

## UHPC

Cement based, ultra-high-performance concrete precast facade panel



### Product Information

Betonex CBOARD UHPC is a cement based, ultra-high-performance precast facade panel specially developed for facade cladding systems.

Betonex CBOARD facade products have been developed as a result of long years of R&D activities within the framework of university industry cooperation abroad.

### General Characteristics

- Cement based.
- Ultra-high strength and durability.
- Fire resistant and non-combustible.
- Low permeability.
- Highly resistant against cracking.
- Unique characteristic.
- Suitable for interior and exterior applications.
- Carbonation and sulphate resistance.
- Can be used as rainscreen or curtain wall as well.

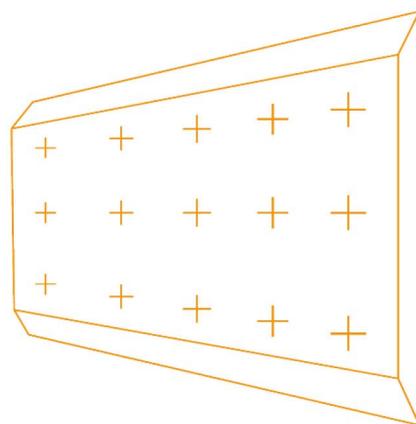
### Special Structure

Betonex CBOARD UHPC's special structure is created using natural materials which makes it eco-friendly while keeping it strong, stable, durable and eco-friendly.

CBOARD UHPC has been carefully engineered by experts to reach a special structure which attains exceptional tensile and compressive strength with an impermeable form thanks to low water/binder ratios, small grains and fiber reinforcement.

### Technical Properties

Technical Properties	UHPC
Compressive Strength	> 100 MPa
Bending Strength	> 17 MPa
Impermeability	1 mm
Elasticity Modulus	45000 MPa
Density	2.3 g/cm <sup>3</sup>
Fire Resistance	A1
Shrinkage Value	1 mm/m
Water Absorption	< 7



 **CBOARD**<sup>®</sup>

### Dimensions & Weight

- 600x1200mm or 600x1500mm panels.
- Between 15-20mm thickness.
- Approximate weight can be considered as 35,5kg/m<sup>2</sup> where the thickness is 15mm.

### Fastening Options

Betonex CBOARD UHPC can be installed on either a steel or aluminum substructure using undercut or hidden channel system.

### Installation Details

- The wall surface should be cleansed of all kinds of dust, debris and foreign materials.
- Using a suitable wall plug, L brackets are installed.
- Vertical T or box profiles are fixed to the L brackets. If specified on the Project or the Specification, heat insulation is placed on the wall, between the profiles. Horizontal undercut or hidden channel profiles are fixed to the vertical profiles.
- Undercut profile or hidden channel profile fixed CBOARD UHPC is installed onto the profiles on the wall and the installation is completed.

### Cleaning & Maintenance

Depending on the location of the cladding and dirt, CBOARD UHPC may be cleaned at an interval of 3-5 years. The cleaning should be made without any chemicals or high-pressure cleaners.

### Responsibility

Technical findings and the application suggestions are based on experimental data. Actual values can vary due to conditions out of control. Suggestions do not take on any other obligations. When the new version of this document is issued, old version becomes invalid.

## Mare Facade

Cement based, precast constituted stone facade panel

### Product Information

Betonex CBOARD Mare Facade is a cement based, ultra-high performance precast constituted stone facade panel specially developed for facade cladding systems. It is also known as technological or engineered stone looking like natural stone but stronger.

Betonex CBOARD facade products have been developed as a result of long years of R&D activities within the framework of university industry cooperation abroad.

### General Characteristics

- Cement based.
- Ultra-high strength.
- Fire resistant and non-combustible.
- Low water absorption.
- Highly resistant against cracking.
- Unique characteristic.
- Suitable for interior and exterior applications.
- 11 standard color and 4 surface finishing options.
- Custom-color is available.

### Special Structure

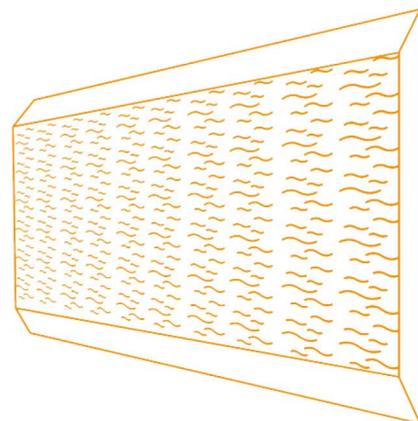
Betonex CBOARD Mare Facade's special structure is created using natural materials which makes it eco-friendly while keeping it strong, stable, durable and eco-friendly.



CBOARD Mare, like natural stones, is a well compacted formation of various sized mineral granules with the binder cement manufactured thanks to the unique CBOARD Mare Technologies Process resulting in dense, compact, lowest porosity structure.

