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MATERIALS

Base — chipboard, lined with films based on thermosetting polymers, varnished and cured by UV rays on the front side.

RECOMMENDED APPLICATION

It is used in the production of furniture and other products used in the premises of types A-B buildings of civil and industrial purposes, including residential, children's and medical institutions. It is also used in decoration and interior design.

CHARACTERISTICS OF BOARD-BASE

Tolerances for dimensions

Parameter	Indicator	Standard
Length	± 5 mm/m	GOST 32289-2013
Width	± 5 mm/m	GOST 32289-2013
Thickness	± 0.3 mm	GOST 32289-2013

Physical and mechanical specifications

Characteristic	Thickness			Standard
	10-20	20-25	25-32	
Density, kg/m ³	550-820	550-820	550-820	GOST 10632-2014
Bend strength, (N/mm ²), min:	11	10.5	9.5	GOST 10632-2014
Moisture (%)	5-13	5-13	5-13	GOST 10632-2014
Conventional adhesion	0	0	0	GOST 32687-2014
Content of formaldehyde, class E1, (mg/100 g), max	8	8	8	EN 120



COATING SPECIFICATIONS

Physical and mechanical properties

Indicator	Result	Standard
Spotting resistance of coating	unchanged	GOST 27627
Cold fluids resistance of coating	5	EN 12720-09
Varnish coating adhesion	1	ISO 2409-07
Hardness of protective-decorative coating	7.5 N	EN 14323-04
Gloss	95 Gloss	ISO 2813

QUALITY STANDARD

90%

boards without any defects

10%

boards with maximum 5 defects with a diameter of 1-3 mm

TERMS OF DELIVERY OF BOARDS

For easy use, defects are marked with stickers



RECOMMENDATIONS ON USE

STORAGE IN HORIZONTAL POSITION

As a rule, the distance is calculated as follows: “distance = 50 * board thickness (mm)”

1. Boards shall be stored on a solid and level surface.
2. Packing bars must have the same thickness along their full length, their length must be equal to the width of the board stacks.
3. The distance between the bars depends on the board thickness. Board thickness $\geq 15\text{mm}$: the distance shall not exceed 800 mm. In any case, for a stacked full-format board with length of 2,400 mm, it is recommended to use 4 bars minimum.
4. Protective boards shall be used to protect the surface of board. Protective (packing) boards shall be $\geq 16\text{mm}$.
5. If further it is planned to tie the boards with steel or plastic straps, ensure that the board edges are adequately protected. This requires the use of special cardboard or packing boards.
6. Do not allow boards protruding in a stack.

 Wrong arrangement



 Wrong arrangement



 Good arrangement



STORAGE IN VERTICAL POSITION

1. It is allowed to store UV-varnish boards in vertical position only if their number is small. In any case, it is necessary to prefer storage in horizontal position than storage in vertical position.

2. During vertical storage, ensure that the UV-varnish boards are securely fixed.

3. Adequate material securing can be ensured with using closed storage racks, vertical stackers or rack structures.



 **Good arrangement**



 **Wrong arrangement**



4. In this case the width of vertical storage cells shall not exceed 500 mm.

5. If open racks are used for vertical storage, the angle of an inclined support shall be at least 10°.

6. Besides, only boards of the same format shall be stored in open storage racks.



HANDLING AND TRANSPORTATION

1. The possible moisture negative effect shall be excluded even at the stage of transportation (for example, to exclude the direct effect of weather conditions on the boards, it is necessary to use a protective film or a closed awning when transporting by trucks).

2. To prevent the load displacement, the anti-slip pads shall be used. When moving large boards manually, they shall be carried vertically to avoid too much bending. It is recommended to use accessories for manual transportation of sheet materials. Besides, protective gloves and safety shoes shall be worn to avoid injuries.

3. In order to prevent the load displacement and overturning, a load shall be secured by respective locking devices (tightening belts, straps etc.).

4. Avoid the boards movement by dragging, if this is necessary then special textile underlays shall be used.

5. The boards shall be lifted excluding their movement by decorative sides against each other.

CARE

The chipboards lined with films based on thermosetting polymers with varnish coating (high gloss) require certain precautions during their transportation, storage and further use:

- the use of sponges with an abrasive layer can damage the surface;
- the surface is to be wiped with a weak soapy solution using a clean, soft cloth;
- do not remove the protective film during cutting and further processing of parts;
- protective film is removed manually after final installation and adjustment of parts;
- the use of other chemicals such as solvents or alcohol-containing substances, powders may damage the surface;
- dry (moisture-free) cleaning of the glossy surface may also harm it (depending on the materials used and the applied efforts).



