Engineering progress
Enhancing lives

RAUVISIO noir™

Technical information

na.rehau.com/noir

REHAU

Contents

DISCLAIMER: The technical suggestions in this guide are designed to provide you with the best results when working with RAUVISIO noir.

Cover and right: RAUVISIO noir Boxcar Blonde and Silver Lake


Engineering progress

01 Directions for use and applications

RAUVISIO noir monotonic matte surface
RAUVISIO noir laminates are made up by a certain number of kraft paper layers soaked in phenol-free resin. These layers are pressed with ornamental paper, at a high pressure and temperature. The ornamental paper goes through an electron beam curing process to give superior performance and the most matte surface.

RAUVISIO noir laminates comply with the following standards:

EN 438./2 ed. 2016
Thermosetting resin-based high pressure ornamental laminates (HPL).

Sawing/milling/drilling of panels
RAUVISIO noir panels can be processed with most approved woodworking tools. In order to enable precise processing it must be ensured that the tools are sharp and that ideal machine settings are used. The use of a scoring blade is recommended. Here, the optimum machine parameters must be established prior to series production via a sequence of sampling.

Edgebanding of panels
The use of a REHAU edgeband material is recommended to create a uniform appearance between the RAUVISIO noir surface and the narrow surface. The best visual results are achieved by using REHAU LaserEdge. No optical joint is visible here thanks to the pigmented polymer functional layer in the edging color. The REHAU LaserEdge edgeband product range can be supplied to match the surface in the materials ABS (acrylonitrile-butadiene-styrene). Correct processing is described in the processing guidelines separately.

For further information, please contact your REHAU sales office. The resulting component quality (e.g. adhesion of the edgeband, appearance and application properties) depends on the machine settings and the board quality used and must be checked by the fabricator. Optimum machine parameters, tool configuration and cutting speeds are to be established individually prior to production using a series of samples; the REHAU applications engineering department will be happy to support you with this.

02 Handling

RAUVISIO noir is inherently highly scratch resistant, but proper handling is still required to properly protect corners and edges. The risk of being damaged is highest when transporting and handling.

Loading and unloading
Carefully lift the laminate panels. Avoid letting the panels slip on one another.

Shipping large quantities
Use a strong pallet slightly larger than the size of the panels. You can also insert the sheets, wrapped in polyethylene film, in a wooden crate sized so they will not move during shipping.

Shipping small quantities
Smaller amounts of sheets can be rolled and shipped in tubes.

Packaging
For long-distance shipping, especially in difficult conditions, the sheets need to be packed in air tight packaging to protect them from dirt, such as large wooden crates, boxes or special wooden containers, or else in containers made of other very strong materials.

Laminate packs need to be protected by wrapping them up in polyethylene film. If shipping with pallets, sheets need to be secured with polyester straps with plastic or cardboard corner protection.

Panel handling
Large-sized panels need to be shipped long ways, allowing them to bend without getting damaged.

Protective film
Laminates are provided with a protective film that will preserve the surface from any scratches or damage. Do not expose peel coat to direct sunlight before removal.

03 Storage

Laminates need to be stored in dry and protected environments, as prescribed by the international reference standards (EN 438).

Laminates must be stored in a dry environment, and ideally with a temperature of 64-72° F (18-22° C), and a 50-60% relative humidity.

Horizontal storage
The panels should be placed on horizontal shelves. The top sheet should have the decorative side facing down to avoid damage. The ideal solution is to stack the panels on shelves provided with side and top partitions.

Vertical storage on an oblique surface
If needed, it is possible to store sheets on shelves vertically with 70° maximum incline. To prevent the sheets from slipping or buckling, use thick sheets as front protection.

04 Cutting

Various techniques exist for cutting laminates, using both manual or automatic cutting equipment.

Manual cutting
Cut the panel on the decorative side using a point or a cutter, with the help of a stiff ruler. Apply strong and constant pressure on the point to trace out the cutting line with the blade facing you. Break the laminate sheet by folding along the cut line.

