FUNDERMAX

Premium Star

Think in new dimensions

LOTOS
the super matt surface

LUXOS
the super glossy surface

for people who create

Premium Star.
Think in new dimensions.

**As a forward-thinking company,
we're focused on bringing you
the very latest trends as they emerge.**

With our newly developed 'Premium Star' product, we're setting new quality standards. Total shine with reflective effects (Luxos) and a super matt surface with anti-fingerprint-effect (Lotos) makes it possible to think in new dimensions. Available in 10 exclusive colours.

Experience LUXOS

Premium Star with a super glossy surface LUXOS

Total shine with reflective effects makes it possible to think in new dimensions.

Product: Premium Star
Surface: Luxos (LU)
Size: 2800 mm x 2070 mm
Thickness: 19 mm

MATERIAL DESCRIPTION

Decorative, UV lacquered wood-based material. Support panel MDF MZ (Homogen P2 by request.)

APPLICATION

Decorative wood-based panels for indoor use.

L003 Clara White

L001 Alma White

L005 Zuria White

L011 Amelia Creme

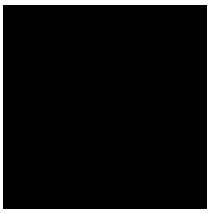
L012 Nepal Grey


L013 Nevada Greige


L010 Aronia Red


L008 Lacus Blue


L009 Cloud Grey


L007 Raven Black

Luxos Premium Star Surface Properties

PROPERTIES	TEST METHOD	VALUE
Surface Coating		UV Lacquer
Colour deviation compared to test sample / reference decor	DIN 5033	„Light, white, cream pastels" ΔE* ± 0,5 „Dark, intense colours" ΔE* ± 1,0
Gloss Level	EN 13722	Measuring angle 20°: > 83 GE (± 3 GE against master/reference)

PROPERTIES	TEST METHOD	VALUE
Abrasion resistance	DIN 68930	Class 2 E / FP (50%) > 25 revolutions
Scratch resistance	DIN 68930	Class 4 E / > 0,5N
Resistance to dry heat	DIN 68930	Gloss and colour > 4
Resistance to moist heat	DIN 68930	Gloss and colour > 4
Chemical stress	DIN 68861 - 1 B	Grad 5
Lightfastness	EN 15187	After 30hrs - no change in UV lacquer, ΔE dependent on type of melamine paper
Cross-cut test	DIN EN ISO 2409	GT ≤ 2
Climate testing	DIN 50016	Optical: No visible changes DOI lt. as per Elcometer ≥ 60
Temperature resistance of furniture fronts	AMK-MB-001	Optical: no swelling, opening of joints, lifting of edges / de-lamination DOI as per Elcometer ≥ 60
Humid climate/ humidity resistance	AMK-MB-005:07/2007	Optical: no swelling, opening of joints, lifting of edges / de-lamination DOI as per Elcometer ≥ 60
Climate change resistance	AMK-MB-005:07/2007	Optical: no swelling, opening of joints, lifting of edges / de-lamination DOI as per Elcometer ≥ 60

Luxos Dimensions

PROPERTIES	TEST METHOD	TOLERANCE	VALUE	UNIT
Length		± 2,0	2800	mm
Width		± 2,0	2070	mm
Blank cuts		± 2,0		mm
Warping	EN 14323	± 2,0	-	mm/m

Experience LOTOS

Premium Star with super matt surface LOTOS

Matt perfection with anti-fingerprint-effect makes it possible to think in new dimensions.

Product: Premium Star
Surface: Lotos (LO)
Size: 2820 mm x 2070 mm
Thickness: 19 mm

MATERIAL DESCRIPTION

Decorative, UV lacquer coated wood-based material.
Support panel version Homogen P2 SL.

APPLICATION

Decorative wood-based panels for indoor use.

L003 Clara White

L001 Alma White

L005 Zuria White

L011 Amelia Creme

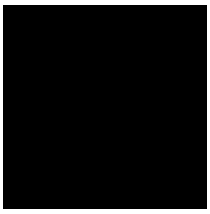
L012 Nepal Grey


L013 Nevada Greige


L010 Aronia Red


L008 Lacus Blue


L009 Cloud Grey


L007 Raven Black

Lotos Premium Star Surface Properties

PROPERTIES	TEST METHOD	VALUE
Surface Coating		UV Lacquer
Colour deviation compared to test sample / reference decor	DIN 5033	„Light, white, cream pastels" ΔE* ± 0,5 „Dark, intense colours" ΔE* ± 1,0
Gloss Level	EN 13722	Measurement angle 85°: < 15 GE (± 3 GE against master/ reference)

