

UPB[®] BOARDS

made of (Resvsta[®])

- **100% Water Resistant**
- **Easy Processing - Like Wood**
- **Customized Color Design**
- **Premium Edge**
- **Thermoformability**
- **100% Recyclable**



reddot design award
winner 2017



**Green
Product Award**

Winner

CATEGORY ARCHITECTURE

Design-Board with the natural
look & feel of wood **UPB BOARD**

iW
INTELLIGENTWOOD

UPB[®] Boards made of (Resvsta[®])



UPB BOARDS made of Resysta - the better wood for a better world

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NEW: INTELLIGENT WOOD

NATURAL FIBERBOARDS WITH THE ecoplus³ TECHNOLOGY

INTELLIGENT WOOD is the first company to rely on the ecoplus³ technology by Resysta International for all its products. This completely new process allows us to produce sustainable natural fiberboards (= universal performance boards/UPB). Natural fiberboards with the ecoplus³ technology by Resysta combine economic prices with excellent freedom of design. They are 100% recyclable, waterproof, low-maintenance and virtually indistinguishable from tropical wood in terms of their optic and tactile properties.

Products using the ecoplus³ technology also have a remarkably low density. At a maximum weight of 0.6 g/cm³, they are extremely lightweight. This makes their handling for production and installation especially effortless. The low expansion of the material makes them even easier to install. On account of its reduced thermal conductivity, it prevents e.g. terraces and façades from heating up too fast. INTELLIGENT WOOD products with the ecoplus³ technology by Resysta offer truly intelligent solutions compared to other panelling materials.



INTELLIGENT WOOD products made of Resysta could be used wherever extreme weather is hard on any material - even at high heat. If the product is installed properly, heat-induced material changes will not affect its appearance or quality. This is why INTELLIGENT WOOD products made of Resysta stay beautiful for a long time.



INTELLIGENT WOOD panel material, universally applicable.



INTELLIGENT WOOD = WOOD 2.0

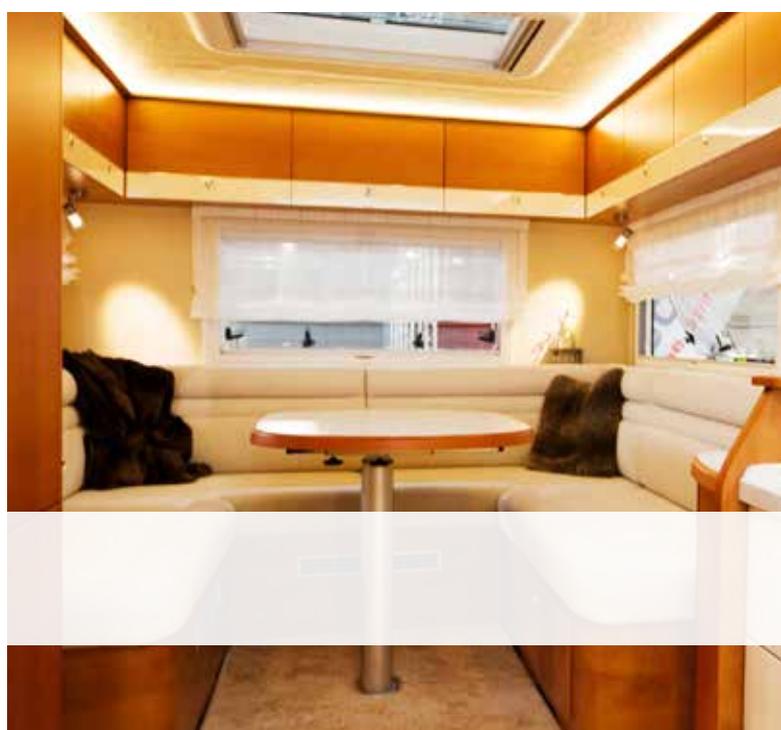
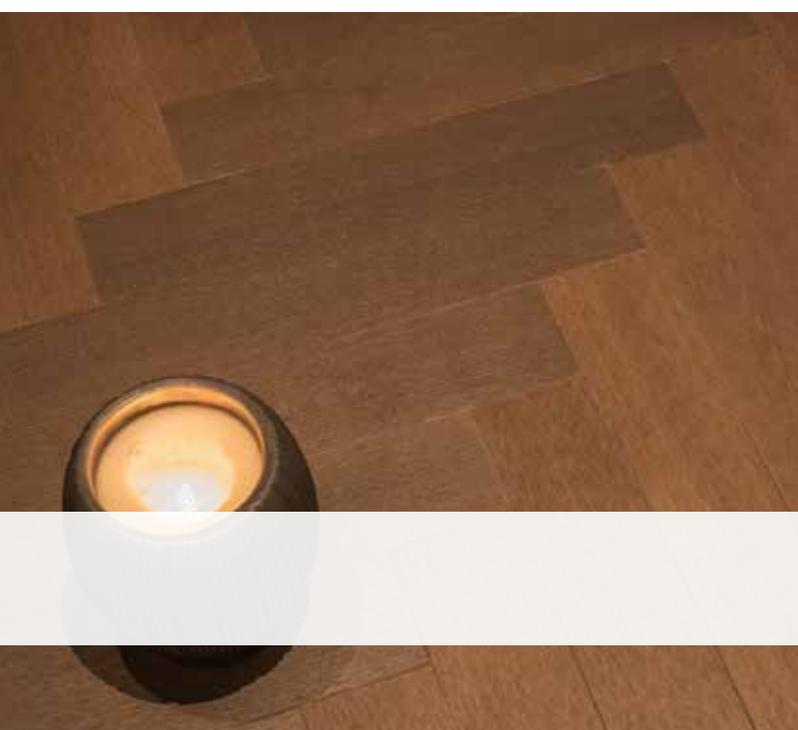
SUSTAINABLE STRATEGY

