



CLADDING





OFFICE BUILDING, CREUZENBURG, GERMANY (PHOTO: SIMONE ROSENBERG, DÜSSELDORF)

COVER IMAGE: PORSCHE ARENA STUTT GART, GERMANY (PHOTO: DIETER STRAUSS, BESIGHEIM, GERMANY)

THE EFFECTIVE METHOD FOR EXTERIOR WALL CONSTRUCTION

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THE PAST

The **rain screen** principle is not new, nor is the idea of rain screen applied to wall design.

For centuries in Norway, they used drained and back-ventilated claddings with both closed and open joints without any scientific, systematic foundation.

Gradually, on buildings with timber claddings, closed joints were adopted, and openings at both the top and bottom of the cladding allowed for drainage and evaporation of any penetrating rainwater.

In the 1950's, a system featuring large panels became one of the first examples of modern rain screen. This system featured **open joints** between panels that were baffled to provide resistance to water penetration and drained and ventilated airspace between the panels and the inner leaf.

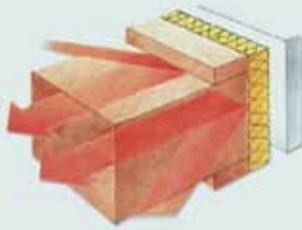
By the 1980's, rain screen was understood and widely used in Europe, North America and in the UK, architects and specifiers have been using rain screen systems for a wide range of building types across a number of sectors.



UNIVERSITY OF TECHNOLOGY, WROCLAW, POLAND (PHOTO: TOMASZ SINEK)

RAINSCREEN CLADDING

With the **energy saving measures** required today, rear ventilated cladding systems are gaining an ever increasing economic importance for old and new buildings. A special characteristic of the rear ventilated cladding system is its **guaranteed performance**. System effectiveness is maintained even when unfavourable internal or external atmospheric conditions are experienced, e.g. in the textile industry, swimming pools, breweries etc. No other wall construction is currently able to fulfill the growing requirements for **heat, dampness, noise and fire protection**.



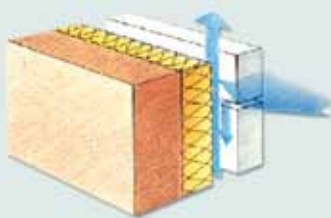
PREVENTING THERMAL BRIDGES

As the insulating material is on the outside of the structural wall, it can easily be mounted without interruptions caused by floor slabs. In this way, any thermal bridges that occur at each floor slab can be prevented. These thermal bridges are also the cause of surface condensation that may result in fungus growth.



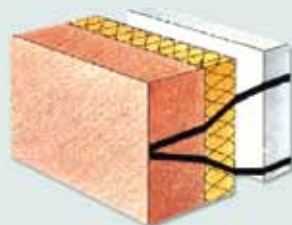
DISSIPATING HEAT FROM THE SUN

The ventilated rainscreen cladding system has a cooling effect when temperatures outside are high. Most of the sun's rays are reflected away from the building. Heat passing through the exterior wall panel is partially dissipated by the ventilating effect of the space between the exterior cladding panel and the structural wall. Any residual heat managing to penetrate buildings is very minor.



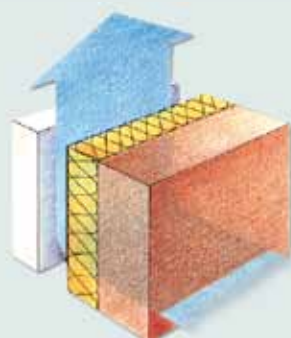
RAINSCREEN

Architectural wall-cladding panels act as a rainscreen on the outside of the building and keep the structural wall absolutely dry. The air space connected to the outside air evacuates water and humidity that might have penetrated behind the wall-cladding panels through its horizontal or vertical joints. This water will never reach the load bearing wall and/or the thermal insulation.



PROTECTING THE BASIC STRUCTURE AND LOAD BEARING WALL AGAINST TEMPERATURE VARIATIONS

In view of the fact that the insulation material is applied to the outside of the building, changes in temperature are very minor compared with those found in conventional constructions where insulation is applied on the interior. This principle works in summer and winter in both hot and cold climates.