Manual saw
The saw must have a thin serrated blade. Saw the panel decorative side up with the smallest possible angle (approximately 10°) to achieve a clean cut.

Portable saw
Place decorative side down. Saw along a traced line or using a stiff ruler as you slowly move the saw forward.

Laminate shears
Shears are able to cut both straight and curved lines. The sides will be trimmed after cutting.

Table saw
Use Chrome-Vanadium blades. The blades need to have a 4 mm thickness, or the vibrations will ruin the cut.

Ribbon saw
Normally, ribbon-saws should not be used on laminates. This type of saw should only be used to obtain certain shapes. In this case, we recommend you use high-speed steel blades.

Milling machines
For the best cutting results, use diamond points. Chrome-Vanadium blades can be used for small projects, but the milling cutter needs to be stable with high rotation speed.

Specialize milling machine and workbench cutter
This milling machine is specially designed for cutting thin laminates. The blade moves across the laminate. Workbench cutters also provide good results.

Mobile saw
Use when cutting laminates in rolls. The circular blade will move through the laminate roll parallel to the machine movement direction.

05 Balancing

The assembly of different kinds of materials causes tension so we recommend both sides supported, ideally of the same material or at the very least the same thickness of material from the same manufacturer.

Pressing RAUVISIO noir laminates
We recommend you press RAUVISIO noir laminate panels on both the top and bottom of the core material, or at least a product of similar quality and thickness for support and to prevent warpage. It is important that the fibers of the two laminate panels face the same direction glued. The two panels need to be pressed at the same time and with the same glue type.

If the core does not exceed a 15 mm thickness, both sides require the same quality and thickness. If the thickness of the support exceeds 15 mm, the thickness of the balancing sheet can be reduced. We recommend you carry out control tests to validate the thickness of the balancing sheet.

Using other materials
Under very specific circumstances, other materials, such as films or a soaked finishing layer in wood or paper, can prove useful as balancing elements. The selected materials must have as similar as possible quality and thickness as RAUVISIO noir monotonic matte surface laminates. Always conduct tests beforehand.

06 Core options

In most applications, RAUVISIO noir 0.9 mm laminate material should be applied to a strong, uniform and smooth core material. The type of glue and related thickness, as well as the pressure exerted during assembly, will affect the final surface finish result.

The dimensions of the laminates can have minimum variations depending on the temperature and environmental humidity degree. Take precautions if pressing in high-temperatures or humid areas. The thermal dilation factor for laminates is approximately 0.015 mm/m/°C both length and width of the sheet.

Types of Support
The supports listed below are the most suitable for RAUVISIO noir. It is important to use a high-quality, flat core for best results.

1. MDF (Medium Density Fiberboard)
Best of option when clean edges are required, and in curved projects. RAUVISIO noir boards from REHAU use an MDF core.

2. Particle board
The structure of a particle board (including the shape of the particles, the smoothness of the surface, the amount of resin and the density) is what brings about the quality and the features of the surface. The tractive power of the panel surface must meet the minimum values prescribed by the regulations in force.

3. Plywood panels
This combination containing a low percentage of hardwood is suitable for some applications.

4. Alveolar materials
Th ese materials are suitable in the event in which they represent the chief element of a compound support. They are also suitable if combined with a frame.

5. Expanded materials
Stiff boards of porous and synthetic foam (such as polystyrene, PVC and polyurethane) can be used, and offer excellent insulating properties. It also makes vertical applications possible.

6. Other materials
Options such as plasterboard, steel, calcium sulfate or cement can be used. However, we recommend you conduct the necessary tests.

07 Glue

Storage
Glue must be stored in the same conditions as the other materials (laminate, balancing element, core) so it has a similar temperature for pressing.