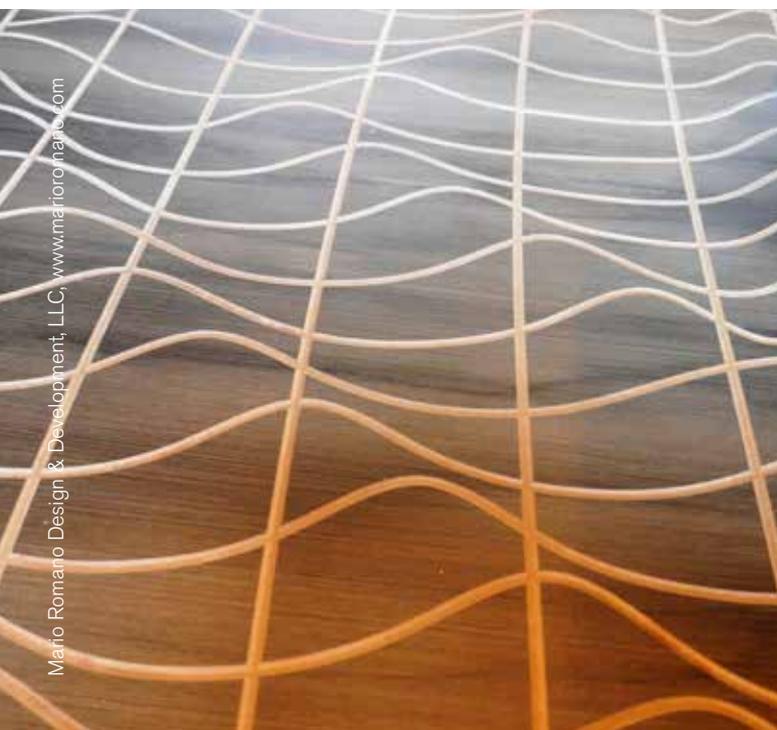
The INTELLIGENT WOOD Universal Performance Boards made of Resysta are incredibly versatile. They do not just look and feel like wood, they can also be processed like wood. And unlike wood, INTELLIGENT WOOD panels are even thermoformable.

This provides unbelievable ease of design for numerous application areas. INTELLIGENT WOOD performs extremely well as flooring material as well as for facades or interior design.

For more than 15 years, the material has been establishing its advantages in worldwide projects throughout various climatic zones and under the most severe conditions. INTELLIGENT WOOD products are easy to care for and more durable than wood or WPC due to its water and UV resistance, and it is 100% recyclable. And since they are made up of approximately 60% rice husks, a waste product from the food industry, INTELLIGENT WOOD products are extremely sustainable and are an example of the technological advancement of natural raw materials - a true wood 2.0.

Rice is grown worldwide. As the fabrication of products made of Resysta is licensed worldwide, it can also be produced worldwide. This ensures that raw materials for production can be sourced regionally and that they do not have to be shipped around the world. This saves costs and reduces CO2 emissions before the production of even one product.





Mario Romaro Design & Development, LLC, www.marioromaro.com



INTELLIGENT WOOD. One panel - infinite possibilities.





Remaining tropical rainforests in the world



INTELLIGENT WOOD - in harmony with nature

INTELLIGENT WOOD - PRESERVES NATURE

CREATES ALTERNATIVES

The tropical rainforests cover over our planet like a green, living belt. Countless animal and plant species are found there, many of which have not even been discovered to date. This 'green lung' stores large amounts of carbon dioxide and is indispensable for maintaining the climate on the earth.

