Rieder

öko skin

Characteristics

Rethinking building skins

Patricia Reser Center for the Arts, Beaverton USA, opsis architecture

Technical specifications

FORMATS	öko skin format	147 mm x 1800 mm	
	öko skin individual	302 mm x 2500 mm (max. usable size)	
	Special sizes	on request	
	Dimensional variation length	± 2,0 mm	EN 12467
	Dimensional variation width	± 1,0 mm	EN 12467
THICKNESS	Thickness	13 mm	
	Thickness tolerance	± 10 %	used approval
	Thickness tolerance within one shipment	± 1.3 mm	EN 12467
	Edge straightness (Level 1)	± 0.05 %	EN 12467
	Perpendicularity (Level 1)	± 2.0 mm/m	EN 12467
PHYSICAL CHARACTERISTICS	Swelling	0.384 mm/m	DIN 18202
	Shrinkage	0.737 mm/m	
	Bulk density (13 mm)	2.0 - 2.42 kg/dm^3	EN 12467
	Bending tensile strength[1]	> 18 N/mm^2	EN 12467, Class 4
	E-modulus for deformation calculation	approx. 10,000 N/mm^2	used approval
	E-modulus for restraint calculation	approx. 30,000 N/mm^2	used approval
	Dead load / Mass per unit area (13 mm)	26 - 31.5 kg/m^2	
	Thermal expansion coefficient	10 x 10^{-6} 1/K	DIN 51045
	Building material class (panel | system)	A1-non-combustible | A2-s1,d0-non-combustible	EN 13501-1
	Temperature stability	according to humidity up to 350°	
	Specific heat capacity	approx. 1000 Joule/(kg*K)	
	Thermal conductivity	lambda: approx. 2.0 W/(m*K)	
	Moisture expansion	0.05 %	EN 12467
WEATHER RESISTANCE	Water impermeability	yes	EN 12467
	Heat-rain-alternate test	yes	EN 12467
	Frost resistance	yes	EN 12467
	Frost-defrost-alternate test	yes	EN 12467
	UV-light resistance	light- and UV-stable colour pigments	DIN 12878
	Wet storage resistance	yes; Efflorescence possible	EN 12467
	Hot water resistance	yes	EN 12467
FASTENING	Fastening exposed	rivets, screws (on wooden supporting structure)[3]	
	Fastening concealed	öko skin hidden fix, undercut anchor	
	Substructure	aluminium, steel, wood	
	Joint width	min. 8 mm recommended; can be adapted depending on application (max. 10 mm with open joint)	
MORE SPECIFICATIONS	Reinforcement	Construction-supervisory approved textile fabric made of glass fibres	
	Edge formation	Cut edges are unfinished and sharp-edged with a coarseness of about 1 mm on the visible face. Glassfibres may emerge at the edges.	
	Colours[2]	Through coloured panels; 24 colours; special colours on request.	
	Surfaces[2]	matt: even surface ferro light: sandblasted at lower pressure ferro: sandblasted at higher pressure	
	Surface protection	Protection from environmental and weather influences	

[1] MOR: Modulus of rupture; Design values deviate from MOR in accordance with national rules and regulations. National approvals, rules and regulations apply to the calculation of the rated resistance.

[2] Because concrete is a natural product, each glass fibre reinforced concrete panel is regarded as a single piece. Differences in colour, structure and texture are characteristic and intended. Efflorescences or visible, small pores are not defects. Light resistance varies depending on the colour. Differences in the surface appearance that do not affect the fitness for purpose of the panels are permitted. EN 12467 / Data sheet Exposed concrete 02/2004 [Publisher:BDZ/DBV]

[3] For visible attachment using screws on a wooden supporting structure, no approval is available. The relevant country-specific regulations must be adhered to. Additionally, the technical foundations for the attachment must be followed.

Colours, surfaces, textures

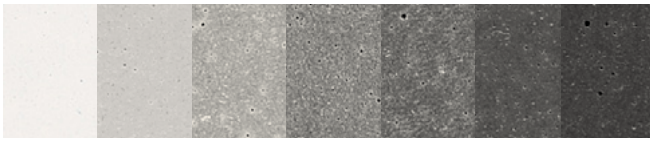
Authentic colour collections
With its well curated range of colours, bricky, timber, pietra and skins.greyscale, Rieder offers a selection of coordinated shades to create the most authentic facades possible in harmony with nature and their surroundings. The different surfaces, textures and formats lend the building envelope vibrancy and depth and give architects free reign for their ideas.

