



RAUVISIO terra™ soft, textured HPL surface
Technical information




na.rehau.com/terra



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This manual contains safety-related information that requires your special attention. It is indicated with the safety alert symbol and the signal words described below:

 DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a risk of property damage, including damage to the individual components.

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

01 Information and safety notes

Latest version of the technical information

To ensure your safety and proper use of our products, please regularly check whether a more recent version of the technical information is available.

You can obtain the latest version of the document from your local retailer, your REHAU sales office or download it from na.rehau.com/terra

Proper use

RAUVISIO products may only be planned, processed and installed in accordance with this technical information. Any other use is in violation of the specifications and is therefore prohibited.

Suitability of the material

Our valid technical information is to be observed for the processing/installation and use of RAUVISIO terra. Our technical information is based on empirical values and knowledge acquired up to the time of printing. The dissemination of this information does not comprise any assurance of the properties of the products described. No explicit or implicit guarantee may be derived from it. The information does not release the user/purchaser from their obligation to assess the suitability of this material and the correct processing thereof to attain the required results in terms of objective and application.

Publication of information

It is essential to ensure that your customers, also including end customers, are aware of the necessity to observe the current technical information as well as instructions for the care and use of RAUVISIO terra.

The care and usage instructions must be made available to the end customer either by you or by your customers.

Note to our distribution partners and customers that press RAUVISIO HPL and resell the laminated boards: Please also inform your customers of the need to follow the current technical information and make this available to them.

Note to processors of pressed HPL boards: Please ensure that at least the installation guidelines and the care and usage instructions are handed over to your customers and to fabrication and installation companies.

Safety and installation instructions

Observe the information on packaging, accessory parts and installation instructions. Keep the installation instructions so that they are always available. If you do not understand the safety instructions or installation recommendations, or if there is any uncertainty with regard to their content, please contact your local REHAU sales office.

Relevant regulations and safety equipment

All applicable safety and environmental regulations as well as the regulations of the trade supervisory center and professional association must be strictly observed. These always take priority over the instructions and recommendations given in the technical information.



CAUTION

To reduce the risk of injury always use safety equipment such as

- Gloves
- Safety goggles
- Ear protection
- Dust mask

Adhesives and additional tools

Strictly observe the safety instructions for any adhesives.



CAUTION

To reduce the risk of injury strictly observe safety instructions for any adhesive. Always store additional tools such as alcohol-based cleaning products and other easily flammable materials in safe and well-ventilated places.



CAUTION

To reduce the risk of injury ensure adequate ventilation and extraction for the processing machines. If production dust is inhaled, provide fresh air and in the event of symptoms seek medical advice.

Ventilation/extraction, production dust

Dust created by drilling, sawing, sanding or machining wood products can expose you to wood dust, a substance known to the State of California to cause cancer. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. Appropriate protective measures should be taken when processing this material.

California residents, visit www.rehau.com/us-en/ca-prop-65 for more information.

Protective measures and disposal

RAUVISIO terra is a high pressure laminate composed of a certain number of kraft paper layers that is not harmful to the environment. The dust that forms is not toxic. The dust concentration is to be minimized through suitable protective measures such as extraction and use of a dust mask. Dust from RAUVISIO terra presents no specific risk of explosion.

Disposal code in accordance with the Waste Catalog Regulation:

- 170203/Construction and demolition works consisting of timber, glass and plastic

Fire behavior

RAUVISIO terra demonstrates favorable fire behavior. In the event of a fire, no toxic substances such as heavy metals or halogens are released. The same fire-fighting techniques can be used as for construction materials containing wood.



WARNING

To reduce the risk of serious injury or death use the following fire extinguishing procedures.

Fire-fighting

Suitable extinguishing agents for fire-fighting are

- Water spray
- Foam
- CO₂
- Extinguishing powder

A solid-stream water jet is unsuitable for safety reasons.

When fire-fighting, wear suitable protective clothing and if necessary standalone breathing apparatus.

02 Directions for use and applications

RAUVISIO terra soft, textured HPL surface

RAUVISIO terra laminates are composed of a certain number of kraft paper layers soaked in phenol-free resin. These layers are pressed with decorative paper, at a high pressure and temperature.

RAUVISIO terra laminates comply with the following standards: DIN EN 438-2:2016 High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 2: Determination of properties.

NOTICE

To reduce the risk of property damage use the following procedures regarding sawing/milling/drilling of panels.

Sawing/milling/drilling of panels

RAUVISIO terra panels can be processed with standard woodworking tools. For precise processing, ensure that tools are sharp and machine settings are ideal. 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 is recommended to create a uniform appearance between the RAUVISIO terra surface and the board edge. 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 ABS (acrylonitrile-butadiene-styrene) material.

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.

03 Handling

RAUVISIO terra 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.

NOTICE

To reduce the risk of property damage use the following handling and transporting procedures.

