Kronodesign®

feelNesS

sense of touch

PET Laminated MDF

Technical Manual

Kronospan

Content

Product description

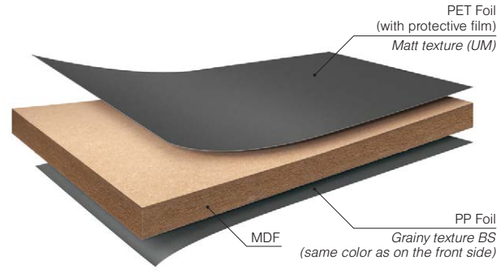
PET Laminated MDF is a high-quality MDF board covered with matt or gloss PET foil. The decor range includes our top-selling uni colors and it is 100% coordinated with the Kronodesign® collection.

Both sides of the boards are produced in the same color.

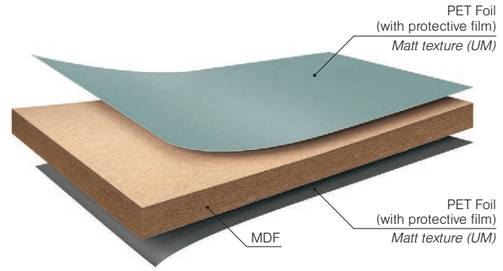
The hot melt Polyurethane adhesive technology guarantees excellent bonding and ensures a flat surface with moisture protection.

All 15 matt and 10 gloss designs are available on stock.

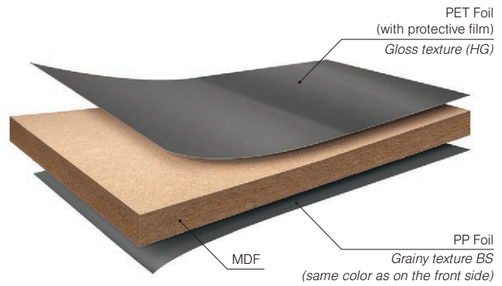
feelNesS ultra matt



feelNesS plus ultra matt



feelNesS high gloss



Technical parameters

feelNesS ultra matt

feelNesS plus ultra matt

	Technical characteristics	Unit	Thickness [mm]					Standard
			>6+9	>9+12	>12+19	>19+30	>30+40	
	General requirements							
1	**Density**	kg/m³ ± 7%	740		720		710	EN 323
2	**Tolerance of thickness**	mm	± 0.2			± 0.3		EN 324-1 EN 622-1
3	**Tolerance on length and width**	mm/m	+ 2 mm/m; maximum + 5 mm					EN 324-1 EN 622-1
4	**Squareness tolerances**	mm/m	2					EN 324-2 EN 622-1
5	**Edge straigtness tolerance**	mm/m	1,5					EN 324-2 EN 622-1
	General requirements - mechanical properties							
6	**Swelling in thickness 24h**	%	≤ 17	≤ 15	≤ 12	≤ 10	≤ 8	EN 317 EN 622-5
7	**Bending strength**	N/mm²	≥ 23	≥ 22	≥ 20	≥ 18	≥ 17	EN 310 EN 622-5
8	**Modulus of elasticity in bending**	N/mm²	≥ 2700	≥ 2500	≥ 2200	≥ 2100	≥ 1900	EN 317 EN 622-5
9	**Internal bond**	N/mm²	≥ 0.65	≥ 0.60	≥ 0.55		≥ 0.50	EN 319 EN 622-5
10	**Formaldehyde release - E1**	mg/ m²h	≤ 3.5					EN 12460-3 EN 622-1
11	**Moisture content**	%	4 + 11					EN 322 EN 622-1
12	**Bonding strength**	N/mm²	≥ 0.9					EN 311
	Technical characteristics	**Unit**	**Value**					**Standard**
13	**Chemical resistance**	rate	1 B					DIN EN 12720 DIN 68861/1
14	**Resistance against micro scratching**	%	≤ 25% alternation of gloss					DIN CEN/TS 16611, Method A
15	**Resistance against micro scratching**	rate	Class 5					DIN CEN/TS 16611, Method B
16	**Resistance against scratching**	N	4 D (>1, to ≤ 1.5N)					DIN EN 15186, Method B DIN 68861/4
17	**Resistance against wet heat - 70°C**	rate	Level 5					DIN EN 12721
18	**Resistance against dry heat - 70°C**	rate	Level 5					DIN EN 12722
19	**Color Consistency (Solid white beige colors)**	rate	Δ E ≤ 0.5 Δ L ≤ ± 0.3 Δ a ≤ ± 0.2 Δ b ≤ ± 0.3					DIN 53236 (45/0) DIN 6174
20	**Gloss level** 60°C measuring head, measuring crosswise	units	dark / intense colors: 3 ±1 light colors: 4 ±1					DIN EN ISO 2813
21	**Light fastness**		≥ 7					DIN EN ISO 4892-2 DIN EN ISO 105 B 02
22	**Fault Definition**	Optical deviations are regarded as faults if they are recognizable with the naked eye from a distance of 50 cm, within 30 seconds in good lighting						

