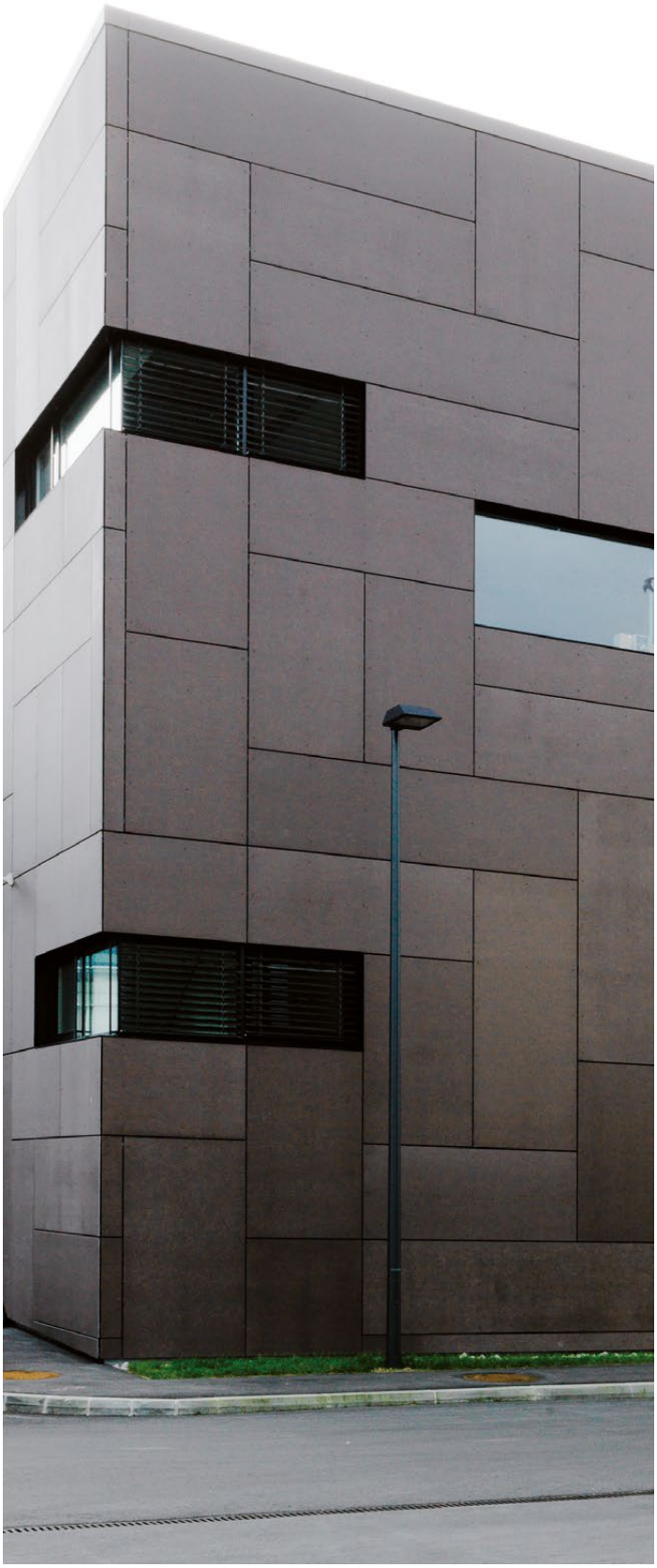
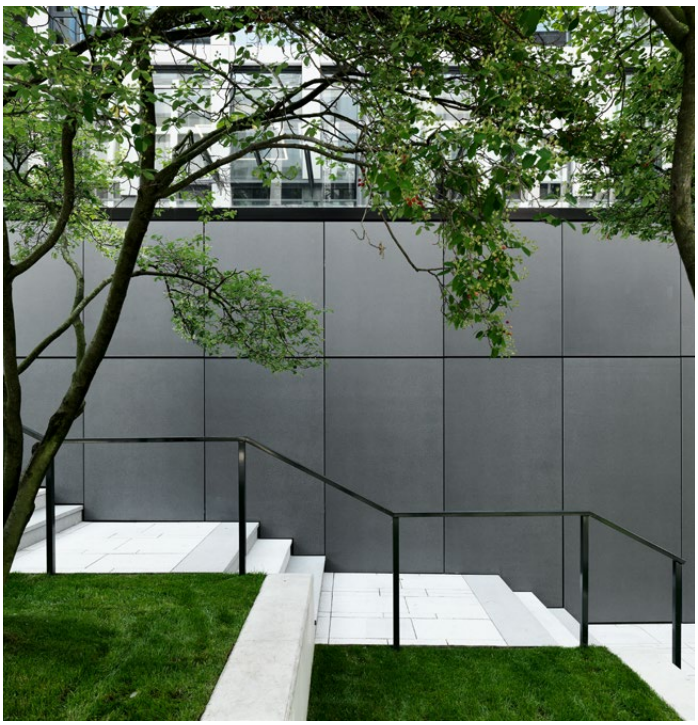




