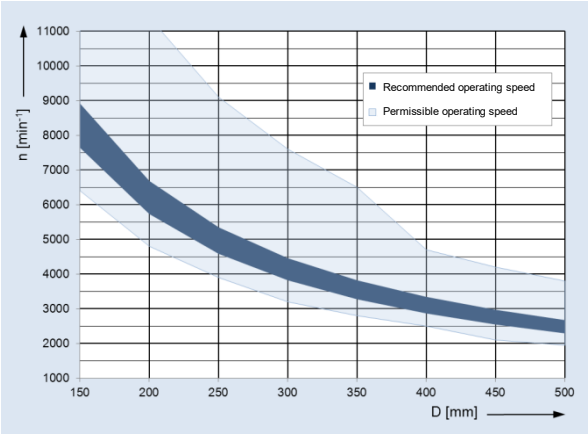
Depending on the sawblade protrusion, the entry and exit angle and thus the quality of the cutting edge change. If the top cutting edge becomes rough, set the sawblade higher. If the cut on the bottom side is rough, the sawblade must be set lower. In this way the most favorable height setting must be determined.

The following sawblade protrusions (Ü) must be set for sizing and panel sizing saws, depending on the diameter (D):

Circular sawblade diameter D [mm]	Protrusions Ü [mm]
D 250	ca. 10 - 20
D 300	
D 350	
D 400	
D 450	



Sawblades with a high number of teeth are generally recommended for good machining quality.
For circular sawing, the recommended cutting speed v_c is 60 - 90 m/s.

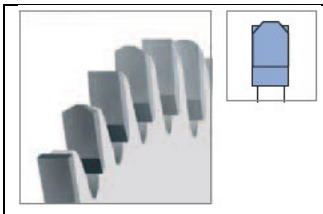
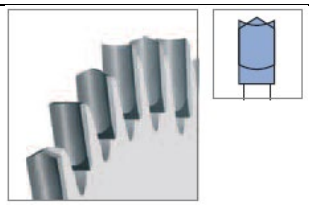
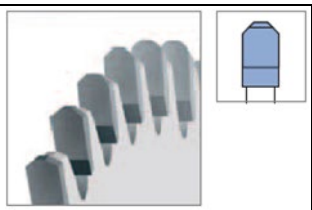
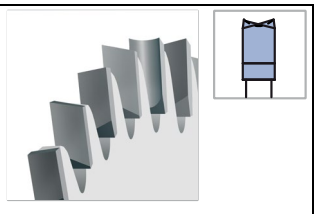


Speed diagram – depending on the circular sawblade diameter

Processing recommendation

EGGER Eurodekor and Eurodekor Plus boards

Recommended tooth shapes

			
FZ/TR (flat tooth/trapezoidal tooth)	HZ/DZ (hollow tooth/ inverted-V tooth)	TR/TR (trapezoidal tooth/ trapezoidal tooth)	HZFA/WZFA (bevelled hollow tooth/ alternate top bevel tooth)

Sizing sawblades
with the saw tooth shape hollow tooth/V-tooth (HZ/DZ) provide the best cutting results on machines without scoring unit. On machines with a scoring unit, the flat tooth/trapezoidal tooth (FZ/TR) sawblade shape also offers good cutting results with a higher tool life compared to HZ/DZ.

Sizing cut without pre-scoring *Excellent*

D [mm]	SB [mm]	TDI [mm]	BO [mm]	NLA [mm]	Z	ZF	SW °	ID
250	3.2	2.2	30	KNL	54	HZ/DZ	10	**161300**
303	3.2	2.2	30	KNL	68	HZ/DZ	10	**161301**
350	3.5	2.5	30	KNL	80	HZ/DZ	10	**161302**

Other dimensions available on request

Sizing cut with pre-scoring *Premium*

D [mm]	SB [mm]	TDI [mm]	BO [mm]	NLA [mm]	Z	ZF	Type	SW °	ID
250	3.2	2.2	30	KNL	60	FZ/TR	UT	10	**163002**
250	3.2	2.2	30	KNL	80	FZ/TR		10	**163003**
300	3.2	2.2	30	KNL	72	FZ/TR	UT	10	**163005**
300	3.2	2.2	30	KNL	96	FZ/TR		10	**163006**
350	3.5	2.5	30	KNL	84	FZ/TR	UT	10	**163007**
350	3.5	2.5	30	KNL	108	FZ/TR		10	**163008**

Other dimensions available on request

In order to create a work-friendly machining, WhisperCut circular sawblades with DP cutting material are recommended. WhisperCut circular sawblades produce up to 10 dB(A) less noise and can be used with standard splitting wedges on machines with scoring unit.