Natural colours
öko skin has a distinct advantage over other colour-treated materials - namely the consistent colouring of the whole panel. The colour is mixed before the actual production process and becomes part of the product by being added during the blending of the raw materials. Other products are often only superficially treated and coloured, resulting in significant quality differences. öko skin is coloured by ferric oxide colours and natural additions and subsequently sandblasted.

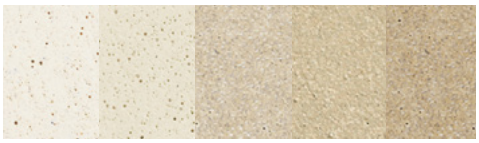
Colour fastness and UV stability
Liquid colours for colouring cement-bonded building materials comply with DIN EN 12878. The pigments used in the liquid colours are light-, UV-and weather-resistant and not soluble in water, alkalis or diluted acids. Factors such as natural fluctuations in raw materials used, panel and air moisture, dirt and light sources must be taken into consideration. The appearance of the panels may even become brighter due to dehydration. Changes caused by age, weather or environmen-specific influences are natural processes that cannot be influenced from a production point of view and are therefore not considered material defects. The technical characteristics of the panel are not affected by these.

Colour differences in production batches
Glass fibre reinforced concrete is a natural material. The characteristics of the raw materials such as the colour of cement lead to variations in colour within a panel, between individual panels or between different production batches. To avoid any discrepancies, we recommend ordering the total amount instead of part orders, and ordering spare panels along with the first delivery. For technical reasons printed colours may differ from the original shade.

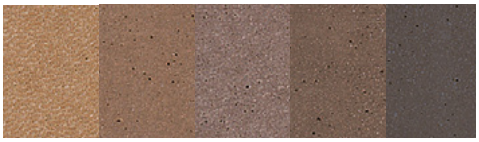
Colour collections



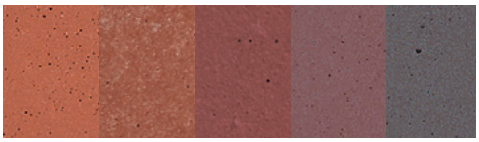
greyscale



pietra

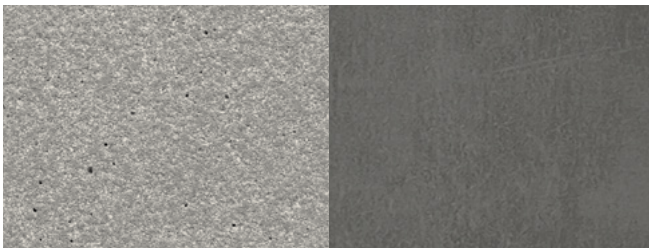


timber



bricky

Textures



standard vintage

Surfaces

ferro
sandblasted at higher pressure, surface is rougher

ferro light
sandblasted at lower pressure, surface is finer than ferro

matt
even surface, mottled appearance, natural blushing effect

Small air bubbles and porosity are possible: data sheet on exposed concrete 02/2004 (Publ.:BDZ/DBV).

Discover all colours, textures and surfaces.

Characteristics fibreC - glassfibre reinforced concrete

Signs of life of a natural building material
Concrete is a natural product, and Rieder understands it as such, with all its signs of life and characteristic features. All facades made of fibreC have an individual character: lively surfaces with interplay of colours and cloud effects instead of artificial uniformity. Even when it comes to the colours of the concrete matrix emphasis is placed on meeting the ecological requirements of modern construction. Rieder does not produce a low-porosity, homogeneously coloured and completely smooth surface, as this would not be in keeping with the concept of sustainability. We deliberately refrain from using any chemical treatments or edge sealants on our products. Our natural product is characterised by colour and texture variations.

Light effects and points of view
Weather conditions, daylight, how the light falls – all these factors affect how we see the facade, especially with a material like concrete. To assess the facade, the material should be viewed in diffused light, because that's the most common lighting condition.