But saving the rainforest is easier said than done as long as the demand for tropical woods continues to rise. With Resysta, everyone can make an important contribution to the protection of the rainforest. Resysta is absolutely free of wood, so no single tree needs to be cut.



While scientists from the University of Maryland (USA) were evaluating numerous satellite images in 2015, they discovered that over a period of five years parts of the tropical rainforest, roughly the size of Germany, disappear irretrievably from our earth. In the period from 2000 to 2020 this corresponds to an area as large as Germany, France, Italy, Austria and Switzerland combined. In other words, every minute the equivalent of almost 18 football fields disappears.

(Sources: Geophysical Research Letters, published AGU Publications, USA, 2015, Do-Hyung Kim, Joseph O. Sexton, John R. Townshend)

ADVANTAGES

LOOK AND FEEL

- natural look of wood
- feels like wood
- variable surface structure
- individual color application
- different finishing methods
- no graying
- subsequent surface design possible
(Color Concept with infinite color selection)
- various surface design possible (e.g. printing)

UPB BOARD MADE OF RESYSTA STANDS UP TO
ANY COMPARISON

RESISTANCE

- 100% water-resistant
- no splintering
- weatherproof
- no graying
- no cracks or chips
- no insect attack
- high resistance to wood-staining fungi
- high resistance to wood-destroying fungi
- rot resistant
- very low swelling and shrinkage
- high UV resistance against destruction
- no distortion due to moisture

CUSTOMIZED SIZE

- standard: 1220 mm x 2440 mm
or length available as desired
- thickness: 6 mm, 8 mm, 12 mm,
16 mm, 20 mm
- other thicknesses and dimensions
can be produced upon request.



ENVIRONMENT

- environmentally friendly
- long lifetime
- free of phenol and formaldehyde resins
- free of adhesive
- recyclable
- made of renewable resources
- excellent ecological balance
- natural product
- no tree needs to be felled

TECHNICAL ADVANTAGES

- homogeneous edge
- high screw-withdrawal resistance
- nail suitable
- bonding suitable
- thermoform suitable
- easy to glue
- cold weldable
- grooves weldable
- non-slip even with standing water
- easy handling due to light weight
- can be used with conventional woodworking machines and tools
- easy to mill and edit
- consistent quality
- easy solutions for the optimization of mechanical stability are possible
- over 20 years of material experience
- inflammable DIN EN 13501 possible

COST SAVING

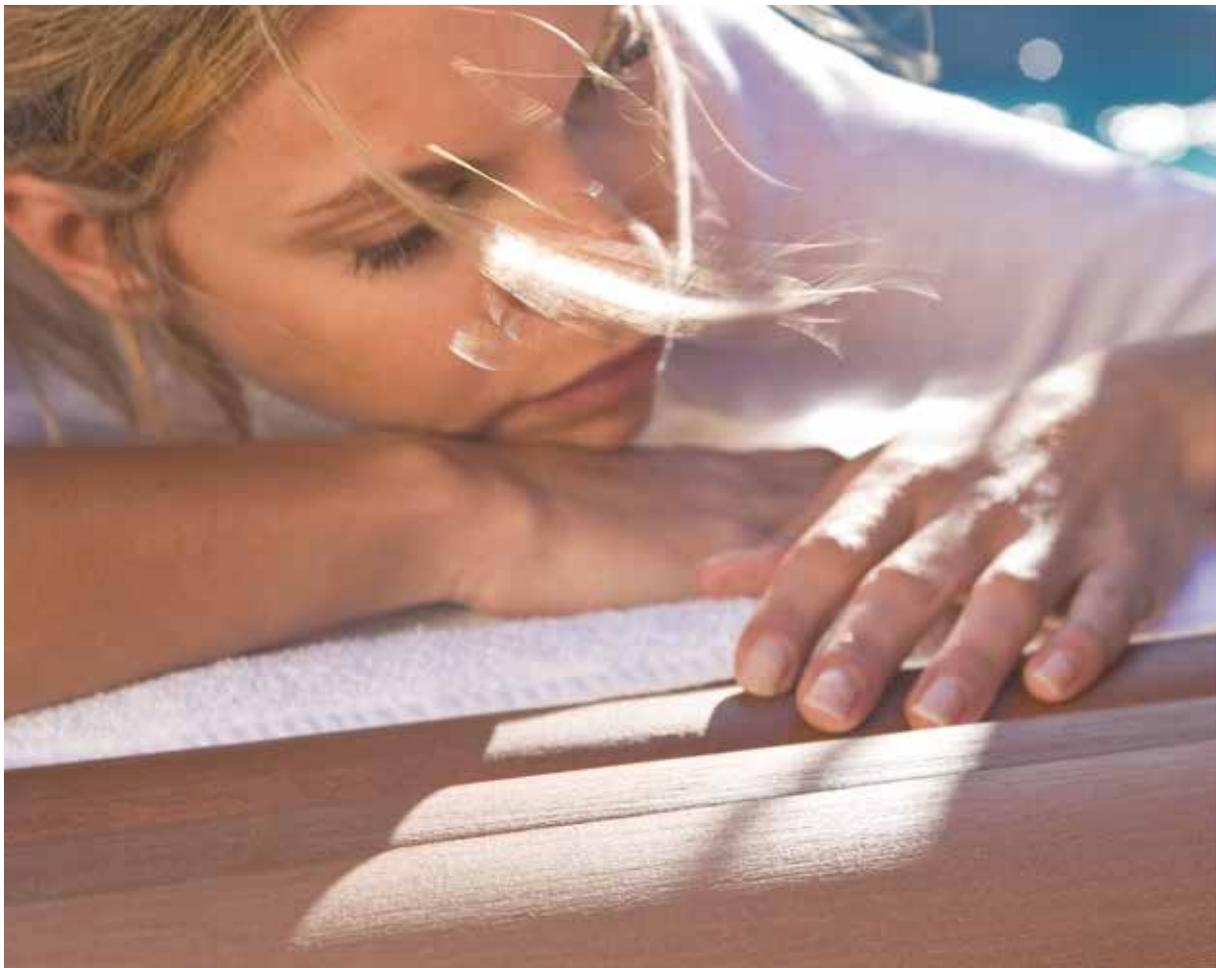
- less expensive than many other materials
- easy processing
- no lipping, no veneer necessary
- standardized quality
- ideal for craft and industry
- low maintenance
- universal material
- fast availability