Sizing cut *Excellent* – WhisperCut

D [mm]	SB [mm]	TDI [mm]	BO [mm]	NLA [mm]	Z	ZF	SW °	ID
250	3.2	2.4	30	KNL	50	HZFA/WZFA	10	**190697**
303	3.2	2.4	30	KNL	60	HZFA/WZFA	10	**190698**
350	3.2	2.4	30	KNL	70	HZFA/WZFA	10	**190699**

Other dimensions available on request

Panel sizing sawblades
with saw tooth shape combinations such as flat / trapezoidal tooth (FZ/TR) or trapezoidal / trapezoidal tooth (TR/TR) are recommended for this purpose. The Leitz RazorCut (TR/TR) saw type achieves the best cutting quality here.

Splitting individual panels and panel stacks – *Premium*

D [mm]	SB [mm]	TDI [mm]	BO [mm]	NLA [mm]	Z	ZF	SW °	ID
300	4.4	3.2	30	KNL	60	FZ/TR	15	**163400**
350	4.4	3.2	60	KNL	72	FZ/TR	15	**163408**
350	4.4	3.2	60	2/14/100	72	FZ/TR	15	**163409**
380	4.8	3.5	60	2/14/100 2/14/125	72	FZ/TR	15	**163418**
380	4.4	3.2	30	2/14/100 2/14/125	72	FZ/TR	15	**163419**

Other dimensions available on request

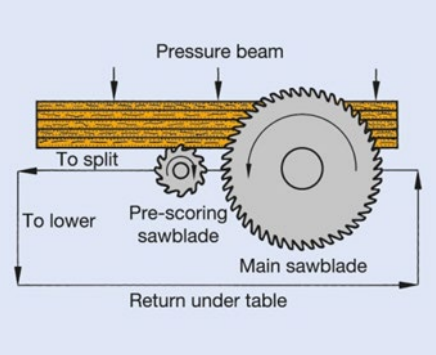
Splitting individual panels in finish cut quality *Excellent* – RazorCut

D [mm]	SB [mm]	TDI [mm]	BO [mm]	NLA [mm]	Z	ZF	SW °	ID
300	4.4	3.2	30	KNL	60	TR/TR	15	**161102**
350	4.4	3.2	60	KNL	72	TR/TR	15	**161108**
350	4.4	3.2	60	2/14/100	72	TR/TR	15	**161109**
380	4.8	3.5	60	2/14/100 2/14/125	72	TR/TR	15	**161116**
380	4.4	3.2	30	2/14/100 2/14/125	72	TR/TR	15	**161117**

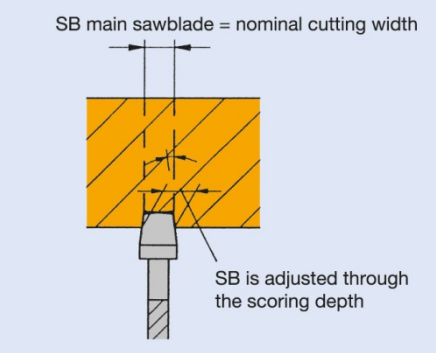
Other dimensions available on request

Scoring sawblades

With EGGER Eurodekor boards, the use of a scoring unit is recommended to achieve good cutting edge quality on the tooth exit side. The cutting width of the scoring sawblade must be set slightly larger than that of the main circular sawblade so that the exiting tooth of the main saw can no longer touch the cutting edge. Divided scoring sawblades are used on circular saw benches and sizing saw machines.