Gluing
- It is very important to spread the product carefully so it is evenly distributed over the entire board
- Glue can be manually spread by a roller, a brush, or a roller system
- Opposing roller dispensers can allow for double-sided pressing on a single core

Types of glue
Various types of glues can be used during pressing and additional applications. All glue parameters need to be implemented based on the data provided by the glue supplier

1. PVC glue

Parameters	Hot press	Cold press
Amount of glue g/m^2	70 - 80	90 - 100
Temperature °C	60 - 70	20
Pressure kg/cm^2	4 - 5	4 - 5
Pressing time	40 - 60 sec	20 - 50 min

This type of glue is employed to glue laminates on wood-based core, on plasterboard, expanded cement, etc.

2. Contact glue (Neoprene)
A thermoplastic glue used with cold-pressing which provides the option of metal pressing. Must be applied on the laminate and on the core with a brush or comb. When the glue is dry to the touch, the sheets can be pressed one against the other. Do not allow the glue to dry too much before pressing, or the gluing will not stick. When pressing, exert brief but strong pressure (8 – 10 kg/cm^2 for at least 1 min). The amount of glue used ranges from 150 – 200 g/m^2.

3. Thermosetting glues
Use with hot presses (100-150 °C) with pressure ranging between 5 and 10 kg/cm^2 for 50 – 100 sec. The amount of glue usually applied is 90 – 150 g/m^2. Excellent results can be found for a variety of applications. When gluing laminate on polystyrene, do not use glues with solvents that may melt the materials. Resorcin-formaldehyde is also recommended for aluminum gluing.

Support	Urea formaldehyde	Melanin formaldehyde	Resorcin formaldehyde	Polyurethane	Epoxy
Wood	X	X	X	X	X
Paper-based alveolar	X	X	X	X	X
PVC				X	X
Polysyrene				X	X
Polyurethane				X	X
Plasterboard	X				
Metal			X	X	X

08 Hole drilling

Drilling laminate and boards
Laminate drilling can be carried out by means of a helicoidal point. The point angle must range between 60° and 80° (metal usually uses a 120° angle). A thread with a very rapid propeller and deep grooves is required to quickly remove the shavings. High speed drilling provides better results with a recommended speed of approximately 1000 tr/mn. Drilling speed must range between 20 and 50 mm/mn.

Place a piece of wood underneath the laminate to avoid splinters when the point penetrates the laminate. The screw holes must exceed the diameter of the screw or point by 1 or 2 mm to avoid cracking the laminate after assembly due to pressure.

Ensure that the holes provided for fixing purposes have a diameter of 1 or 2 mm greater than the body of the screws or nails.

Always round cut angles; protruding angles can cause the laminate to develop cracks.

Large-sized holes
It is recommended to use a saw drill or adjustable cutting tool to make holes exceeding 15 or 20 mm.

09 Cutting

Saw
The aspect of the cut edge depends on various factors, such as the regulation of the blade in height. We recommend you conduct preliminary tests before starting any manufacturing process in order to give the required adjustment.

Place the RAUVISIO noir panel with the decorative side in the opposite direction to the rotation of the blade. In addition, the sheet must be well supported and secure with an adjustable height pressure tool to prevent movement and vibration. Make sure that the saw blade is aligned with the worktop and has the right depth. If you are cutting a particle board with pressed laminate on both sides, we recommend a cutting depth not exceeding the thickness of the panel by more than 10 mm. In this way, you will prevent the laminate from splinting. You will need to allow as little room as possible between the surface of the workbench and the panel.

Should any splits be noticed on the top side of the laminate, we recommend you slightly lift the blade. On the other hand, should this situation be observed on the lower side, it is advisable to lower the blade. We recommend you perform cutting on a workbench equipped with saw and tracer.

It is also possible to cut several sheets together. In the case of panels with decoration on one side only, all sheets should be placed with their decorative sides facing upwards. Alternatively, the stack of sheets should be placed on a "sacrificial panel" that has the same or superior hardness and texture as those being cut to shape.