UPB BOARD MADE OF RESYSTA

LOOKS AND FEELS LIKE WOOD

INTELLIGENT WOOD products are made of Resysta. Resysta is a very versatile material, which is used wherever materials have to be particularly resistant and wood is not as suitable in the long run, e.g. for garden furniture or even in shipbuilding. The basic prerequisite for the developers was therefore to replace wood, and especially tropical wood, with products made of Resysta.

The idea: Resysta consists of approx. 60% rice husks, a natural waste material of the food industry. Combined with a patented surface treatment, this creates products that are difficult to distinguish from wood and highlight this optical impression with every touch. It has the warmth and lightness of wood.



UPB BOARD MADE OF RESYSTA

LOVES WATER

Due to its components (approx. 60% rice husks, approx. 22% rock salts and approx. 18% mineral oil), INTELLIGENT WOOD products, like all products made of Resysta, are absolutely water-resistant. Therefore, INTELLIGENT WOOD products do not swell. They can even be installed in the water! Furthermore they are resistant against salt-water and chlorine-water, non-slip and float in water like wood (depending on the primary material).

Even under the toughest conditions INTELLIGENT WOOD products made of Resysta do not rot or decay. These characteristics are also used by major cruise ship companies, who use deck and railing products made of Resysta, thus eliminating the need for continuous replacement and maintenance of these parts. Rain, dampness or even waterlogging do not affect your façade or your terrace made of UPB Boards made of Resysta.



INTELLIGENT WOOD PRODUCTS

ARE RESISTANT TO MOULD, FUNGI AND TERMITES

Wood is undoubtedly a beautiful material. Its diversity and natural appearance is widely appreciated. But as soon as moisture comes into play, wood becomes very vulnerable. It begins to rot, which can permanently damage the wood in its basic structure. fungi can develop, which can be harmful in a residential setting.

In warmer regions, termites become a danger because they can seriously damage the stability of buildings. INTELLIGENT WOOD products do not absorb moisture. Therefore, they do not rot and fungi also have no chance. Furthermore, termites do not like rice husks. Therefore, you will be able to enjoy your façades and terraces made of INTELLIGENT WOOD products for a long time.



UPB BOARDS

WITH THE PREMIUM EDGE

Most building materials are not produced in the required sizes. Panels of any kind are therefore cut to size on site. However, cutting material results in a variety of edges which have to be reworked and sometimes have to be covered with edge strips to meet optical requirements.

INTELLIGENT WOOD products can generally be processed like wood - nailing, sanding, milling, gluing, drilling and, of course, sawing - the only difference: edges do not have to be reworked since INTELLIGENT WOOD products do not splinter or fray - the UPB Board edges are sound. After each cut, further processing can be started immediately without great effort.