Panel sizing system with scoring unit and pressure device



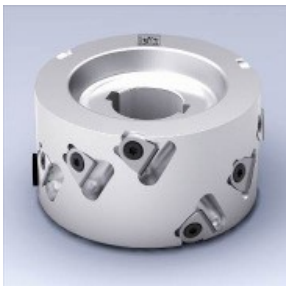
Application diagram of conical scoring sawblade. When repairing the tools, it is recommended to sharpen the scoring saws with the main saws in a set.

All dimensions available on request

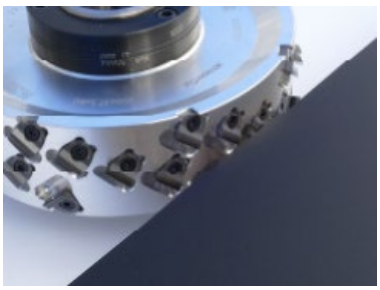
Jointing on table milling machine or throughfeed systems

In order to produce edges free of break-outs on the cover layers of the panel, jointing tools with alternate shear angles should be used. Diamond cutterheads such as Leitz WhisperCut with a shear angle of 30° to 50° are recommended. The chip removal should be as low as possible and not exceed 2 mm.
For good cutting results, it is advantageous to use tools with high concentricity and balance quality which are achieved by using centering adaptors such as hydraulic clamping systems, HSK holders or shrink-fit clamping systems.
Only tools marked “MAN” or “BG-Test” may be used when working with manual feed on table milling machines. Furthermore, for safety reasons, the speed range specified on the tool must not be exceeded or fallen short of. The tools for manual feed may only be used when running against the feed.

Tool examples:



DP-jointing cutter WhisperCut



DP-WhisperCut EdgeExpert

DP-jointing cutter with fixed tipping

DP-jointing cutter EdgeExpert

The application parameters of the jointing cutters should be selected so that the tooth feed (f_z) is between 0.5 and 0.8 mm.
The DP-WhisperCut version is recommended for perfect cutting results.

Processing recommendation

EGGER Eurodekor and Eurodekor Plus boards

Dimensions DxSBxBo [mm]	RPM n [min^{-1}]	No. of teeth Z	Feed speed v_f [m/min]	Leitz ID, DP WhisperCut		Machine
				LH	RH	
85x43x30	12.000	3	14 - 25	**192076**	**192077**	Ott
100x32x30	12.000	3	14 - 25	**192090**	**192091**	IMA
100x43x30	12.000	2	8 - 18	**192082**	**192083**	Stefani, Holz Her
100x43x30	12.000	2	8 - 18	**192080**	**192081**	Hebrock, EBM
100x43x30	12.000	3	14 - 25	**192088**	**192088**	Biesse
100x43x30	12.000	3	14 - 25	**90885**	**90886**	Brandt
125x32x30	9.000	3	14 - 25	**192092**	**192093**	IMA
125x43x30	9.000	3	14 - 25	**75627**	**75627**	Homag, Biesse
125x43x30	9.000	3	14 - 25	**192094**	**192095**	IMA

Other dimensions available on request

Processing recommendation

EGGER Eurodekor and Eurodekor Plus boards

Hoggers for throughfeed machines

Diamond compact hoggers, which generate little friction and cutting pressure, are recommended. The Leitz Diamaster DT Premium type mounted on a hydraulic clamping element is particularly suitable for maximum radial and axial runout and excellent machining quality and tool life. The cutting speed (v_c) is 80 m/s at the usual speed (n) 6000 min^{-1} and diameter (D) 250 mm. The application parameters and the number of teeth of the hoggers should be selected so that the tooth feed (f_z) is between 0.15 - 0.25 mm.