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 laminate sheets can be rolled and shipped in tubes.

Packaging

For long-distance shipping, especially in difficult conditions, the laminate 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, laminate 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.

04 Storage

NOTICE

To reduce the risk of damage use the following storage procedures.

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 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 laminate sheets on shelves vertically with 70° maximum incline. To prevent the sheets from slipping or buckling, use thick sheets as front protection.

05 Cutting

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

NOTICE

To reduce the risk of damage use the following cutting procedures.

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 cut 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.

Specialized 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.

06 Balancing

NOTICE

To reduce the risk of damage use the following balancing procedures.

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 terra laminates

We recommend you press RAUVISIO terra laminate panels on both the top and bottom of the core material, or at least use 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. 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 be as similar as possible in quality and thickness to RAUVISIO terra soft, textured HPL surface laminates. Always conduct tests beforehand.

07 Core options

NOTICE

To reduce the risk of damage, RAUVISIO terra 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.

The dimensions of the laminates can have minimum variations depending on the temperature and environmental humidity. 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 terra. It is important to use a high-quality, flat core for best results.

1. MDF (Medium Density Fiberboard)

Best option when clean edges are required, and in curved projects.

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

These 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. These 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 Gluing

NOTICE

To reduce the risk of damage use the following gluing procedures.

Storage

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

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.

Gluing

- It is very important to spread the glue 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/cm² for at least 1 min). The amount of glue used ranges from 150 – 200 g/m².

3. Thermosetting glues

Use with hot presses (100-150°C) with pressure ranging between 5 and 10 kg/cm² for 50 – 100 sec. The amount of glue usually applied is 90 – 150 g/m². 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
Polystyrene				X	X
Polyurethane				X	X
Plasterboard	X				
Metal			X	X	X

08 Hole drilling

NOTICE

To reduce the risk of damage use the following hole drilling procedures.

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 1/2 in.

09 Cutting

NOTICE

To reduce the risk of damage use the following cutting procedures.

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 make the required adjustment.

Place the RAUVISIO terra panel with the decorative side in the opposite direction to the rotation of the blade. Make sure the sheet is well supported and secured 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 upward. 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 crack the laminate.

Manual tools

Files and abrasive paper can be used.

Always start from the visible side using a flat line. Work on the finish using a thin lime or abrasive paper.

Milling machine

In most cases a manual electric milling machine is used to remove the excess laminate. During this operation, the visible side can be protected by 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 with 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 Maintenance and cleaning

NOTICE

RAUVISIO terra is extremely durable and requires little maintenance. To reduce the risk of damage and 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 or detergent. Use a damp cloth to clean the surface. Wipe with a clean, dry 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 clean, dry 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. Be very careful when using scale removers, since they might 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 open 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	mm ² /ms	≤ 1
		Fibers, hair and scratches	mm ² /m ²	≤ 10
Dimensional tolerances	EN 438-2.5	Thickness tolerance	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	≥ 90
Resistance to immersion 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
Dimensional 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 diameter ball	EN 438-2.20	Spring force	N	≥ 20
Resistance to impact with large diameter ball	EN 438-2.21	Drop height	mm	≥ 800
		Indentation diameter	mm	≤ 10
Resistance to cracking	EN 438-2.23	Appearance	Rating	≥ 4
Resistance to scratching	EN 438-2.25	Appearance	Rating	≥ 3
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

Properties	Test method	Property or attribute	Unit	Results
Density	EN ISO 1183	Density	g/cm ³	≥ 1.35
Hygiene (suitability for food service)	NSF	NSF/ANSI 35	mg/m ³	pass
Formaldehyde emissions	EN 13986	Formaldehyde emission rating	Rating	E1
		Classification	mg/m ³	A+
		Formaldehyde	mg/m ³	≤ 0.002
		Acetaldehyde	mg/m ³	≤ 0.002
		Toluene	mg/m ³	≤ 0.002
VOC emissions	AFNOR NF EN ISO 16000-9	Tetrachlorethylene	mg/m ³	≤ 0.002
		Xylene	mg/m ³	≤ 0.002
		Trimethylbenzene	mg/m ³	≤ 0.002
		TVOC	mg/m ³	≤ 0.01
Phenol free	EN ISO 16000-9	Phenol content in resin		Phenol free
Top laminate raw density	DIN EN 323	-	g/cm ³	1.35
Fire behavior	DIN 4102/1			Standard: Class B Fire resistant: Class A
Flame spread index	ASTM E84	Class A: 0-25 Class B: 26-75 Class C: 76-250		Standard: 45 Fire resistant: 0
Smoke developed index	ASTM E84	Class A,B,C: 0-450		Standard: 80 Fire resistant: 35
Formaldehyde emissions	EN 622 and TSCA Title VI	Class E1: < 0.09 PPM TSCA: < 0.11 PPM		E1/CARBII/TSCA Title VI

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

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