Remark:
1. Exception dark colors (e.g. wolfram grey, black) fulfill 4 E (> 0.5 to ≤ 1.0 N)

Technical parameters

feelNesS high gloss

	Technical characteristics	Unit	Thickness [mm]					Standard
			>6+9	>9+12	>12+19	>19+30	>30+40	
	General requirements							
1	**Density**	kg/m³ ± 7%	740		720		710	EN 323
2	**Tolerance of thickness**	mm	± 0.2			± 0.3		EN 324-1 EN 622-1
3	**Tolerance on length and width**	mm/m	+ 2 mm/m; maximum + 5 mm					EN 324-1 EN 622-1
4	**Squareness tolerances**	mm/m	2					EN 324-2 EN 622-1
5	**Edge straigtness tolerance**	mm/m	1,5					EN 324-2 EN 622-1
	General requirements - mechanical properties							
6	**Swelling in thickness 24h**	%	≤ 17	≤ 15	≤ 12	≤ 10	≤ 8	EN 317 EN 622-5
7	**Bending strength**	N/mm²	≥ 23	≥ 22	≥ 20	≥ 18	≥ 17	EN 310 EN 622-5
8	**Modulus of elasticity in bending**	N/mm²	≥ 2700	≥ 2500	≥ 2200	≥ 2100	≥ 1900	EN 317 EN 622-5
9	**Internal bond**	N/mm²	≥ 0.65	≥ 0.60	≥ 0.55		≥ 0.50	EN 319 EN 622-5
10	**Formaldehyde release - E1**	mg/ m²h	≤ 3.5					EN 12460-3 EN 622-1
11	**Moisture content**	%	4 + 11					EN 322 EN 622-1
12	**Bonding strength**	N/mm²	≥ 0.9					EN 311
	Technical characteristics	**Unit**	**Value**					**Standard**
	General requirements - Optical properties							
13	**Chemical resistance**	rate	1 B					DIN EN 12720 DIN 68861/1
14	**Resistance against micro scratching**	%	≤ 25% alternation of gloss					DIN CEN/TS 16611, Method A
15	**Resistance against scratching**	N	≤ 1.5					DIN EN 15186, Method B
16	**Resistance against wet heat - 70°C**	rate	Level 5					DIN EN 12721
17	**Resistance against dry heat - 70°C**	rate	Level 5					DIN EN 12722
18	**Color Consistency (Solid white beige colors)**	rate	Δ E ≤ 0.5 Δ L ± 0.3 Δ a ± 0.2 Δ b ± 0.3					DIN 53236 (45/0) DIN 6174
19	**Gloss level** 60°C measuring head, measuring crosswise	units	≥ 90					DIN EN ISO 2813
20	**Light fastness**		≥ 7					DIN EN ISO 4892-2 DIN EN ISO 105 B 02
21	**Fault Definition**	Optical deviations are regarded as faults if they are recognizable with the naked eye from a distance of 50 cm, within 30 seconds in good lighting						

Processing recommendations

Feelness-coated plates can be processed without any problems with circular saws, routers and band saws.
Perfect chip removal and contamination suction at the point of origin is absolutely necessary.
The static charge on the surface during further processing must be neutralized by appropriate measures to prevent static charge (ionization devices and others).