Point of view
To assess the optical properties of a facade, it is necessary to choose a distance from the object that allows one to see the building as a whole.

Concrete lives
As the panels are not chemically treated or painted, small defects, dents, tension lines, efflorescences or flaws and textures may be visible (Data sheet exposed concrete 02/2004 [Publ.:BDZ/DBV]). When cement sets, it separates calcium hydroxide. This dissolves in water and can migrate to the concrete surface. When the water evaporates, the calcium hydroxide is returned to the surface and is converted to calcium carbonate (lime). If this natural process is intensified by unfavourable conditions, it leads to deposition of calcium carbonate, which is visible as a white efflorescence. Efflorescences are a natural feature of all cement-bonded composite materials.

Part of nature: resistant & stable
Glassfibre reinforced concrete is not an artificially created material that exists cut off from the natural cycle of the environment. As adaptable and extraordinary the öko skin is, it is just as authentic. öko skin is part of a natural cycle. Influencing variables for possible colour changes are temperature variations and differences in air humidity. Concrete is hygroscopic. It absorbs moisture and gives it off again irregularly.

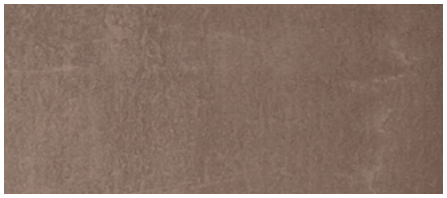
A typical feature of highly-compressed, high-quality concrete surfaces is so-called blue- and green discoloration, which can occur in particular in bright colours or fresh panels. They can be attributed to a natural hardening and drying process of organic substances. Tests and experiences have shown that this blue colouring on the cladding may disappear under the influence of UV radiation and light. This occurs based on the climatic and environmental influences. Heat, insolation and dryness can in particular accelerate the process.

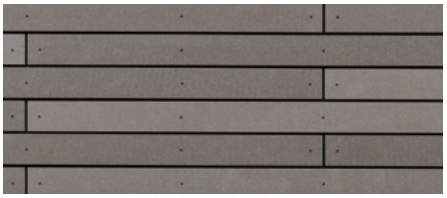
Surface protection
As a basic protection against environmental influences, öko skin comes with a transparent hydrophobic impregnation. The hydrophobising is permeable and therefore breathable. If the cladding panel is applied vertically, it provides solid basic protection against weathering, dust and dirt but not against scratching, pressurised liquids, oil, acids, strong alkaline substances, etc.

Note
The surface characteristics described apply to the visible side of the cladding panel. öko skin sample panels can never reflect all of the above characteristics. In large-scale cladding applications, optical phenomena occur that cannot be detected on small sample panels.

Visual changes like micro-cracks (tension lines) do not affect the technical characteristics of öko skin. Static functions, long-term stability and fire resistance are not affected.

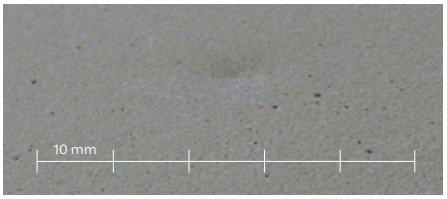

Blue tint


Texture

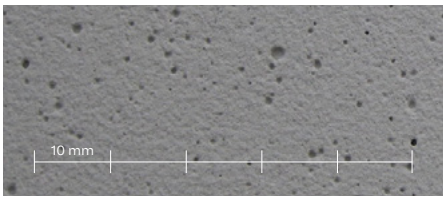

Colour play


Blowhole

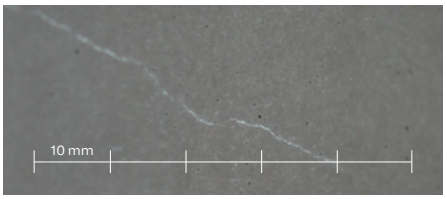

Motting



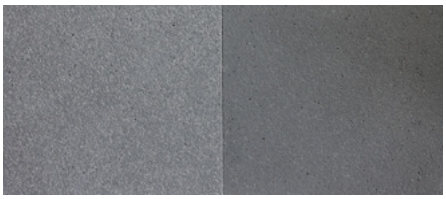
Depression



Pores



Tension line


Colour variation

EN 11/2023