Dimensions DxSBxBo [mm]	RPM n [min^{-1}]	No. of teeth Z	Feed speed v_f [m/min]	Leitz ID, DT Premium	
				LH	RH
250x10x60	6.000	24	25 - 33	**190410**	**190411**
250x10x60	6.000	36	32 - 43	**190418**	**190419**
250x10x60	6.000	48	39 - 53	**190426**	**190427**
250x10x60	6.000	60	45 - 80	**190434**	**190435**

Other dimensions available on request

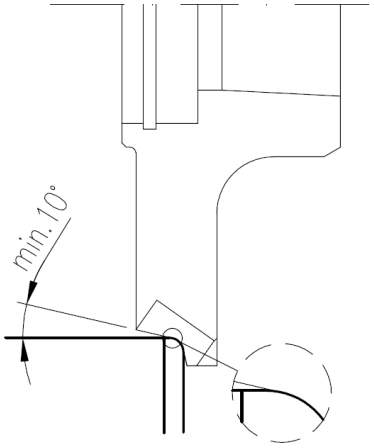
Leitz DT Premium hogger

Edge processing on edge banding machines

Radii cutters and scrapers on edge banding machines must be set so that the tools do not touch the tool material. For panels with protective foil, the foil must not be damaged.

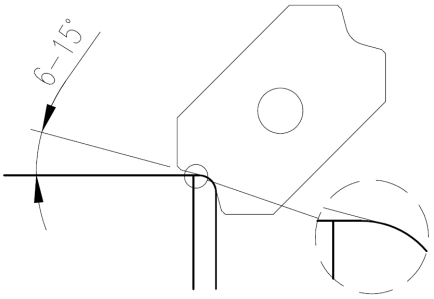
Radii cutter / bevel cutter

Radii cutters should have a profile run-out of at least 10°. The setting of the radius and bevel cutters must be selected so that there is only contact with the edge.



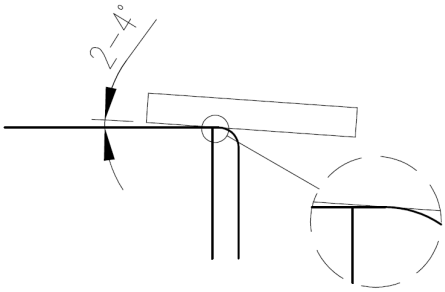
Profile scrapers

Profile scrapers are equipped with a profile relief and can easily be used for finishing the EGGER Eurodekor boards with exact adjustment.



Flat scrapers

Flat scrapers should preferably have an inclination of 2 - 4° from the edge to the plate.



All dimensions available on request

Groove processing

For grooving, the number of teeth of the tool should be selected in relation to feed speed for optimum edge quality. The tooth feed rate (f_z) should be in the range of 0.06 - 0.2 mm when machining with feed (GLL).

RPM n [min^{-1}]	No. of teeth Z	Feed speed v_f [m/min]
6000	24	8 - 16
6000	36	13 - 26
6000	48	17 - 35

Other dimensions available on request

CNC Machining Centres

Spiral solid carbide cutters (VHW) or preferably diamond tipped (DP) routers are best suited for machining on router and machining centres.
Good workpiece clamping on the machine must be ensured. We recommend stable and rigid Leitz Thermo-Grip® shrink chucks for maximum concentricity, balance quality and perfect cutting quality. A good machining result can only be achieved with sufficient rigidity of the machine.