concrete skin
Characteristics
05/2017

Technical specifications

Sizes	2.5 x 1.2 m, 3.1 x 1.2 m and 3.6 x 1.2 m	
Special sizes	on request	
Dimensional variation length (3.6 m)	± 3 mm	EN 12467
Dimensional variation width (1.2 m)	± 2 mm	EN 12467
Diagonal difference < 1.5 m | > 1.5 m	± 3.5 mm | ± 4 mm	DIN 18202
Diagonal difference > 2.5 m | > 3.6 m	± 5 mm | ± 6 mm	DIN 18202
Thickness	13 mm (10 mm on request)	
Thickness tolerance	± 1.3 mm	EN 12467
Edge straightness (Level 1)	± 0.1 %	EN 12467
Perpendicularity (Level 1)	± 2 mm/m	EN 12467
Physical characteristics		
Tolerances facing > 0.6 | > 1.2 | > 3.6 m	± 2 mm | ± 4 mm | ± 8 mm	DIN 18202
Swelling	0.384 mm/m	
Shrinkage	0.737 mm/m	
Bulk density	2.0 - 2.42 kg/dm³	EN 12467
Bending tensile strength	> 18 N/mm² (MOR*)	EN 12467, Class 4
E-modulus for deformation calculation	approx. 10,000 N/mm²	
E-modulus for restraint calculation	approx. 30,000 N/mm²	
Dead load / mass per unit area (13 mm)	26 - 31.5 kg/m²	
Thermal expansion coefficient	10*10^(-6) 1/°k	DIN 51045
Building material class (panel | system)	A1 - non-combustible | A2-s1,d0 - non-combustible	DIN 4102 | EN 13501-1
Temperature stability	according to humidity up to 350°C	
Specific heat capacity	approx. 1,000 Joule / (kg*K)	
Thermal conductivity	lambda: approx. 2.0 W / (m*K)	
Moisture expansion	0.05 %	EN 12467
Weather resistance		
Water impermeability	given	EN 12467
Heat-rain-alternate test	given	EN 12467
Frost resistance	given	EN 12467
Frost-defrost-alternate test	given	EN 12467
UV-light resistance	UV-light resistant colour pigments	DIN 12878
Hot water resistance	given	EN 12467
Wet storage resistance	given	EN 12467
Fastening		
Fastening exposed	rivets	
Fastening concealed	adhesive, undercut anchor	
Substructure	aluminum, steel	
Joint width	min. 8 mm	
Reinforcement	with alkali-resistant glassfibres (AR glass), technical approved	
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**	Through coloured panels; 12 standard colours; special colours on request.	
Surfaces**	matt: brushed / smooth surface, natural blushing effect (excl. formparts) ferro light: sandblasted at lower pressure, surface is finer than FE (excl. formparts) ferro: sandblasted at higher pressure, surface is rougher	
Assembling and weather protection	hydrophobicity	

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

Colours and surfaces

12 standard colours - 3 surfaces
concrete skin offers a wide range of design options for facades. The selection of twelve different colours in each of three surfaces offers a wide range of designs to meet individual expectations. Special colours (RAL - equivalent) can also be produced on request. The three surface finishes (sand blasted, finely sandblasted or brushed) open up a wide spectrum of optical and tactile effects. The combination of different surfaces in the same colour creates a particularly vivid design.