PROPERTIES	TEST METHOD	VALUE
Abrasion resistance	DIN 68930	Class 2 E / FP (50%) > 25 revolutions
Scratch resistance	DIN 68930	Class 4 E / > 0,5N
Resistance to dry heat	DIN 68930	Gloss and colour ≥ 4
Resistance to moist heat	DIN 68930	Gloss and colour ≥ 4
Chemical stress	DIN 68861 - 1 B	Grad 5
Lightfastness	EN 15187	After 30hrs - no change in UV lacquer, ΔE dependent on type of melamine paper
Cross-cut test	DIN EN ISO 2409	GT ≤ 2
Climate testing	DIN 50016	Optical: No visible changes
Temperature resistance of furniture fronts	AMK-MB-001	Optical: no swelling, opening of joints or lifting of edges /de-lamination
Humid/ humidity climate resistance	AMK-MB-005:07/2007	Optical: no swelling, opening of joints or lifting of edges /de-lamination
Climate change resistance	AMK-MB-005:07/2007	Optical: no swelling, opening of joints or lifting of edges /de-lamination

Lotos Dimensions

PROPERTIES	TEST METHOD	TOLERANCE	VALUE	UNIT
Length		± 2,0	2820	mm
Width		± 2,0	2070	mm
Blank cuts		± 2,0		mm
Thickness		± 0,3	19	mm
Warping	EN 14323	± 2,0	-	mm/m

Premium Star Processing Guidelines

Premium Star with Luxos and Lotos surface.

When processing coated chipboard and MDF panels with Fundermax's Premium Star Lotos and Luxos surfaces (depending on the machining method), the indicative values from the table in terms of the choice of cutting speed (VC) and tooth feed (FZ), should be observed.

These parameters are related to the tool diameter (D), number of teeth (Z), rotational speed (n) and the feed speed (vf) of the processing machine. The correct choice of each ensures a successful result.

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

v_c - Cutting speed [m/s]
$v_c = D \bullet \pi \bullet n / 60 \bullet 1000$
D – Tool diameter [mm]
n – Rotational Speed of Tool [min-1]

f_z – Tooth feed [mm]
$f_z = vf \bullet 1000 / n \bullet z$
v_f – Feed speed [m/min]
n – Rotational Speed of Tool [min-1]
z – Number of teeth

v_f – Feed speed [m/min-1]
$v_f = fz \bullet n \bullet z / 1000$
f_z – Tooth feed [mm]
n – Rotational Speed of Tool [min-1]
z – Number of teeth

MACHINING METHOD	CUTTING SPEED v_c
Sawing	60 - 95 [m/s]
Routering	50 - 70 [m/s]
Drilling	0,5 – 2,0 [m/s]

MACHINING METHOD	FEED SPEED f_z
Sawing	0,01 – 0,03 [mm]
Routering	0,40 – 0,70 [mm]
Drilling	0,05 – 0,17 [mm]

GENERAL TOOL INFO

Tools with new or newly repaired cutting edges are recommended for optimum edge quality.

CUTTING MATERIAL

In principle, both tools with hard-cutting (HW) as well as diamond cutting (DP diamond polycrystalline) blades can be used. The use of tools with diamond cutting blades (DP) is recommended in order to prolong the lifespan of the tool during intense usage.

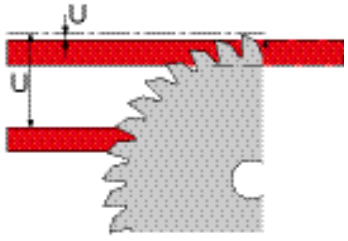
CUTTING PANELS WITH CIRCULAR BLADES

Please note:

- Visible side facing up
- Pay attention to the correct saw blade overhang (see table)
- Adapt speed and number of teeth to the feed speed
- Use a saw with a scoring unit in order to ensure clean cuts on the underside of the panel

Depending on the overhang of the saw blade, the entrance and exit angles can affect the quality of the cutting edge. If the upper cutting edge becomes untidy, the saw blade must be set higher. If the same occurs on the underside, the saw blade should be lowered. For the best results it should be set to the correct height.

Sliding table saws require the following saw blade overhangs (U):



CIRCULAR SAW BLADE DIAMETER	PROTRUSION
300 - 400 [mm]	aprox.10 [mm]

Saw blades with a high number of teeth are generally recommended for good processing quality. For circular saws, the recommended cutting speed is 60 - 95 m / s. The maximum permissible speed of the tools vc has to be taken into account.
Sliding table saws with the saw tooth shape (HZ / DZ) provide the best cutting results. This tooth shape is also recommended when scoring saw blades are unavailable.