Initial condition

after 500 h

after 2,000 h



BANGKIRAI

brittle and cracked surface



WPC

embossed wood surface
optics made in the USA
strong discoloration
(fading), rough surface,
loss of gloss, some white
particles selectively visible



FOAMED PVC

made in USA
strongly grayed surface

Determined color change in greyscale levels

PRODUCTS MADE OF RESYSTA IN COMPARISON

BEST RESULTS AFTER 2,000 HOURS XENON TEST

Task formulation

Resysta carried out 'artificial weathering of selected materials' in collaboration with the renowned Dresden 'eph-Institute'.

The Xenon test was selected as the test method.

Implementation of test

The artificial weathering took place over 2,000 h (after 650 MJ/m² irradiation) in a Xenon test device CI 3000 (test equipment KL 31) according to DIN EN 11341. The artificial weathering was carried out under the following test conditions:

- 55 °C black standard temperature
- 50% relative humidity
- Irradiation strength 0.5W (m² x nm) at 340 nm
- Weathering cycle: Spray cycle 18 min, drying phase 102 min

For this test over 2,000 hours a factor of 15-25 can be applied. Assuming a factor of 20 and an average of 7 sun hours per day (Central Europe), this corresponds to outside weathering of over 15 years.

The following evaluations were carried out to characterize the weather resistance:

- visual detection of the change in color using grey scale according to DIN EN 20105-A02
- visual assessment after 500 h, 1,000 h, 1,500 h and 2,000 h.

Test material

Two test specimens each were made available to the 'EPH Institute' from 15 material samples.

For each variant, 1 test specimen was weathered.

Summary:

Of all the materials tested, products made of Resysta combines natural optics and haptics most convincingly with longevity.



PRODUCTS MADE OF RESYSTA + VARNISH (WALNUT) + 2K

hardly recognisable colour change, single white particles easily visible



DARK BURMA
09 C 09

DARK BURMA

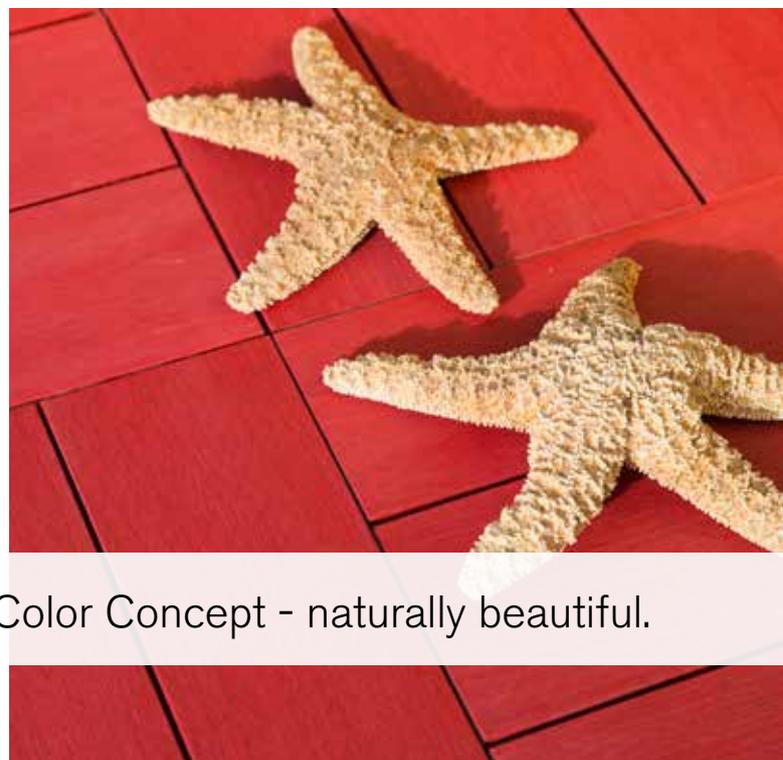
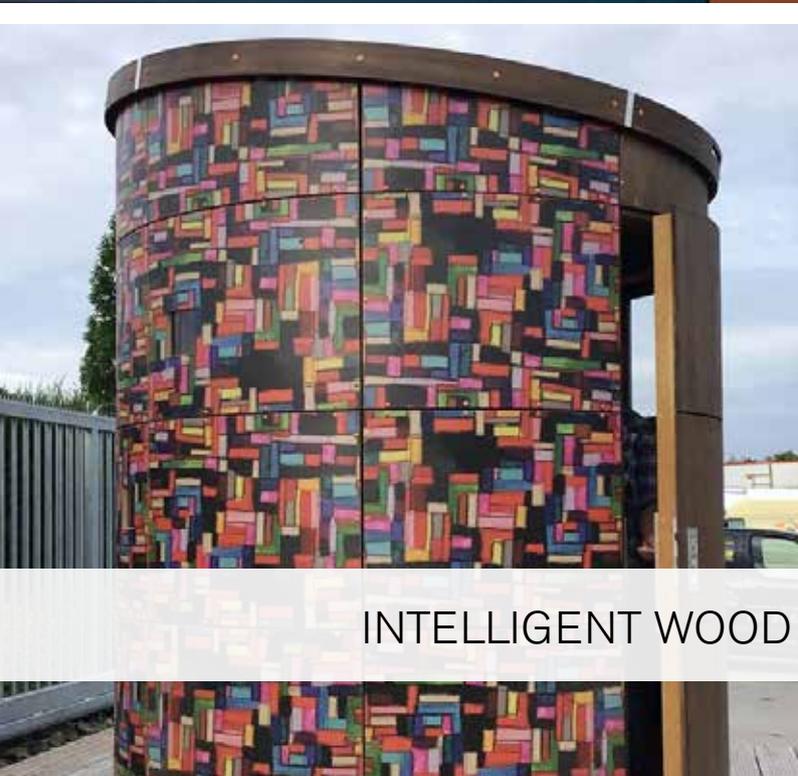