Careful removal of foreign bodies and chips by suction should be ensured.
There must be no dirt on the Feelness surface or on the reverse side of the plate during stacking that could damage the Feelness surface due to pressure zones.
Before starting the cut, make sure that the surface of the cutting tool is parallel to the machined surface. This will prevent changes to the geometry of the part.

To achieve the best product coverage, it is important to follow the tool usage guidelines below:
- Tools must be sharp with properly sharpened corners.
- Tungsten carbide or diamond cutting edges will provide the best results.
- Use the cutting standards recommended by the authorized tool supplier.
- Perform regular sharpening in accordance with the tool supplier's tool recommendations.
- The machine must be stabilized, adjusted and maintained in good condition.
- All equipment should be as clean as possible.
- The surface placed in a protective transparent film should be turned upwards during the cutting process.
- A pruning saw should be used for a cleaner cut on the underside.
- Cutting without a scoring saw is not recommended.
- Before edging, it is receommended to apply pre-milling.
- During processing, the plates must always be firmly fixed to the machine in order to avoid vibration of the workpiece during the cutting process.
- During cutting, chipping of the edges should be checked

If there is chipping, it means that the saw is worn out and the cutting should be continued with a sharpened saw.
- Finish processing products that have been cut at an angle of 45 degrees as soon as possible.
- In order to prevent the damage to the surface, the surface protection foil must not be removed until the installation is completed.

When pre-formatting the plate, it is necessary to leave a minimum undercut size of 10 mm on each of the four sides before removing the transparent film.
In order to be able to cut products with PET coating without problems, care must be taken that the environment has a temperature of approximately 20 degrees.

The following recommendations apply to the various stages of processing:

Milling

When using CNC machines, it is recommended that the feed rate be adapted to the type of machining tool (see the manufacturer's recommendations), the spindle speed and the number of teeth.
This will positively affect the quality of the processed surfaces.
When milling, the free angle **α** should be between 2° and 10° and the milling angle **γ** should ideally be between 1° and 5°.
A cutting speed of up to 33 m/s gives the best results.
The correct milling speed setting of the coated panel must be established by test operations.
Broken edges, crack marks and peeling of the Feelness layer must be prevented.

Knife size	RPM [cycle/min.]	Number of teeth	Feed rate
250x10x60	6.000	24	15-24
250x10x60	6.000	36	25-25
250x10x60	6.000	48	35-45
250x10x60	6.000	60	45-55

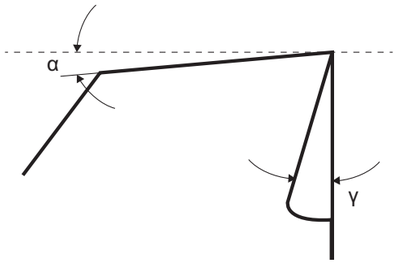


Illustration for milling and sawing
free angle = α
cutting angle = γ

Cutting

When using circular saw cutting machines, the shape and geometric projection of the teeth of the circular saws are of key importance for the quality of the machined surfaces.
Important are: free angle α and cutting angle γ.
Optimal values of angle **α** are between 2° and 10°, angle **γ** between 1° and 5°.
Very good results are achieved when cutting with circular saws with a negative cutting angle: from -1° to -5°.