Recommended saw tooth shapes

HZ/DZ
(Pendulum tooth / concave tooth)

WZ/FA
(Variable tooth with bevel)

WZ/TR
(Flat tooth / trapezoid tooth)

TR/TR
(Trapezoidal tooth / trapezoid tooth)

DIMENSION DXSBXBO [MM]	TOOTH FORM	NUMBER OF TEETH z	REVOLUTIONS n	FEED SPEED v_f BACK SPEED v_f	LEITZ IDENTIFICATION NUMBER
303 x 3,2 x 30	HZ/DZ	68	4.000 [min^{-1}]	Manual feed	161003
380 x 4,8 x 60	FZ/TR	72	4.500 [min^{-1}]	10 [m/min]	69089
380 x 4,8 x 60	TR/TR	72	4.500 [min^{-1}]	10 [m/min]	69114
400 x 4,4 x 30	WZ/FA	72	4.500 [min^{-1}]	10 [m/min]	65346

JOINT MILLING ON MILLING MACHINES/ CONTINUOUS FLOW SYSTEMS

In order to create chip-free and seamless edges on the top layer of the panel, joining tools with a reciprocal axis angle should be used. Diamond cutting heads such as Leitz WhisperCut with an axle angle of 30 ° to 50 ° are recommended. The chip removal should be as small as possible and not exceed 2mm. To achieve good results it's better to use tools with high concentricity and balancing quality. This can be achieved using centering interfaces such as hydraulic clamping systems, HSK mount or shrink fit systems. When working with manual feeds on table milling machines, only tools marked „MAN“ or „BG test“ may be used. Additionally, please adhere to the speed range indicated on the tool itself and keep within it for safety reasons. The tools for manual feeding must only be used against the rotation of the milling machine. The tooth feed (fz) of joining cutters should be set between 0.4 and 0.70 mm. The DP-WhisperCut is recommended for a perfect cutting result.

DIMENSIONS DXSBXBO	ROTATIONAL SPEED n	NUMBER OF TEETH z	FEED SPEED v_f	LEITZ IDENTIFICATION NUMBER		MACHINE
				LL	RL	
85 x 43 x 30 [mm]	12.000 [min^{-1}]	3	15 - 20 [m/min]	1192076	192077	Ott
100 x 43 x 30 [mm]	12.000 [min^{-1}]	2	10 - 15 [m/min]	192082	192083	Stefani, Holz Her
100 x 43 x 30 [mm]	12.000 [min^{-1}]	2	10 - 15 [m/min]	192080	192081	Hebrock, EBM
100 x 43 x 30 [mm]	12.000 [min^{-1}]	3	15 - 25 [m/min]	192088	192088	Biesse
100 x 43 x 30 [mm]	12.000 [min^{-1}]	3	15 - 25 [m/min]	90885	90886	Brandt
100 x 32 x 30 [mm]	12.000 [min^{-1}]	3	15 - 25 [m/min]	192090	192091	IMA
125 x 32 x 30 [mm]	9.000 [min^{-1}]	3	14 - 20 [m/min]	192092	192093	IMA
125 x 43 x 30 [mm]	9.000 [min^{-1}]	3	14 - 20 [m/min]	75627	75627	Homag, Biesse
125 x 43 x 30 [mm]	9.000 [min^{-1}]	3	14 - 20 [m/min]	192094	192095	IMA

CNC STATIONARY MACHINES

For machining on top, milling machines and machining centres, spiral solid carbide end mills (VHW) or preferably diamond-equipped (DP) top cutters are recommended. The panel must be secured well to the machine to create the correct tension.

Additional mechanical tensioners may be used to support vacuum suction pads. It's best to use sturdy and stiff Leitz Thermo-Grip® shrink-fit chucks for maximum concentricity, balance and perfect cutting quality. Good machining results can only be achieved with sufficient rigidity of the machine. Stiff portal machines are ideal.

Recommended application data:
Rotational Speed n = 20.000 – 24.000 min^{-1}

Feed (vf) in full cut:
Z1 = 10 m/min
Z2 = 20 m/min
Z3 = 24 m/min

DIMENSIONS D x NL x S	NUMBER OF TEETH Z	TURNING DIRECTION	EXECUTION	LEITZ ID-NO.
20 x 38 x 20 [mm]	2 + 2	RL	Diamaster Quattro	191241
20 x 32 x 20 [mm]	2 + 2	RL	Diamaster Quattro Edge Expert	191071

DRILLING

Carbide-filled or fully carbide (VHW) spiral, dowel and hinge drills are recommended. To ensure higher stability on CNC machining centres it's best to use hinge drills in the main spindle rather than the drilling bar.