Recommended specification for circular saws:
- Tooth pitch: 10 to 15 mm
- Cutting speed: 3,000 to 4,000 rpm
- Tip speed: 60 to 100 m/s
- Forward speed: 15 to 30 m/min

Use blades with a cutting edge in hard metal, such as a Chrome-Vanadium alloy. Ensure the blades are not too thin, since this could cause vibrations and consequent cracks on the laminate.

Manual tools
Files and abrasive paper
Always start from the visible side using a flat lime. Work on the finish using a thin lime or abrasive paper.

Milling machine
In most cases a manual electric milling machine is employed to remove the excess laminate. During this operation, the visible side can be protected by means of another sheet of laminate placed between the milling machine and the visible side. With right-angle or slant profiles, use milling cutter heads with a straight or slant blade.

Workbench tools
For milling by means of a workbench milling machine, we recommend you use normal and vertical milling machines.

Tool wear
Wear depends on the type and shape of the tools employed, on the type of support and on the quality of cut required.

10 Maitenance and cleaning

RAUVISIO noir is extremely durable and requires little maintenance. To achieve good results when removing stains, follow the indications listed below.

Ordinary maintenance
Clean the panels with a damp cloth. Most stains are removed with water and an ordinary gentle household soap. With resistant stains, a more concentrated soap can be used. Always dry with a clean cloth.

Slightly dirty surfaces - daily maintenance
Soak a clean cloth in water containing a household soap and detergent. Use a damp cloth to clean the surface. Wipe with a dry and clean cloth.

Dirty surfaces - cleaning thoroughly
Remove the dirt. Soak a clean cloth in water containing household soap and wring it. As you wipe the surface clean, ensure you always move the cloth in the direction of the casework. You can also soak a clean cloth in water containing alcohol or a similar product, and clean the surface. Wipe with a dry and clean cloth.

To be avoided
Never use abrasive or particularly aggressive products, such as steel wool, abrasive powder or other furniture polishes, because they can cause irreparable surface scratches.

Stain removal

	Detergent products for home use	Alcohol, window cleaning products	Turpentine oil, acetone, perchloroethylene	Special solvents, graffiti solvents
Finger marks	X			
Grease, oil	X		X	
Shoe marks	X		X	
Soot, nicotine	X			
Ink	X		X	
Coffee, tea	X			
Fruit juice	X			
Chalk, fountain pen ink	X			
Markers		X	X	
Paint		X	X	X
Glue	It is not possible to remove certain types of glue, especially dried bicomponent glues, without damaging the surface.		X	
Lipstick, shoe-polish, wax			X	
Lime, calcareous deposits	Remove them with a 10% acetic acid solution. Pay special care when using scale removers, since they may contain highly corrosive substances which will damage the surface of the laminate.			
Rust	X	Employ a citric acid solution for resistant stains.		

Stains caused by paint, markers, pen ink, etc.
Use organic solvents, such as denatured alcohol, turpentine oil, acetone, graffiti solvents, etc. Remove solvent residues with water containing a household soap. Do not use a nitrocellulose-based thinner. Always conduct cleaning operations in an airy room and away from naked flames.

Note: After removing stains, carefully clean the surface with soapy water. Dry the panel.

Cleaning before gluing
Before gluing, carefully clean the surface as well as the rear of the laminate in order to remove any traces of surface dirt or processing residues. Also clean the surface of the core to avoid problems and defects after pressing. Use soft bristle brushes or air.