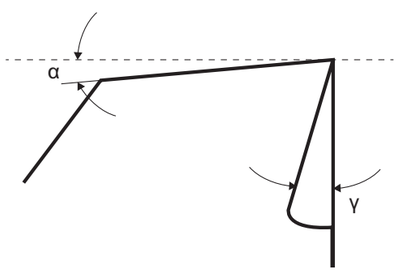


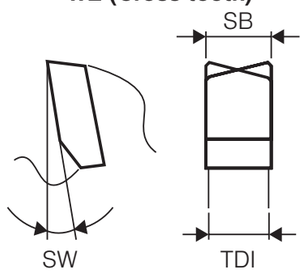
Illustration for milling and sawing
free angle = α
cutting angle = γ

Preliminary trials are recommended to establish the optimal feed rate.
As standard, the teeth of the circular saws are made of a hard alloy - HW (tungsten carbide).
Circular saws with polycrystalline diamond (PCD) teeth can be used to increase the durability between sharpenings, respectively the cutting quality.

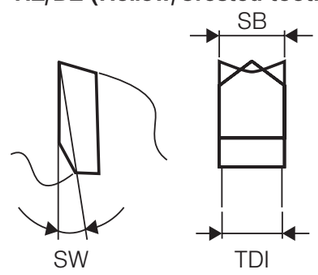
Example values for circular saws:

Dimensions of the circular saw	Tooth type	Number of teeth	Cutting speed [m/s]	Pitch [mm]
300x3,2x2,2	WZ-HZ/DZ-FZ/TR	96	20-55	10
300x3,0x2,2	WZ-HZ/DZ-FZ/TR	100	20-55	10
300x3,2x2,2	WZ-HZ/DZ-FZ/TR	108	20-55	10
400x3,2x2,2	WZ-HZ/DZ-FZ/TR	120	20-55	10

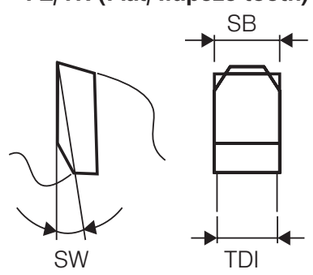
WZ (Cross tooth)



HZ/DZ (Hollow/Crested tooth)



FZ/TR (Flat/Trapeze tooth)

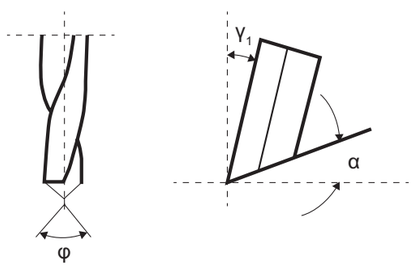


For circular saws with a diameter of about 200 mm, the distance between the teeth should usually be about 10 mm. Cutting speeds of up to around 3000 m/min. lead to optimal results.
Test cuts are recommended for optimal tuning.
Important: Number of teeth and feed rate depend on cutting height and application for single panels or stack cuts.

Drilling

We recommend the following drill geometry.

free angle = α (recommended 5-8°)
cutting angle = γ (recommended 3-4°)
Drilling speed of about 30-60 m/min.



Surface and defect control

According to the AMK-MB 009 bulletin of the Chamber of Commerce of the kitchen manufacturers in Germany, which was issued based on EN 14323, EN 14322, and DIN 68930, the panels must meet the following requirements:
There can be no more than 1 bud with a diameter of less than 5 mm per 1 m^2 of surface.
It should be taken into account that 2 pimples per 1 m^2 of surface are within the tolerance limits, provided that the diameter is less than 3 mm and the distance between them is not less than 25 cm.
The effect of swelling / non-sticking must be taken into account, especially after cutting a short edge with a length of min. 5 mm is within the standard.
A micro-defect which applies to stains or dirt, as well as fibers or scratches, can be only acknowledged if it is detected under the following conditions:

- Evaluation is performed under sunlight-like lighting (6500 Kelvin)
- Visibility at least 700 mm from the panel surface
- Viewing time: maximum 20 sec.
- Light intensity: 1000 - 2000 lux
- Angle of inclination of the product: 30 degrees

First, the foil should not be removed from the surface. If the foil protrudes over the edgebanding, it should not be pulled up but cut with a sharp knife. In case of a defect where the foil is not glued to the surface and separates without further effort, these panels or cut lists should not be used. When the foil is glued but removed from the surface through additional effort, and there is a residual layer of MDF fibers on it, these claims will not be acknowledged.
These panels are intended for dry indoor use only and are unsuitable for humid environments or prolonged exposure to water vapors. We do not carry a warranty when the panels are violated or mechanically damaged due to additional handling.