INTELLIGENTWOOD

UPB® Boards made of Resysta®

- **Wide color range**
- **Finishes all Resysta products**
- **Permanently resistant to moisture and UV radiation**
- **Extremely low-maintenance**

Impressive **COLOR DIVERSITY**



INTELLIGENT WOOD Color Concept - naturally beautiful.

EMOTION FOR YOUR BUILDING

Colours evoke emotions. Have courage to display your colors and delight your visitors with an emotional reception. INTELLIGENT WOOD offers over 30 different colors to give your façade or other INTELLIGENT WOOD elements made of Resysta an emotional touch. In addition, INTELLIGENT WOOD varnishes, lacquers and oils increase the resistance to water and UV. INTELLIGENT WOOD colors – an emotional upgrade for your products made of Resysta.





INTELLIGENT WOOD Color Concept

INTELLIGENT WOOD

ABSOLUTE FREEDOM IN COLOR DESIGN

There is only one Ferrari red, a specific Starbucks green, and a particular Facebook blue. These colors are precisely defined and should be exactly the same world-wide. For this purpose, colors have to be adapted individually depending on the substrate. INTELLIGENT WOOD colors can be individually adjusted at a certain purchase quantity, so that your specifications, taste or simply your favourite colors are met 100%. This allows you to give your project a completely individual and unique touch.



SAVE
THE RAIN FORESTS

Resysta®
THE BETTER WOOD

FOR A BETTER
WORLD

ADVANTAGES UPB BOARD MADE OF RESYSTA

COMPARED TO OTHER BOARD MATERIALS

HDF, MDF, GLUED WOOD, PLYWOOD, SOLID WOOD, PVC

LOOK AND FEEL

- natural wood optic
- natural wood haptic
- ecologically valuable
- no tree needs to be felled

RESISTANCE

- no graying
- 100% water-resistant
- no rotting
- no insect attack
- high resistance to wood-staining fungi
- high resistance to wood-destroying fungi
- high UV resistance against destruction
- very low swelling and shrinkage
- no cracks or chips

ENVIRONMENT

- green product
- free of phenol and formaldehyde resins
- free of adhesive
- recyclable
- made of renewable resources
- excellent ecological balance
- natural product
- no tree needs to be felled

TECHNICAL ADVANTAGES

- less expensive than many other materials
- homogeneous edge
- easy to thermoform
- easy to glue
- cold weldable
- grooves weldable
- no distortion due to moisture
- non-slip even with standing water
- subsequent surface design possible (Color Concept with infinite color selection)
- various surface design possible (e.g. printing)
- no foils and veneer necessary
- easy handling due to light weight
- inflammable DIN EN 13501 possible
- can be used with conventional woodworking machines and tools
- easy to mill and edit
- fast availability
- easy solutions for the optimization of mechanical stability are possible
- over 20 years of material experience
- consistent quality



INTELLIGENT WOOD PRODUCTS - perform like wood - but better!



