



## The third dimension

The product innovation fibre C 3D enables architects and builders to use three-dimensional freeform elements on facades with complex geometries.

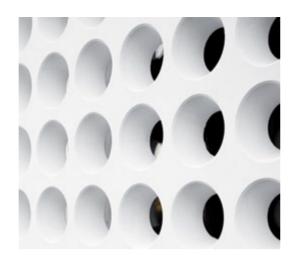
**Architectural concrete** | "Monolithic Cast" is a special production technology for concrete panels that enables 3-dimensional cladding elements with faced concrete quality on both sides. Other surface textures such as relief concrete (by the usage of formliners) are available. Each element consists of a uniform and non-seperable unit for a monolithic appearance.

Individual | The modular formwork construction is done based on the architects' individual design. Self compacting concrete (SCC) reinforced with fibres is pumped into the formwork to build positive as well as negative forms with dimensional accuracy. The colour of the concrete matrix is variable. The characteristic appearance of concrete creates a creates a vivid and authentic surface on the facade.

**Economical solution** | fibreC 3D elements have a visual compatibility with fibreC extruded panels. A high repeatability of the produced 3D elements and the combination with flat fibreC panels offer builders an economical solution for the whole building envelope.

**Intelligente assembly** | Fixing anchors can be integrated during the production process (concealed) or added with screws later on. The optional use of barcode technologies (scanning) provides advantages in logistics.

**Service** | Rieder offers support for architects and planners from the early planning stage to the realisation of the project and gives advice regarding facade optimisation, fastening methods, logistics solutions and installation.







550 m² fibreC 3D elements with a thickness of 7 cm are cladding the Lontoonkatu 9 project in Helsinki, designed by Kirsi Korhonen and Mika Penttinen Architects. The entire facade was divided into 16 different types of panels with lenghts up to 3.8 m. More than 400 concrete elements with faced concrete quality on both sides offer an interesting view from inside of the building.







Casted fixing anchors



fibreC 3D element with windows and recesses



Individual formwork construction

## Technical data

Colour Surface Reinforcement Edge formation Visual characteristics variable, colour specification and tolerances to be defined by mock-up visible side on one or both panel sides, other surfaces textures on request depending on statics alkali-resistant glassfibres and steel or stainless steel client specific defined by mock-up

Because concrete is a natural product, each fibreC 3D 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 technical characteristics of the panels, are permitted. [Merkblatt Sichtbeton]

| Technical Specification                           | fibreC 3D                             | Norm                  |
|---|---------------------------------------|-----------------------|
| Size  | 1500 x 3600 mm                        |                       |
| Special sizes/geometric shapes/surface structures | on request                            |                       |
| Dimensional variation l < 1 m                     | ± 3 mm                                |                       |
| Dimensional variation l > 1 m                     | ± 0.2 % * l; max = 5 mm               |                       |
| Diagonal difference up to   above 1.5 m           | ± 3.5 mm   ± 4 mm                     |                       |
| Diagonal difference above 2.5 m   3.6 m           | ± 5 mm   ± 6 mm                       |                       |
| Thickness   | 25 mm - 100 mm                        |                       |
| Tolerance thickness                               | ± 2 mm                                |                       |
| Physical Characteristics                          |                                       |                       |
| Tolerances facing up to 600 mm   1200 mm          | ± 2 mm   ± 4 mm for flat panels       | DIN 18202             |
| Tolerances facing up to 3600 mm                   | ± 8 mm for flat panels                | DIN 18202             |
| Swelling  | 0.384 mm/m                            |                       |
| Shrinkage   | 0.737 mm/m                            |                       |
| Water absorption                                  | 0.34 %                                |                       |
| Bulk density                                      | ca. 2.4 kg/dm³                        |                       |
| Thermal expansion coefficient                     | 4.3 x 10 <sup>-6</sup> 1/°k           | DIN 51045             |
| Building material class                           | A 1 – incombustible                   | DIN 4102 / ASTM E 136 |
| Bending tensile strength                          | > 7.5 N/mm²                           |                       |
| Elastic modulus                                   | approx. 23000 N/mm²                   |                       |
| Weather Resistance                                |                                       |                       |
| Water impermeability                              | ok                                    |                       |
| Heat-rain-alternate test                          | ok                                    | EN 12467              |
| Frost resistance                                  | ok                                    | EN 12467              |
| Frost-defrost-alternate test                      | ok                                    | EN 12467              |
| UV-light resistance                               | UV- and weatherproof colour pigments  |                       |
| Fixing  | depending on geometry and application |                       |
| Fastening visible                                 | screws                                |                       |
| Fastening invisible                               | casted anchor system                  |                       |
| Substructure                                      | aluminium, steel, stainless steel     |                       |
| Joint width                                       | min. 8 mm                             |                       |
| Casted anchors                                    | ± 5.0 mm                              |                       |