Recommended application data:
RPM n = 18.000 - 24.000 min^{-1}

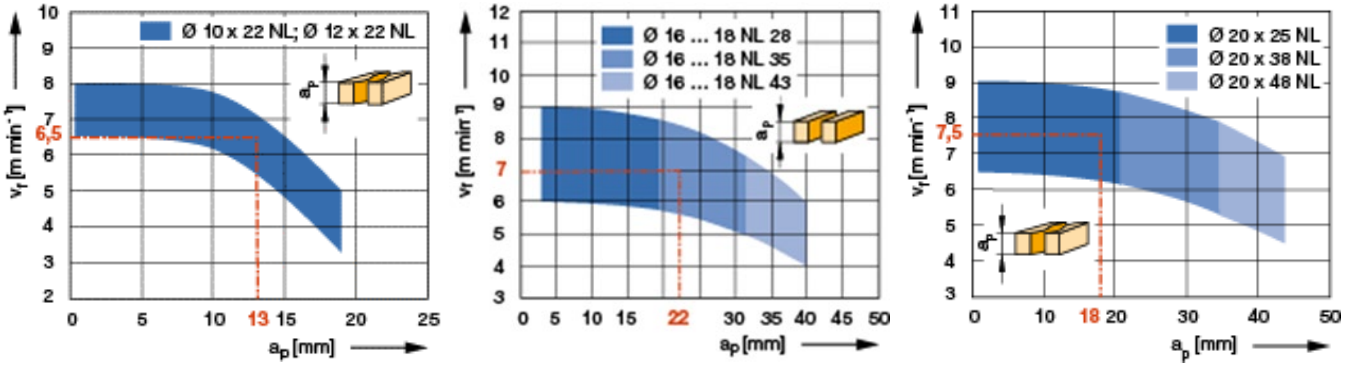
Processing recommendation

EGGER Eurodekor and Eurodekor Plus boards

Grooving and sizing

Router cutter Diamaster PRO

Feed rate (v_f) depending on cutting depth a_p:

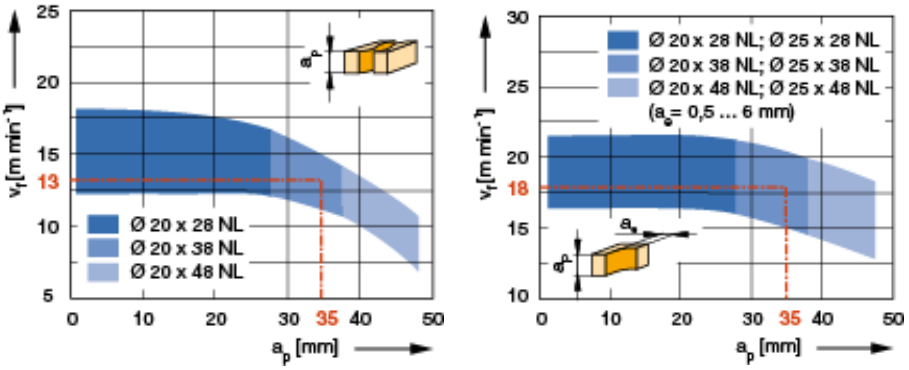


D [mm]	GL [mm]	NL [mm]	S [mm]	Leitz ID	
				LH	RH
10	70	22	12x40		**091264**
12	70	22	12x40		**091265**
12	90	28	20x50		**191095**
14	90	28	16x50		**091267**
16	90	28	16x50	**091271**	**091270**
16	100	28	25x60		**091272**
16	115	43	25x60	**091276**	**091275**
18	95	35	20x50		**091278**
18	105	43	20x60	**091281**	**091280**
20	100	28	25x60	**091285**	**091284**
20	95	35	20x60		**091286**
20	115	43	25x60		**091290**
20	120	48	25x60	**091294**	**091293**
20	130	58	25x60		**191041**

Other dimensions available on request

Router cutter Diamaster QUATTRO

Feed rate (v_f) depending on cutting depth a_p:



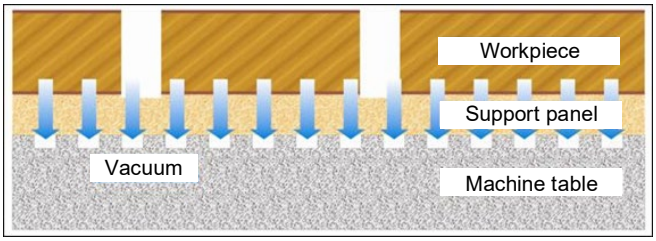
D [mm]	GL [mm]	NL [mm]	S [mm]	Leitz ID	
				LH	RH
20	90	28	20x50		**091235**
20	120	48	25x60	**091246**	**091247**
25	110	38	25x60		**091251**
25	120	48	25x60	**091252**	**091253**

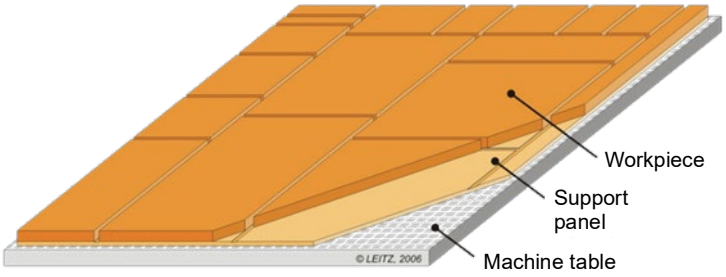
Other dimensions or versions available on request

Splitting using the nesting method

Production process with support panel

The workpiece is clamped as securely as possible on the machine table by means of a vacuum. The workpieces to be processed are usually supported by a thin MDF board, which is used as a “maxi-suction” and support panel for the machine grid table. The depth of the cutting tool is adjusted in order not to protrude the workpiece and cut into the support panel too much (max. 0.3 - 0.5 mm deeper).