11 Data sheet

Properties	Test method	Property or attribute	Unit	Results
Surface quality	EN 438-2.4	Spots, dirt and similar surface defects	mm2/ms	≤ 1
		Fibers, hair and scratches	mm2/m2	≤ 10
Dimensional tolerances	EN 438-2.5	Thickness tolerence	mm	0.9 + 0.10
	EN 438-2.6	Length and width	mm	± 10 / 0
	EN 438-2.7	Straightness of edge	mm/m	≤ 1.5
	EN 438-2.8	Squareness	mm/m	≤ 1.5
	EN 438-2.9	Flatness	mm/m	≤ 60
Resistance to surface wear	EN 438-2.10	Initial point	Revolutions	≥ 200
Resistance to immerson in boiling water	EN 438-2.12	Appearance	Ratings	≥ 4
Resistance to water vapor	EN 438-2.14	Appearance	Ratings	≥ 4
Resistance to dry heat (180°C)	EN 438-2.16	Appearance	Ratings	≥ 4
Resistance to wet heat (100°C)	EN 12721:1997	Appearance	Ratings	≥ 4
Dimensionsal stability at high temperatures	EN 438-2.17	Cumulative dimensional change	Longitudinal %	≤ 0.55
		Cumulative dimensional change	Transversal %	≤ 1.05
Resistance to impact with small diamter ball	EN 438-2.20	Spring force	N	≥ 21
Resitance to impact with large diamater ball	EN 438-2.21	Drop height	mm	≥ 1000
		Indentation diameter	mm	≤ 10
Resistance to cracking	EN 438-2.23	Appearance	Rating	≥ 4
Resitance to scratching	EN 438-2.25	Appearance	Rating	≥ 4
Resistance to staining	EN 438-2.26	Appearance - Group 1 and 2	Rating	5
		Appearance - Group 3	Rating	≥ 4
Light fastness (xenon-arc)	EN 438-2.27	Contrast	Grey scale rating	≥ 4
Gloss level	ISO 2813	Surface specular reflectance	Gloss unit	5-15 (measured at 85°)

Properties	Test method	Property or attribute	Unit	Results
Electrostatic property	EN 61340-4-1	Surface electrical resistance: Point to point resistance Vertical resistance	 ohms ohms	 7.76×10^{11} 1.23×10^{11}
Density	EN ISO 1183	Density	g/cm3	≥ 1.35
Resistance to micro scratches	EN 438-2.30	Visual assessment	Rating	5
Acids resistance	SEFA 8-PL-2016 Section 8.1	Chemical spot test	pass/not pass	pass
Hygiene (suitability for food service)	NSF	NSF/ANSI 35	mg/m3	pass
Contact with food - overall migration	EN 1186-3	3% acetic acid 24h @ 40C	mg/dm2	0.5
	EN 1186-3	50% ethanol 24h @ 40C	mg/dm2	0.6
	EN 1186-14	95% ethanol 24 h @ 40C	mg/dm2	1.0
	EN 1186-14	isoctane 24h @ 40C	mg/dm2	< 0.1
Contact with food - formaldehyde specific migration	EN 13130-23	3% acetic acid 24h @ 40C	mg/kg	< 15
Formaldehyde emissions	EN 13986	Formaldehyde emission rating	Rating	E1
VOC emissions	AFNOR NF EN ISO 16000-9	Classification	mg/m3	A+
		Formaldehyde	mg/m3	≤ 0.002
		Acetaldehyde	mg/m3	≤ 0.002
		Toluene	mg/m3	≤ 0.002
		Tetrachlorethylene	mg/m3	≤ 0.002
		Xylene	mg/m3	≤ 0.002
		Trimethylbenzene	mg/m3	≤ 0.002
		TVOC	mg/m3	≤ 0.01
Evaluation of micro-organisms action	JIS Z 2801:2010	Antimicrobial activity after 24h at 35C	bacterial viability: log reduction reduction %	> 3.6 > 99.975
Phenol free	EN ISO 16000-9	Phenol content in resin		Phenol free
Reaction to fire - standard version	ASTM E84-20	Flame spread and smoke developed	Classification	Class B
Reaction to fire - FR version	ASTM E84-20	Flame spread and smoke developed	Classification	Class A

Customer Service Contacts
Hours Monday to Friday, 8 am to 6:30 pm EST
Email orders to orders.us@rehau.com
www.na.rehau.com/cabinetdoors

United States
Phone (888) 734-2810 Fax (616) 285-7622
Canada
Phone (888) 905-0345 Fax (514) 905-0490

For updates to publication, visit **na.rehau.com/resourcecenter**

122.01 03.2022