PREVENTION OF INTERNAL CONDENSATION

Insulation material can be applied to the outside of the structural wall because it is protected effectively by the architectural exterior wall panel. Because of differences in vapour pressure and temperature passing through the wall, condensation has been shown to occur close to the ventilated area and not in the structural wall itself. As a result, the ventilating effect is easily sufficient to dry out the thermal insulating material.

NATURA



HIGHLAND BRIDGE LOFTS, COLORADO, USA (PHOTO AFCC, USA)



OFFICE BUILDING, REMSCHEID, GERMANY (PHOTO RALPH RICHTER, DÜSSELDORF, GERMANY)



AIRPORT ALGER, ALGERIA (PHOTO EURO PANELS)

NATURA is a through-coloured fibre cement high density panel with a pure core and a unique semi transparent or coloured finish that gives the smooth surface a noble and prestigious look.

Its beautiful appearance and assured exterior serviceability has led to its use on prestige high-rise residential, commercial and institutional buildings.

NATURA offers the designer subtle shades of colour along with the crisp, clean lines required to create dynamic and attractive elevations.

The creative freedom offered by NATURA is underpinned by its strength, light weight, durability and ease of use, all proven over many years of design-led applications across a wide range of sectors.



OLYMPIC FARM HOUSE, SOUTH KOREA (PHOTO: CHAI SU-OK)

ADVANTAGES

- **Through-coloured** base board, with transparent or coloured varnish which gives a natural appearance
- **Wide colour range**, tailor made colours on request
- **Non combustible**, no flame spread, no fume development, no toxic gasses
- Resistant to high temperatures
- Excellent weather resistance, water resistant
- Frost resistant
- High dimensional stability
- Resistant to fungus, bacteria, insects, vermin, etc.
- Resistant to many chemicals
- Environmentally friendly, no harmful gas emissions
- **Strong and rigid sheet**
- Minimal maintenance
- **UV-stable**
- Big sizes

DIMENSIONS AND TECHNICAL PROPERTIES (AVERAGE VALUES)

Thickness	5, 8, 12 mm
Size untrimmed	1280 x 2530 mm -1280 x 3130 mm
Size trimmed	1250 x 2500 mm -1250 x 3100 mm
Weight	5 mm 9.5 kg/m ² 8 mm 15.4 kg/m ² 12 mm 22.8 kg/m ²

Density 1650 kg/m³

Bending strength³ (24h immersed in water) // =24.0 N/mm² & ⊥ =17.0 N/mm²

Modulus of elasticity 15000 N/mm²

Maximum water absorption 20 %

Moisture movement (30-90%, mean) 1.0 mm/m

Thermal expansion coefficient 10*10⁻⁶ m/mK

Thermal conductivity coefficient 0.6 W/mK

Frost resistance frost resistant

Reaction to fire according to EN13501-1 A2-s1,d0

NATURA meets the requirements of the European Norm EN 12467 and is CE-marked.

NATURA PRO



INSTITUTE FOR BIOLOGY, DRESDEN, GERMANY (PHOTO: GRIT DÖRRE, DRESDEN)



CONCERT HALL KÖTHEN, GERMANY (PHOTO: WERNER HÜTMACHER, BERLIN)



OFFICE BUILDING, REDANGE, LUXEMBURG (PHOTO: ETERNIT BELGIUM)

Natura PRO is a NATURA panel provided with an additional permanent UV cured top-coating that, apart from its anti graffiti resistance, additionally makes the sheet harder and stronger.

UV cured top layers offer good protection against many types of staining, mechanical damage during construction and against the graffiti, which can be eliminated with common graffiti removers.