MACHINING RECOMMENDATIONS

GENERAL MACHINING INSTRUCTIONS

A good machining result depends on the correct choice of these factors

When machining UV-varnish products the approximate values from the Table shall be observed for selecting the cutting speed (vc) and feed per tooth (fz) depending on the machining method. These parameters are related to the diameter of the cutting tool (D), the number of teeth (Z), the rotation speed (n) and the feed rate (vf) when used on a machine-tool.

Machining method	Cutting speed, vc, m/s
Sawing	60-90
Milling	50-70
Drilling	0.5-2.0

Machining method	Feed per tooth (fz), mm
Sawing	0.05-0.12
Milling	0.50-0.8
Drilling	0.10-0.15

FURNITURE BOARDS

Effective equations for cutting, feed per tooth and feed rate

fz – feed per tooth (mm)

$fz = vf \cdot 1,000 / n \cdot z$
feed rate [m/min-1]
n – rotational speed [min-1]
z – number of teeth

vc – cutting speed (m/s)

$vc = D \cdot \pi \cdot n / 60 \cdot 1,000$
D – diameter of cutting tool [min-1]

CUTTING TOOL MATERIAL

We recommend to use tools with a hard-alloy cutting edge (HW)

Tool general information

When machining UV-varnish products, to achieve optimal edge quality, it is recommended to use tools with new blades after sharpening. It is advisable to use tool with maximum wear 80%, since after repeated sharpening the balance is disturbed, as well as the factory shape of the cutting part.



BOARDS CUTTING WITH DISK SAWS

General Provisions

- the speed and number of teeth shall comply with the feed rate;
- it is necessary to use a pre-scoring saw to accurately cut along the bottom face of the board.
- the board shall be placed with the outer surface (lined side with film) up;
- it is necessary to set the maximum projection of the saw blade;

PANEL SIZING SAW

Recommended rotational speed
5,000 rpm

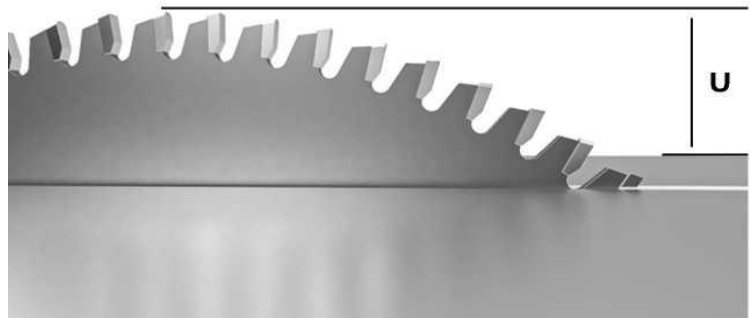
Good result of size cutting is achieved with trapezoidal teeth (FZ/TR) and hollow-triangular teeth (HZ/DZ) saws.

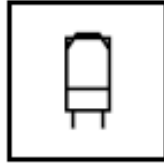
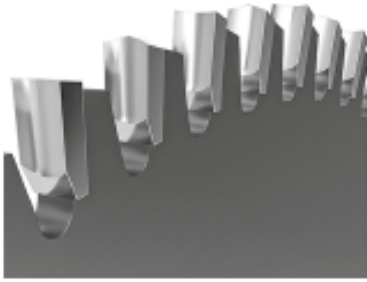
Diameter of disk saw blade (mm)	Saw projection (mm)
250	15-20
300	18-22
350	22-26
400	26-28
450	28-32

RECOMMENDED SHAPES OF SAW TEETH

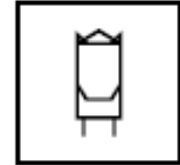
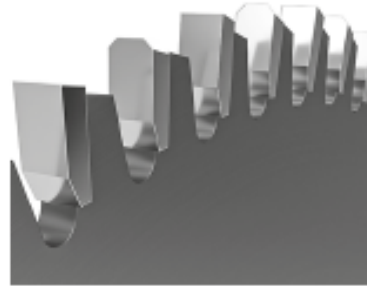
The recommended cutting speed (v_c) for disk saws is 60-90 m/s

For quality machining it is recommended to use saw blades with a large number of teeth.





FZ/TR
(flat tooth/trapezoidal tooth)



HZ/DZ
(hollow tooth/triangular tooth)



Diagram of tapered pre-scoring disks usage.