PROCESSING INFORMATION

INTELLIGENT WOOD CAN BE PROCESSED LIKE WOOD

INTELLIGENT WOOD products are 100% water-resistant and can be processed with or without surface treatment using conventional woodworking machines. Simple milling, sawing, sanding, screwing, nailing, tacking and gluing with PUR-based glue. The edges can be easily sanded after processing and do not need an edge strip. However, UPB Boards from INTELLIGENT WOOD can do more than many other panel materials; the INTELLIGENT WOOD UPB panels are also thermoformable. This opens up entirely new possibilities for shaping and leaves more space for creative solutions



Since INTELLIGENT WOOD UPB Boards made of Resysta use ecoplus³ technology, they are also very light and easy to handle in two-hand operation. With a medium density of 0.6 g/cm³, INTELLIGENT WOOD UPB boards also float on water.



INTELLIGENT WOOD - A gift of nature

READY AND EASY TO USE

WATER-RESISTANT PANEL WITH THE NATURAL LOOK & FEEL OF WOOD

UPB boards made of Resysta are supplied with a ground surface finish and can be finished by hand or machine with coarse sandpaper. For processing, commercially available woodworking machines are used.

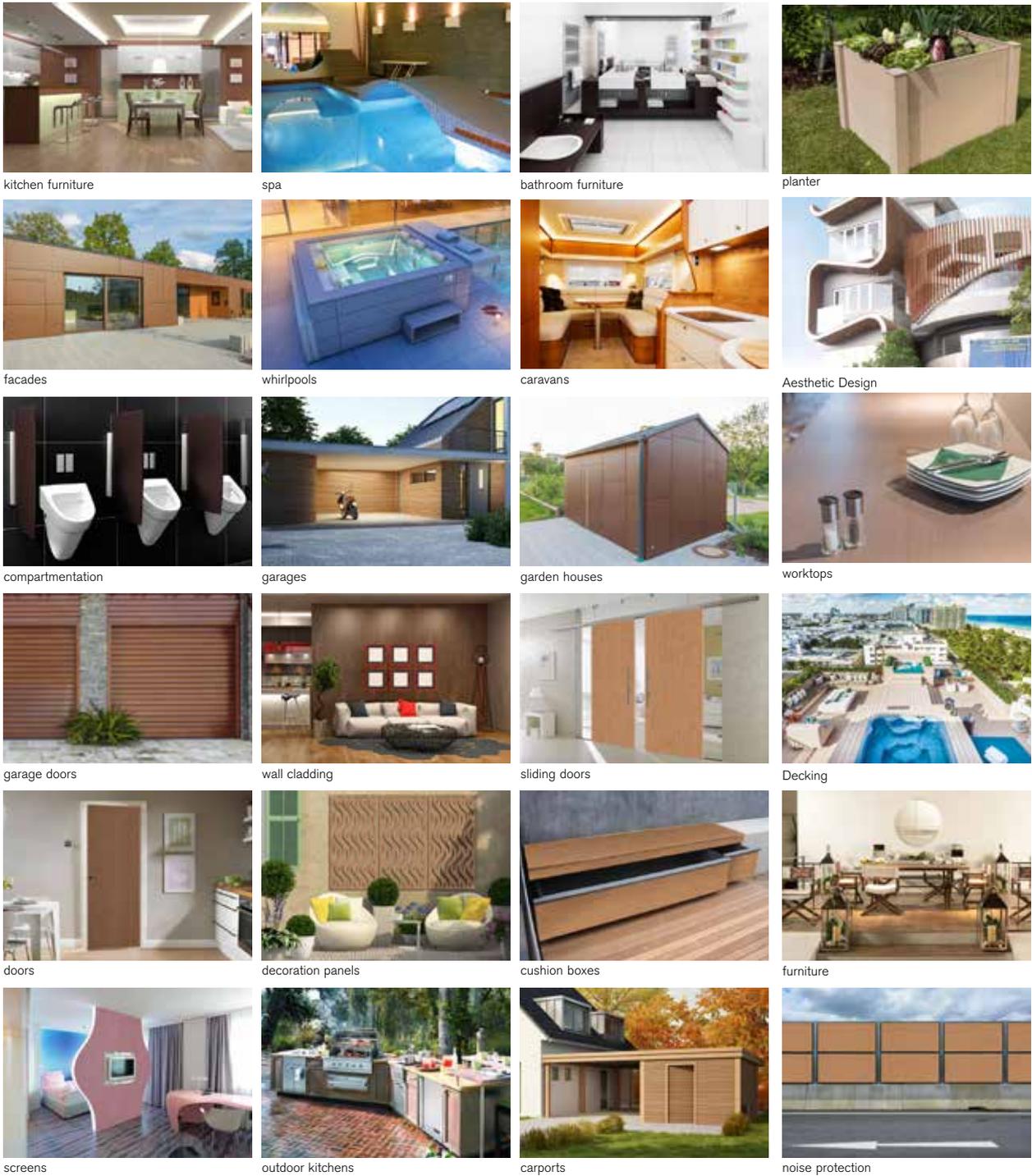
For a colored design, the surfaces of UPB boards can be colored directly with a stain/varnish which is specially selected for Resysta.