CENTER OF TRADE, WROCLAW (PHOTO TOMASZ SINEK, POLAND)

ADVANTAGES

- **Through-coloured** basic board, with transparent or coloured varnish which gives a natural appearance
- **Wide colour range**, tailor made colours on request
- **Non combustible**, no flame spread, no fume development, no toxic gasses
- Resistant to high temperatures
- Excellent weather resistance, water resistant
- Resistant to fungus, bacteria, insects, vermin, etc.
- Resistant to many chemicals
- Environmentally friendly, no harmful gas emissions
- Frost resistant
- High dimensional stability
- **Strong and rigid sheet**
- Minimal maintenance
- **UV-stable**
- Big sizes
- **Anti graffiti**
- **Anti scratch**

DIMENSIONS AND TECHNICAL PROPERTIES (AVERAGE VALUES)

Thickness:	5, 8, 12 mm
Size untrimmed	1280 x 2530 mm - 1280 x 3130 mm
Size trimmed	1250 x 2500 mm - 1250 x 3100 mm
Weight	5 mm 9.5 kg/m ² 8 mm 15.4 kg/m ² 12 mm 22.8 kg/m ²

Density	1650 kg/m ³
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Bending strength ³ (24h immersed in water)	// =24.0 N/mm ² & ⊥ =17.0 N/mm ²
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Modulus of elasticity	15000 N/mm ²
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Maximum water absorption	20 %
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Moisture movement (30-90%, mean)	1.0 mm/m
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Thermal expansion coefficient	10*10 ⁻⁶ m/mK
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Thermal conductivity coefficient	0.6 W/mK
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Frost resistance	frost resistant
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Reaction to fire according to EN13501-1	A2-s1,d0
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NATURA PRO meets the requirements of the European Norm EN 12467 and is CE-marked.

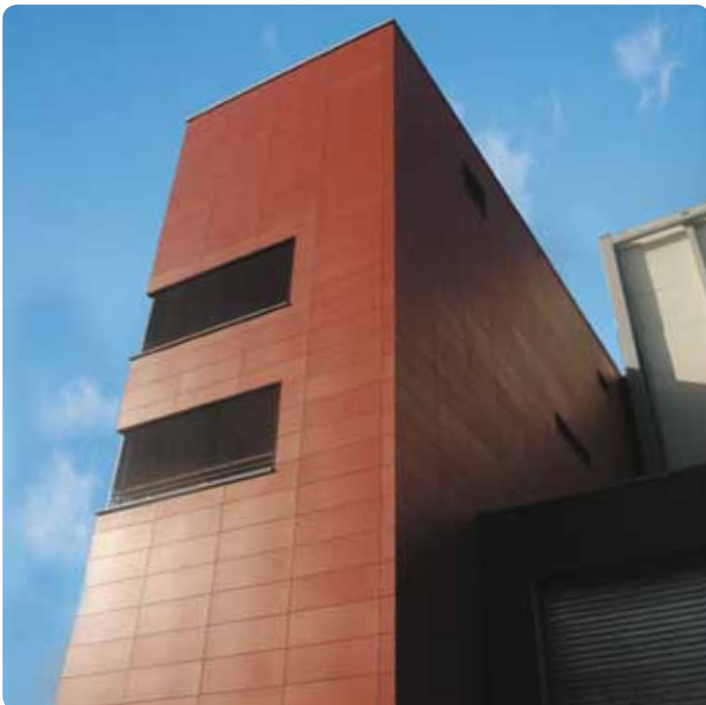
PICTURA



ZONNEVELD, THE NETHERLANDS (PHOTO: ETERNIT BELGIUM)



ERNST-MORITZ-ARNDT UNIVERSITY, GREIFSWALD, GERMANY (PHOTO ETERNIT GERMANY)



PROJECT LEUDELANGE, LUXEMBURG (PHOTO ETERNIT BELGIUM)

PICTURA is a unique fibre cement high density panel, with an optically flat, semi-matt, hard and smooth surface. Its hard surface, which is also resistant against UV, scratches, graffiti and chemicals, is unrivalled among cladding panels, and is ideally suited for use in aggressive environments. The unique PRO top coating stands guarantee for the excellent performance of the sheet.

Lightweight yet strong, PICTURA panels are available in a wide range of colours, with excellent colourfast qualities, and have particularly impressive fire resistance qualities.