When repairing tools (always in sets), they shall be brought into compliance with each other in terms of the blades width

PRE-SCORING SAW

To achieve a high quality saw-cut in materials on the side of the teeth projection, it is recommended to use a pre-scoring device. The working width of the scoring saw shall be slightly wider than the main saw disk, so that the protruding main saw teeth will no longer touch the saw-cut place.

In circular saw machine with lower position of the spindle and in circular panel sizing saw the telescopic pre-scoring devices consisting of two parts are used.

The panel sizing saw with a pre-scoring device and pressing-down accessory



JOINTING CUTTERS IN MILLING MACHINES WITH LOWER SPINDLE POSITION OR IN STRAIGHT-TYPE MACHINES

The parameters of the jointing cutter use shall be selected so that the feed per tooth fz will be from 0.4 to 0.7 mm

In order to machine the edge without chipping on the outer layers of board, you shall use jointing interlocking side cutters with a variable axial angle. In this case, it is recommended to use diamond milling heads with an axial angle of 30 to 50. The chips removal shall be as minimum as possible, and not exceeding 2 mm.

To obtain a good milling result, it is recommended to use tools with high accuracy of radial runout and balance quality, achieved through the use of centering interfacing points such as hydraulic clamping elements, hollow taper shanks (HSK) or shrink chucks. Besides, for safety reasons the speed range indicated on the tool shall not be exceeded or reduced. Manual feed tools shall only be used opposite to the direction of rotation of the cutter.

Dimensions DxSBxB0 (mm)	Number of revolutions, n: (min-1)	Number of teeth, Z	Feed rate, vf (m/min)	LL (left rotation)	RL (right rotation)	Equipment
85x43x30		3	15-20	192,076	192,077	Ott Company
				192,082	192,083	Stefani, Holz Her
100x43x30	12,000	2	10-15	192,080	192,081	Hebrock, EBM
				192,088	192,088	Biesse
				90,885	90,886	Brandt
125x32x30				192,090	192,091	IMA
125x32x30				192,092	192,093	IMA
125x43x30	9,000	3	14-20	75,627	72,627	Homag, Biesse
				192,094	192,095	IMA



MACHINING EDGES WITH PROTECTIVE FILM

Remains of PUR adhesive shall be removed immediately after lining

For edges that are used with protective film to protect their surface, it is recommended to use common separating agents, coolants and cleaners. The separating agent can be sprayed onto the first press roller or directly onto the board surface and edges after the roller starts moving along the edge.

If the protective film has separated during machining in continuous-action installations, it is recommended to check and to clean the shoe block, as well as grease shall be applied to reduce friction between the protective film and the shoe block.

For the edges long-term protection against external effects, it is necessary to remove the protective film during the final assembly of the furniture only. The agents shall not be solvents of varnish and shall not damage the varnished surface. We recommend cleaner LP 305/98 (RIEPE) to wipe the finished parts.

STATIONARY NC MACHINES

Rotational speed
20,000–24,000 rpm

When working on milling machines with top spindle and on machines such as machining center, it is better to use cutters with diamond inserts.



Drills for blind holes

Number of revolutions:
 n [min⁻¹] 4,000–6,000

Feed rate:
 v_f [m/min] 0.5–2



Cup drills

Rotational speed:
3,000–4,500

Feed rate:
 v_f [m/min] 0.5–2

HOLES DRILLING

Tool shall be sharp and new

Hard-alloy spiral drills, blind hole drills, or cup drills are used to drill holes.



GENERAL INFORMATION

1. Varnished boards shall be stored or machined in a closed room with constant climatic conditions (the recommended temperature is 20–25 °C with a relative humidity about 50–60%).

2. To ensure optimal flatness of the boards, it is necessary to prevent the following negative factors during transportation, storage, and machining: storage in the vicinity of heating devices or other sources of heat; direct exposure to heat radiation and direct sunlight; uneven air conditioning with high humidity.

3. The information does not relieve the consumer/buyer from the obligation of professional and proper analysis to what extent this material and finished products of it are suitable for operation in the relevant conditions and for the relevant purposes of use.

4. Single boards, and top and bottom boards in stacks respond more quickly to the varying environmental effects than boards in stacks.

5. Moreover, changes are possible in the products machining, which result from the continuous improvement of UV-varnish products, changes in the technology of tooling and machining.

6. These guidelines have been compiled with the particular care and use of all available information. Technical changes arising from the continuous improvement of UV-varnish products and changes in the norms and documents of public law are possible. Therefore, this technical description is not intended to be the user manual or legally binding document.