Maintenance and cleaning

Before removing the protective film on the treated surface, it is recommended to complete the technological cycle of processing the boards.
The protective cover of transparent film must be removed within 24 hours after completion of installation, no later than 3 months after delivery.

- The products are covered with a protective film (for the purpose of protection), it minimizes the damage that can occur during the production process and protects the glossy panel until the moment of receiving the finished product.
- Therefore, the protective film should not be removed until the product is finished to minimize these damages.
- The protective cover of transparent film must be removed after the installation is complete.
- The surface should be wiped with a damp cloth and soap solution.

For cleaning, it is recommended to use a non-abrasive cloth moistened with soap and water, then dry immediately.
As a precaution, to check the suitability of a cleaning product, apply to an inconspicuous area, minimizing the exposure time and amount of cleaning agent (diluted according to the supplier's recommendations) to prevent surface damage.
In general: wet surfaces should be dried immediately, for example with a soft, well-absorbing sponge.
The cleaning agent used must not be abrasive, i.e. containing abrasive particles, often used for example in cleaning powders.
The preparation must not contain oxidizing substances (chlorates, perborates or other bleaching agents) or strong bases (concentrated ammonia, solutions of sodium hydroxide).
The cleaning agent must not contain substances, such as waxes or polymer dispersions, which will remain on the surface after drying.
These are likely to change the gloss level of the film and are difficult to remove in subsequent cleaning operations.
Wood care substances such as pastes and varnishes usually contain oils and/or waxes of various origins and other substances that will usually seal the porous or lightly damaged surface of the wood.
These substances can swell plastics and cause discoloration.
Delamination is possible near the edges due to swelling of the adhesive joint.
Steam cleaning tools are also not suitable.
Stains that cannot be removed with diluted soapy water described above can be removed with diluted methanol or alcohol-based cleaners (e.g. window cleaner, testing on an inconspicuous area first).
The exposure time should be as short as possible without using excessive pressure. The use of concentrated alcohols (methyl alcohol, isopropanol) should be avoided.

Storage instructions

The products are intended for indoor use and should not be used outdoors or where they will be exposed to direct steam, water or sunlight (infrared rays).
The product must be stored and handled without air circulation and without dust and small particles.
When processing the panels, they must be arranged carefully in order to prevent dents and breaks at the edges and corners.
During transport and movement during processing, the plates must be moved without rubbing against each other.

- While the panels are being processed, they should be arranged carefully to prevent dents, scratches and breaks at the edges and corners. To prevent deformation, the parts should not be stored for a long period of time.
- In addition to the top and bottom plates of the package, the other plates in the package react more quickly to changing environmental influences (climate). Cover plates must therefore be used.
- During the handling of the product during the transport phase, the products must be lifted without rubbing against each other.
- When plates are stored horizontally in a warehouse, it must be ensured that they are stacked on pads at regular intervals.
- When storing stacks on top of each other, the pads should be aligned and the same amount for each pack.

The pads must be of uniform thickness and smooth surface.
Their length must be compatible with the width of the package of plates.
If the plate is more than 15 mm thick, a minimum of 4 pads should be used, with the same distance between them.
If the plate is less than 15 mm thick, a minimum of 5 spacers should be used, with the same distance between them.

Storing more than 6 packs on top of each other is not recommended.
Vertical storage is possible for a small number of plates, and the angle between the wall and the vertical racks must be a minimum of 10 degrees.

The temperature at which the plates are stored/processed should be higher than 10°C and there should be 50-60% air humidity.
The climate must be stable without large temperature differences and an increase in air humidity.
Wood-based boards should not be stored in places exposed to open air conditions and direct sunlight.
They should not be stored near heaters and other heat sources.

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