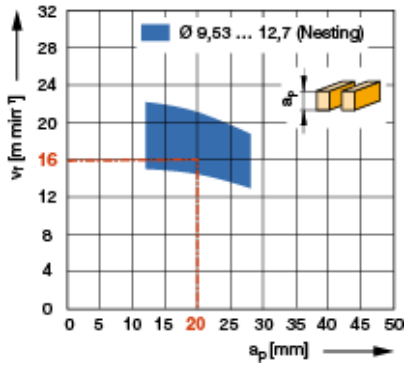
Production process with rubber mat

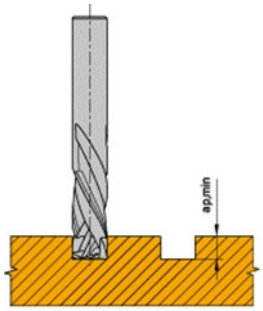
A rubber mat is used as a support through which the workpiece is clamped by means of a vacuum. The cutting tools are set or adjusted to a depth of 0.1 mm protrusion in order not to cut into the rubber too much (max. 0.05 - 0.1 mm deeper). This mat is replaced every 1 - 2 years.

Router cutter in Nesting design

Router cutter HW-solid Z 2+2

Feed rate (v_f) depending on the cutting depth a_p:





Minimum groove depth $a_{p\,min}$
For tear-free cut

D [mm]	D [in]	GL [mm]	GL [in]	NL [mm]	NL [in]	S [mm]	S [in]	$a_{p\,min}$ [mm]	DRI	Leitz ID
9,53	3/8“	76,2	3“	23	7/8“	9,53x40	3/8“x1 1/2“	5,5	RH	**240518**
9,53	3/8“	76,2	3“	28,6	1 1/8“	9,53x40	3/8“x1 1/2“	7	RH	**240503**
10		75		28		10x40		8	RH	**240530**
12,7	1/2“	76,2	3“	32	1 1/4“	12,7x40	1/2“x1 1/2“	5	RH	**240504**
12,7	1/2“	76,2	3“	32	1 1/4“	12,7x40	1/2“x1 1/2“	6	RH	**240505**
12,7	1/2“	88,9	3 1/2“	34,9	1 3/8“	12,7x40	1/2“x1 1/2“	6	RH	**240506**
12,7	1/2“	101,6	4“	43	1 5/8“	12,7x40	3/8“x1 5/8“	20	RH	**240507**

Other dimensions or versions available on request

Router cutter Diamaster PRO DP Z 2+2

Feed rate (v_f) depending on the cutting depth a_p:

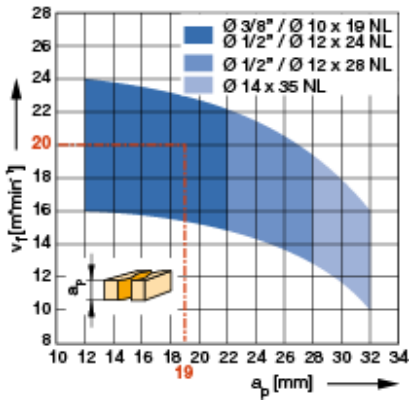


Table optimal workpiece thicknesses

Leitz ID	NL [mm]	Workpiece thickness [mm]
191059	19	9 - 16
191060	24	13 - 20 (22)
191061	28	19 - 25
191101	35	22 - 32

D [mm]	GL [mm]	NL [mm]	S [mm]	DRI	Leitz ID
10	65	19	10x40	RH	**191059**
12	70	24	12x42	RH	**191060**
12	75	28	12x42	RH	**191061**
14	90	35	16x50	RH	**191101**