### Technical Properties

Technical Properties	Mare Facade
Wind Load Strength	400 kgf/m <sup>2</sup>
Bending Strength	14 MPa
Density	2.35 g/cm <sup>3</sup>
Impact Resistance	Class B
Fire Resistance	A1
Thermal Expansion	0,45 mm/m
Water Absorption	2 %
Freeze Thaw Effect	No Deformation
Abrasion Resistance	8-11/50 cm <sup>3</sup> /cm <sup>2</sup>



### Dimensions & Weight

- 600x1200mm or 600x1500mm panels.
- Between 15-20mm thickness.
- Approximate weight can be considered as 35,5kg/m<sup>2</sup> where the thickness is 15mm.

### Fastening Options

Betonex CBOARD Mare Facade can be installed on either a steel or aluminum substructure using hidden rail system.

### Installation Details

Where 9-10mm horizontal joints are preferred:

- The wall surface should be cleansed of all kinds of dust, debris and foreign materials.
- Using a suitable wall plug, L brackets are installed.
- Vertical T or box profiles are fixed to the L brackets. If specified on the Project or the Specification, heat insulation is placed on the wall, between the profiles.
- Hidden horizontal rail profiles are fixed to the vertical profiles
- CBOARD Mare Facade is inserted into the upper rail profiles with a sloped movement, then left onto the bottom rail profiles and the installation is completed.

Where 9-10mm horizontal joints are preferred:

- The wall surface should be cleansed of all kinds of dust, debris and foreign materials.
- Using a suitable wall plug, L brackets are installed.

- Vertical T or box profiles are fixed to the L brackets. If specified on the Project or the Specification, heat insulation is placed on the wall, between the profiles.
- Only the bottom rail is fixed to the vertical profiles, then CBOARD Mare Facade is placed to the bottom groove. After that, the upper rail profiles are inserted into the upper groove with a space of expansion and fixed to the vertical profiles. Following the same method, the installation is completed from bottom to top of the facade.

### Cleaning & Maintenance

Depending on the location of the cladding and dirt, CBOARD Mare Facade may be cleaned at an interval of 3-5 years. The cleaning should be made without any chemicals or high-pressure cleaners.

### Responsibility

Technical findings and the application suggestions are based on experimental data. Actual values can vary due to conditions out of control. Suggestions do not take on any other obligations. When the new version of this document is issued, old version becomes invalid.

## BRICK CHANNEL PANEL

Cement based, precast GRC facade panel with channels for brick installation.



### Product Information

Betonex CBOARD Brick Channel Panel is a cement based, alkali resistant glass fibre reinforced concrete (GRC) precast facade panel specially developed for lining bricks with ease and speed.

Betonex CBOARD facade products have been developed as a result of long years of R&D activities within the framework of university industry cooperation abroad.

### General Characteristics

- Cement based.
- High-strength and ductility.
- Fire resistant and non-combustible.
- Durable and lightweight.
- Highly resistant against cracking.
- Unique characteristic.
- Suitable to be cut to desired size.
- Similar characteristics with bricks.
- Fast and smooth workmanship.

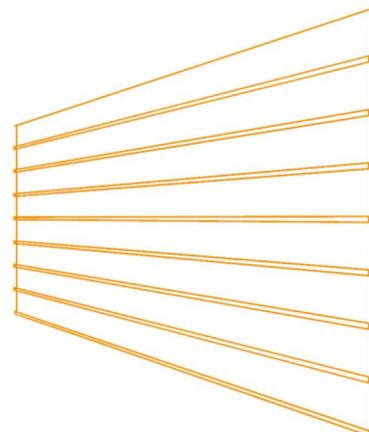
### Special Structure

Betonex CBOARD Brick Channel Panel's special structure is created using natural materials which makes it eco-friendly while keeping it strong, stable, durable and lightweight.

### Technical Properties

Technical Properties	Brick Channel Panel
Compressive Strength	30-50 MPa*
Bending Strength	8-20 MPa*
Proportionality Ratio	8-17 MPa*
Minimum Expansion	0,58 %
Impact Strength	5-16 kJ/m <sup>2</sup> *
Elasticity Modulus	12000 MPa
Density	1,8- 2,0 g/cm <sup>3</sup> *
Thermal Expansion Coeff.	1,2x10 <sup>-5</sup> /°C
Thermal Conductivity	0,6-1,4 w/mK
Fire Resistance	A1
Shrinkage Value	0,5-1,5 mm/m*
Swelling Value	0,5-1,5 mm/m*
Water Absorption	6%*
Water Vapor Diffusion	60

\* Desired value in the range could be manufactured depending on the specification requirements.



### Dimensions

- Available in 600x1250mm standard dimensions.
- Between 8-30mm thickness.

### Fastening Options

Betonex CBOARD Brick Channel Panel can be installed on either a steel or aluminum substructure using a screw-retained or rivet-retained system.