For additional protection, we recommend Resysta 2K protective varnish in different degrees of gloss. For industrial applications, a UV-curing protective lacquer is also available. After the treatment, you get a transparent surface which is hardly distinguishable from wood.

Alternatively, Resysta's specially designed transparent, colored oils are available.

| Characteristics | Standard | Value | Unit |
|---|--|---|-------------------|
| Density | ISO 1183 | 0.6 +/- 0.05 | g/cm ³ |
| Tensile strength | EN 789 | ≥9.0 | N/mm ² |
| Tensile module | EN 789 | ≥700 | N/mm ² |
| Bending strength | EN 789 | ≥10 | N/mm ² |
| Flexural module | EN 789 | ≥800 | N/mm ² |
| Shear module | EN 789 | ≥160 | N/mm ² |
| Shear strength | EN 789 | ≥2.7 | N/mm ² |
| Brinell hardness | EN 1534 | ≥20 | N/mm ² |
| Screw extraction resistance - surface | EN 320 | ≥1200 | N |
| Screw extraction resistance - narrow side | EN 320 | ≥1200 | N |
| Nail extraction resistance - surface | EN 320 | ≥200 | N |
| Nail extraction resistance - narrow side | EN 320 | ≥300 | N |
| Head pull-through parameter | DIN EN 1383 | ≥25 | N |
| Thermal linear expansion coefficient | ISO 11359-2 | 5.2 *10(-5) | m/m°C |
| Thermal linear expansion force | RES 101 SKZ | ~1.500 | N |
| Thermal conductivity (λ) | Annex to EN 12667 | ≥0.07 | W/(mK) |
| Thermal capacity | | 1.02 | J/(gK) |
| Diffusion resistance (water vapour permeability) | DIN EN ISO 12572 | μ = 1000 | |
| Airborne sound insulation | ISO-10140-2 | 32 | Rw(dB) |
| Water absorption of unpolished panel / weight | EN 317 | ≤ 2.0% (24h) - Res | |
| Water absorption of unpolished panel / length | EN 317 | ≤ 0.1 % (24h) - Res | |
| Water absorption of unpolished panel / width | EN 317 | ≤ 0.1 % (24h) - Res | |
| Water absorption of unpolished panel / thickness | EN 317 | ≤ 0.1 % (24h) - Res | |
| Fire behaviour standard - UL V94 | UL V94 | V0 | |
| Fire behaviour standard - EN 13501 | DIN EN 13501 | D,s3,d0 | |
| Short-term welding factor - tensile test | DVS 2203 Part 2 | 0.68 | |
| Short-term welding factor - flexural test | DVS 2203 Part 2 | 0.76 | |
| Resistance against termites | EN 117 | Attempted attack - no infestation | |
| Resistance against wood-discolouring fungi | EN 15534-1:2012 based on ISO 16869 | Assessment number 0 - No growth / No discolouration | |
| VOC emission | AgBB [Committee for Health-Related Evaluation of Building Products] Test concept / DIN EN ISO 16000-3/6/9 i.a. | Passed | |
| VOC emission | French regulation no. 2011-321 /DEVL1104875A | Passed | |
| Durability with respect to wood-destroying fungi (basidiomycetes) | EN 15534-1:2014- 9.5.2 (based on ENV 12038) | Class 1 | |
| Algae resistance | EN 15534.1:2014 - 8.5.6 (based on EN 15458) | Resistance against algae infestation | |
| Soft rot resistance | EN 15534-1:2014, Subsection 8.5.3 based on CEN/TS 15083-2 | Highest durability class | |

The data in the above table are based on the values of the 20mm plate, have been performed in our own laboratory according to the internationally valid test methods to the best of our knowledge and practice and are based on our experience. Different strengths, processing and application areas can affect the results, so no liability is accepted for the stated values. If a new version of the technical data is published, the above information will become invalid. The user is responsible for the proper storage, processing, use and disposal of the product.



Version October 2019 | International

INTELLIGENT WOOD Universal Performance Boards are available in the following dimensions

| Thickness in mm | Width x Length in mm |
|-----------------|----------------------|
| 6 | 1220 x 2440 |
| 8 | 1220 x 2440 |
| 12 | 1220 x 2440 |
| 16 | 1220 x 2440 |
| 20 | 1220 x 2440 |

INTELLIGENT WOOD

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