Natural colours
concrete skin has a distinct advantage over other colour-treated materials - namely the consistent colouring of the whole panel. The mixture of the desired colour is created before the actual production process. The colour becomes part of the product by being added in the blending of the raw materials. Other products are in some cases only superficially treated and coloured, resulting in significant quality differences.

concrete skin is coloured by ferric oxide colours and natural additions and subsequently brushed or sandblasted. The natural, authentic colours of concrete skin fit well in landscapes and blend with nature and the environment.

Colour fastness and UV stability
Liquid colours for colouring cement-bonded building materials comply with the 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 environment 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
Glassfibre reinforced concrete is a natural material. The characteristics of the raw materials such as the colour of cement can 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 with the first delivery.

Due to technical reasons printed colours may differ from the original shade.

ferro
Sandblasted: blasted at higher pressure, surface is rougher

ferro light
Sandblasted: blasted at lower pressure, surface is finer than ferro

matt
Brushed, smooth surface, mottled appearance, natural blushing effect

Small air bubbles and porosity are possible: data sheet on exposed concrete 06/2015 (Publ.:BDZ/DBV)

Characteristics

Vivid signs of a natural building material
Concrete is a natural product and Rieder sees it as such, with all its vital signs and characteristics. Living surfaces with the interplay of colour shades and cloud effects, rather than dead and clinical surfaces are characteristic of concrete skin. Even in the colouring of the concrete matrix, the focus is placed on meeting the ecological requirements of modern design. This is why the production involves natural raw materials to ensure the authenticity of all products. The demand for low porosity, homogeneous colour and strictly uniform smooth surfaces is not part of our sustainable philosophy. We consciously avoid chemical treatment and artificial materials to preserve the authenticity of the „green" product concrete skin. Colour and texture variations are a feature of our natural product.

Concrete lives.
As the panels are not chemically treated or painted, defects, dents, tension lines, efflorescences or flaws and textures may be visible (Data sheet exposed concrete 06/2015 [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 and stable
concrete skin is not an artificially created material that exists cut off from the natural cycle of the environment. As adaptable and extraordinary the concrete skin is, it is just as authentic. 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. The concrete moisture influences the color effect. The large format of the panels means that moist spots may dry at different speeds. Visible colour changes may occur between individual panels and within a panel. The visible characteristics of conrete are intensified on matt panel surfaces.

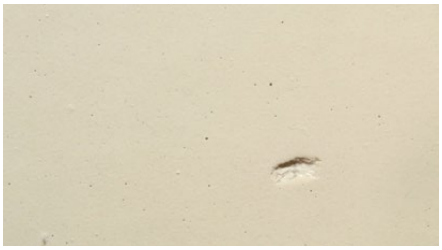
Hydrophobising
As a basic protection against environmental influences, concrete skin comes with a transparent hydrophobic impregnation. The hydrophobising is permeable and therefore breathable. If the cladding panel is applied vertically, it provides solid basic protection against weathering, dust and 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. concrete 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 tension lines do not affect the technical characteristics of concrete skin. The static functions and the long-term stability are not affected.

Radii formparts
The radius of formparts is subject to certain variations. Moulded elements have a standard radius from 3 to 15 mm. Within a single formpart piece the radius can vary up to 6 mm.

Blowhole/dent

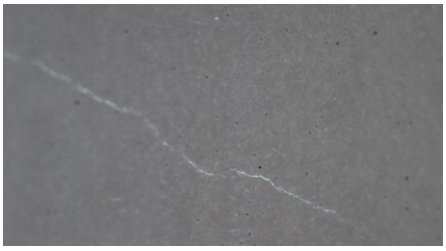


Mottling

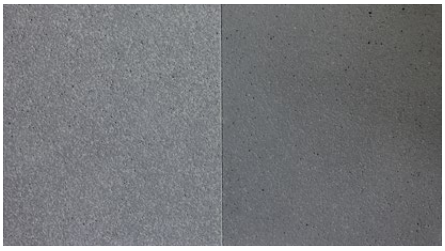
Depression

Pores

Tension Line



Colour variation



another Plastica product

Plastica Plaat B.V. | Industrieweg 92 | 5145 PW Waalwijk
Tel. +31(0)416 67 24 00 | info@plastica.nl | www.plastica.nl