### Installation Details

- The wall surface is cleansed of all kinds of dust, debris, and foreign materials.
- Using a suitable wall plug, L brackets are installed.
- Vertical T or box profiles are fixed to the L brackets. If specified on the Project or the Specification, heat insulation is placed on the wall between the profiles.
- CBOARD Brick Channel Panels are fixed to the vertical profiles using screws/rivets.
- PU-based sealant is applied to the joints.
- Suitable brick adhesive / mortar is applied, and bricks are lined completing the installation.

### Cleaning & Maintenance

Depending on the location of the cladding and dirt, the brick facade system with CBOARD Brick Channel Panels may be cleaned at an interval of 3-5 years. The cleaning should be made without any chemicals or high-pressure cleaners.

### Responsibility

Technical findings and the application suggestions are based on experimental data. Actual values can vary due to conditions out of control. Suggestions do not take on any other obligations. When the new version of this document is issued, old version becomes invalid.

## FLAT PANEL

Cement based, precast GRC facade panel



### Product Information

Betonex CBOARD Flat Panel is a cement based, alkali resistant glass fibre reinforced concrete (GRC) precast facade panel specially developed for facade cladding systems. Betonex CBOARD facade products have been developed as a result of long years of R&D activities within the framework of university industry cooperation abroad.

### General Characteristics

- Cement based.
- High-strength and ductility.
- Fire resistant and non-combustible.
- Durable and lightweight.
- Highly resistant against cracking.
- Unique characteristic.
- Suitable for interior and exterior applications.
- Suitable to be cut to desired size.
- Can be painted to desired color.

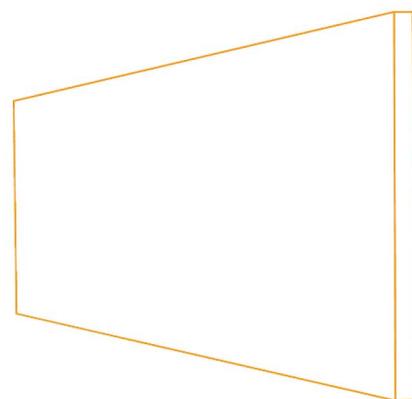
### Special Structure

Betonex CBOARD Flat Panel's special structure is created using natural materials which makes it eco-friendly while keeping it strong, stable, durable and lightweight. Thanks to its cutting-edge manufacturing technology, CBOARD panels stand out among its alternatives with a fixed-thickness and stable production.

### Technical Properties

Technical Properties	Flat Panel
Compressive Strength	30-50 MPa*
Bending Strength	8-20 MPa*
Proportionality Ratio	8-17 MPa*
Minimum Expansion	0,58 %
Impact Strength	5-16 kj/m <sup>2</sup> *
Elasticity Modulus	12000 MPa
Density	1,4- 1,9 g/cm <sup>3</sup> *
Thermal Expansion Coeff.	1,2x10 <sup>-5</sup> /°C
Thermal Conductivity	0,6-1,4 w/mK
Fire Resistance	A1
Shrinkage Value	0,5-1,5 mm/m*
Swelling Value	0,5-1,5 mm/m*
Water Absorption	8-13%*
Water Vapor Diffusion	60

\* Desired value in the range could be manufactured depending on the specification requirements.



### Fastening Options

Betonex CBOARD Flat Panel can be installed on either a steel or aluminum substructure using visible screw-retained, visible rivet-retained or hidden channel system.

### Dimensions

- Up to 1200x1800mm panels, may be increased upon request.
- Between 8-30mm thickness.

### Installation Details

Visible screw/rivet-retained system:

- The wall surface is cleansed of all kinds of dust, debris, and foreign materials.
- Using a suitable wall plug, L brackets are installed.
- Vertical T or box profiles are fixed to the L brackets. If specified on the Project or the Specification, heat insulation is placed on the wall between the profiles.
- CBOARD Flat Panels are fixed to the vertical profiles using screws/rivets.
- PU-based sealant is applied to the joints and over the screws/rivets.
- CBOARD Flat Panels are painted to the desired color and the installation is completed.

Hidden channel system:

- The wall surface is cleansed of all kinds of dust, debris, and foreign materials.
- Using a suitable wall plug, L brackets are installed.

- Vertical T or box profiles are fixed to the L brackets. If specified on the Project or the Specification, heat insulation is placed on the wall between the profiles.
- Horizontal hidden channel profiles are fixed to the vertical profiles.
- CBOARD Flat Panels are installed on the channels.
- PU-based sealant is applied to the joints.
- CBOARD Flat Panels are painted to the desired color and the installation is completed.

### Cleaning & Maintenance

Depending on the location of the cladding and dirt, CBOARD Flat Panel facade may be cleaned at an interval of 3-5 years. The cleaning should be made without any chemicals or high-pressure cleaners. Re-painting may be considered to achieve the first-day-look of the facade.

### Responsibility

Technical findings and the application suggestions are based on experimental data. Actual values can vary due to conditions out of control. Suggestions do not take on any other obligations. When the new version of this document is issued, old version becomes invalid.