Dowel Drill

Rotational speed n: 4000 – 4500 [min^{-1}]
Feed speed v_f: 0,5 – 1,5 [m/min]

DIMENSION DxSBxBo	NUMBER OF TEETH z	EXECUTION	LEITZ ID NUMBER	
			LL	RL
5 x 25 x 57,5 [mm]	Z 2 / V2	HW-Solid-dowel Excellent	33728	33729
5 x 35 x 70 [mm]	Z 2 / V2	HW-Solid-dowel Excellent	33496	33497

Through-hole drill

Rotational speed n: 4000 – 4500 [min^{-1}]
Feed speed v_f: 0,5 – 1,0 [m/min]

DIMENSION DxSBxBo	NUMBER OF TEETH z	EXECUTION	LEITZ ID NUMBER	
			LL	RL
5 x 25 x 57,5 [mm]	Z 2 / V2	HW-massiv-Durchgangslochbohrer Excellent	34018	34019
5 x 35 x 70 [mm]	Z 2 / V2	HW-massiv-Durchgangslochbohrer Excellent	34100	34101

Hinge Drills
Rotational speed n: 3000 – 4500 [min^{-1}]
Feed speed v_f: 0,5 – 2,0 [m/min]

Hinge bores can be drilled with full carbide hinge drills.
The following tools are recom-mended by Leitz:

DIMENSION DxSBxBo	NUMBER OF TEETH z	EXECUTION	LEITZ IDENTNUMMER	
			LL	RL
30 x 57 [mm]	Z 2 / V2	Hinge boring bits	37202	37202
35 x 70 [mm]	Z 2 / V2	Hinge boring bits	37213	37214

TOOL LIFE-SPAN

The life-span of a tool depends on a large number of influencing factors, therefore no statements or rights can be derived within the framework of this processing guideline.

All suggestions, machining parameter and references, are simply that - forming guidelines only. Machine or process-related issues can lead to changing circumstances. An optimal setup of machine, tool and materials, as well as a clear understanding of customer-specific requirements can only be achieved with a Leitz application engineer on site.

Due to the superior quality and special surface finish of FunderMax Premium Star with Lotos and Luxos surfaces, a reduction of tool lifespan is to be expected compared to conventionally coated FunderMax panels, (particularly with reference to the pre-mentioned influencing factors.)

CARE INSTRUCTIONS

General instructions for care
In order to preserve the surface structure it's best to pre-clean with a soft, wet cloth. This should be followed by a dry clean with a commercially available, soft cloth. Spilled substances and liquids (such as tea, coffee, etc.) should be removed quickly, as longer exposure times can have an adverse effect on the surface structure.

Slight contamination
For the removal of slight contaminations it's best to use a soft, non-scratch sponge, cloth or leather, with warm water. In order to protect the surface texture, no dirt erasers, microfibre cloths or the like should be used. To prevent smearing, the wet pre-cleaned area should have a final clean with a soft, dry cloth or kitchen roll.

Normal contamination/pollutants
Commercial household cleaners with non-abrasive components and warm water, as well as a clean, soft cloth, are best suited to remove normal contamination. First the affected area should be cleaned with diluted household cleaner, followed by a final clean with clear, warm water. Finally, the cleaned area should be dried with a clean, dry cloth or kitchen roll.

Stubborn dirt
Commercial glass cleaner can be used for the cleaning of various stubborn contaminates (after testing in an inconspicuous area).

These methods of cleaning should not be used:

- Detergents with a high acid or salt-content
- Steam cleaners
- Cleaning with: microfibre cloths, steel wool, cleaning sponges with scratchy surfaces, polishing agents, bleaching agents, furniture cleaners, solvents or chemical substances (such as ammonia, alcohol, etc.)

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FUNDERMAX FRANCE
3 Cours Albert Thomas
F-69003 Lyon
Tel.: + 33 (0) 4 78 68 28 31
Fax: + 33 (0) 4 78 85 18 56
infofrance@fundermax.fr
www.fundermax.fr

FUNDERMAX SPAIN
Pol. Ind. Can Salvatella Avda. Salvatella, 85–97
E-08210 Barberà del Vallès (Barcelona)
Tel.: + 34 93 729 63 45
Fax: + 34 93 729 63 46
info.spain@fundermax.biz
www.fundermax.es

FUNDERMAX INDIA
Pvt. Ltd.
No. 13, 1st floor, 13th Cross, Wilson Garden
Bangalore – 560 027
Tel.: + 91 80 4112 7053
Fax: + 91 80 4112 7053
officeindia@fundermax.biz
www.fundermax.at

FUNDERMAX POLSKA Sp. z o.o.
ul. Rybitwy 12
PL-30 722 Kraków
Tel.: + 48 12 653 45 28
Fax: + 48 12 657 05 45
infopoland@fundermax.biz

FUNDERMAX SWISS AG
Industriestrasse 38
CH-5314 Kleindöttingen
Tel: +41 (0) 56 268 83 11
Fax: +41 (0) 56 268 83 10
www.fundermax.ch
infoswiss@fundermax.biz

FunderMax GmbH
Klagenfurter Straße 87-89, A-9300 St. Veit/Glan
T +43 (0) 5/9494-0, F +43 (0) 5/9494-4200
office@fundermax.at, www.fundermax.at