Other dimensions or versions available on request

Router cutter Diamaster PRO³ DP Z 3+3

Feed rate (v_f) depending on the cutting depth a_p:

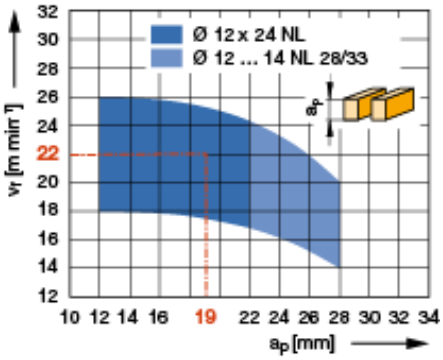


Table optimal workpiece thicknesses

Leitz ID	NL [mm]	Workpiece thickness [mm]
191030	19	9 - 16
191031	24	13 - 20 (22)
191032	28	19 - 25
191033	33	20 - 30

D [mm]	GL [mm]	NL [mm]	S [mm]	DRI	Leitz ID
12	65	19	12x42	RH	**191030**
12	70	24	12x42	RH	**191031**
12	75	28	12x42	RH	**191032**
14	90	33	16x50	RH	**191033**

Other dimensions or versions available on request

In order to find an optimal tool selection in connection with the machine, material and machining parameters, a consultation or recommendation from a Leitz application engineer is recommended.

Boring

For boring, carbide-tipped or solid carbide (VHW) twist drills, dowel drills and hinge boring bits are recommended. On CNC machining centres, it is recommended to use the hinge boring bits in the main spindle instead of in the drilling beam due to higher stability.

For all applications, the following tools can be used according to the tables below:

Dowel drill

RPM n [min^{-1}]	3000 - 8000
Feed speed v_f [m/min]	0.5 - 3.0

Dowel drills HW-solid – *Excellent*

D [mm]	GL [mm]	L [mm]	NL [mm]	S [mm]	Leitz ID	
					LH	RH
3	70	68.5	16	10x45	**042596**	**042597**
5	70	68.5	35	10x27	**033496**	**033497**
8	70	68.5	35	10x27	**033500**	**033501**
10	70	68	35	10x27	**033540**	**033541**

Other dimensions available on request

Dowel drills HW-tipped – *Premium*

D [mm]	GL [mm]	L [mm]	NL [mm]	S [mm]	Leitz ID	
					LH	RH
5	70	68.5	35	10x30	**033484**	**033485**
5.1	70	68.5	35	10x30	**033492**	**033493**
8	70	68.5	35	10x30	**033488**	**033489**
10	70	68.5	35	10x30	**033490**	**033491**

Other dimensions available on request

Through-hole boring bit

RPM n [min^{-1}]	3000 - 8000
Feed speed v_f [m/min]	0.5 - 3.0

D [mm]	GL [mm]	NL [mm]	S [mm]	Leitz ID	
				LH	RH
5	70	35	10x27	**034100**	**034101**
8	70	35	10x25	**034104**	**034105**
10	70	35	10x22	**034114**	**034115**

Through-hole drills HW-tipped – *Premium*

D [mm]	GL [mm]	NL [mm]	S [mm]	Leitz ID	
				LH	RH
5	70	35	10x25	**033964**	**033965**
8	70	35	10x25	**033966**	**033967**

Other dimensions available on request

Hinge boring bit

RPM n [min^{-1}]	3000 - 8000
Feed speed v_f [m/min]	0.5 - 3.0

For hinge bores, Leitz recommends solid carbide hinge boring bits:

Hinge boring bits HW-solid

D [mm]	GL [mm]	L [mm]	S [mm]	Leitz ID	
				LH	RH
15	70	68	10x26	**034812**	**034813**
20	70	68	10x26	**034814**	**034815**
25	70	68	10x26	**034816**	**034817**
30	70	68	10x26	**034820**	**034821**
35	70	68	10x26	**034822**	**034823**

Other dimensions available on request

For hinge bores in EGGER Eurodekor Plus ML06 panels, Leitz recommends solid carbide hinge boring bits with the bevel:

Hinge boring bit HW-solid with the bevel

D [mm]	GL [mm]	L [mm]	S [mm]	Leitz ID	
				LH	RH
15	70	68	10x26	**130073401**	**130073400**
20	70	68	10x26	**130073403**	**130073402**
25	70	68	10x26	**130073405**	**130073404**
30	70	68	10x26	**130073409**	**130073408**
35	70	68	10x26	**130073411**	**130073410**

Other dimensions available on request

Performance times

Tool performance times are influenced by a variety of factors, so that no performance time statements or rights can be derived within the scope of this machining guideline. The information on the tools and machining parameters are recommended guide values. Machine or process constellations can lead to deviating parameters. An optimal adaptation of machine, tool and material as well as customer-specific requirements can only be carried out on site together with a Leitz application engineer.

Processing recommendation

EGGER Eurodekor and Eurodekor Plus boards

Explanation of abbreviations

A	=	dimension A
a_e	=	cutting thickness (radial)
a_p	=	cutting depth (axial)
ABM	=	dimension
APL	=	panel raising length
APT	=	panel raising depth
AL	=	working length
AM	=	number of knives
AS	=	anti sound (low noise design)
b	=	overhang
B	=	width
BDD	=	thickness of shoulder
BEM	=	note
BEZ	=	description
BH	=	tipping height
BO	=	bore diameter
CNC	=	Computerized Numerical Control
d	=	diameter
D	=	cutting circle diameter
D0	=	zero diameter
DA	=	outside Diameter
DB	=	diameter of shoulder
DFC	=	Dust Flow Control (optimised chip clearance)
DGL	=	number of links
DIK	=	thickness
DKN	=	double keyway
DP	=	polycrystalline diamond
DRI	=	rotation
FAB	=	width of rebate
FAT	=	depth of rebate
FAW	=	bevel angle
FLD	=	flange diameter
f_z	=	tooth feed
$f_{z\,eff}$	=	effective tooth feed
GEW	=	thread
GL	=	total length
GS	=	Plunging edge
H	=	height
HC	=	tungsten carbide, coated
HD	=	wood thickness (thickness of workpiece)
HL	=	high-alloyed tool steel
HS	=	high-speed steel (HSS)
HW	=	tungsten carbide (TCT)
ID	=	ident number
IV	=	insulation glazing
KBZ	=	abbreviation
KLH	=	clamping height
KM	=	edge breaker
KN	=	single keyway
KNL	=	combination pinhole consists of 2/7/42 2/9/46,35 2/10/60
L	=	length
l	=	clamping length
LD	=	left hand twist
LEN	=	Leitz standard profiles
LH	=	left hand rotation
M	=	metric thread
MBM	=	minimum order quantity
MC	=	multi-purpose steel, coated
MD	=	thickness of knife
min^{-1}	=	revolutions per minute (RPM)
MK	=	morse taper
m min^{-1}	=	metres per minute
m s^{-1}	=	metres per second
n	=	RPM
$n_{max.}$	=	maximum permissible RPM
NAL	=	position of hub
ND	=	thickness of hub
NH	=	zero height
NL	=	cutting length
NLA	=	pinhole dimensions
NT	=	grooving depth
P	=	profile
POS	=	cutter position
PT	=	profile depth
PG	=	profile group
QAL	=	cutting material quality
R	=	radius
RD	=	right hand twist
RH	=	right hand rotation
RP	=	radius of cutter
S	=	shank dimension
SB	=	cutting width
SET	=	set
SLB	=	slotting width
SLL	=	slotting length
SLT	=	slotting depth
SP	=	tool steel
ST	=	Cobalt-basis cast alloys, e.g. Stellit®
STO	=	shank tolerance
SW	=	cutting angle
TD	=	diameter of tool body
TDI	=	thickness of tool
TG	=	pitch
TK	=	reference diameter
UT	=	cutting edges with irregular pitch
V	=	number of spurs
v_c	=	cutting speed
v_f	=	feed speed
VE	=	packing unit
VSB	=	adjustment range
WSS	=	workpiece material
Z	=	number of teeth
ZA	=	number of fingers
ZF	=	tooth shape (cutting edge shape)
ZL	=	finger length