PROJECT LEUDELANGE, LUXEMBURG (PHOTO ETERNIT BELGIUM)

ADVANTAGES

- **Non combustible**, no flame spread, no fume development, no toxic gasses
- Resistant to high temperatures
- Water resistant
- Resistant to fungae, bacteria, insects, vermin, etc.
- Resistant to many chemicals
- Frost resistant
- High dimensional stability
- **Strong** and rigid sheet
- **High resistance to UV radiation**
- Big sizes
- **Anti graffiti**
- **Anti scratch**

DIMENSIONS AND TECHNICAL PROPERTIES (AVERAGE VALUES)

Thickness	5, 8 and 12 mm	
Size untrimmed 8 - 12 mm	1280 x 2530 mm - 1280 x 3130 mm	
Size trimmed 5 mm	1220 x 2500 mm - 1220 x 3000 mm	
Size trimmed 8 - 12 mm	1250 x 2500 mm - 1250 x 3100 mm	
Weight	5 mm	8.8 kg/m ²
	8 mm	15.4 kg/m ²
	12 mm	22.8 kg/m ²

Density 1650 kg/m³

Bending strength³ (24h immersed in water) // =24.0 N/mm² & ⊥ =17.0 N/mm²

Modulus of elasticity 15000 N/mm²

Maximum water absorption 20 %

Moisture movement (30-90%, mean) 1.0 mm/m

Thermal expansion coefficient 10*10⁻⁶m/mK

Thermal conductivity coefficient 0.6 W/mK

Frost resistance frost resistant

Reaction to fire according to EN13501-1 A2-s1,d0

PICTURA meets the requirements of the European Norm EN 12467 and is CE-marked.

TEXTURA



MERIDA HEADQUARTER, WROCLAW, POLAND (PHOTO: TOMASZ SINEK, POLAND)



YELLOW FURNITURE STORE, MÜNSTER, GERMANY (PHOTO CHRISTIAN RICHTERS, MÜNSTER)



SCHOOL SINT MECHTILD, MAGENBURG (PHOTO: FRIEDEMANN STEINHAUSEN, POTSDAM)

TEXTURA combines vivid colour, texture and toughness in one fully compressed fibre cement cladding panel.

With a highly glazed, granular and acrylic finish available in any factory-approved RAL colour, it is impact resistant yet strong, light in weight and easy to use.

Its performance pedigree is second to none, complying with European Standards with regard to fire resistance and spread of flame.

TEXTURA panels can be visibly surface-fixed, glued, or secured with specially designed, concealed fixings.



SCIENCE BUILDING, HAMBURG, GERMANY (PHOTO: BERNADETTE GRIMMENSTEIN, HAMBURG)

ADVANTAGES

- **Available in any factory-approved RAL colour** (subject to min order)
- **Granular** finish
- **Non combustible**, no flame spread, no fume development, no toxic gasses
- Resistant to high temperatures
- Water & frost resistant
- Resistant to fungae, bacteria, insects, vermin, etc.
- Resistant to many chemicals
- Environmentally friendly, no harmful gas emissions
- High dimensional stability
- **Strong** and rigid sheet
- Big dimensions

DIMENSIONS AND TECHNICAL PROPERTIES (AVERAGE VALUES)

Thickness	8 and 12 mm	
Size untrimmed	1280 x 2030 mm -1280 x 2530 mm - 1280 x 3130 mm -1530 x 3130 mm	
Size trimmed	1250 x 2000 mm -1250 x 2500 mm - 1250 x 3100 mm -1500 x 3100 mm	
Weight	8 mm	15.4 kg/m ²
	12 mm	22.8 kg/m ²

Density 1650 kg/m³

Bending strength³ (24h immersed in water) // =24.0 N/mm² & ⊥ =17.0 N/mm²

Modulus of elasticity 15000 N/mm²

Maximum water absorption 20 %

Moisture movement (30-90%, mean) 1.0 mm/m

Thermal expansion coefficient 10*10⁻⁶ m/mK

Thermal conductivity coefficient 0.6 W/mK

Frost resistance frost resistant

Reaction to fire according to EN13501-1 A2-s1,d0

TEXTURA meets the requirements of the European Norm EN 12467 and is CE-marked

ETER-COLOR



SILVERTOP, RESIDENTIAL BUILDING, ANTWERPEN, BELGIUM (PHOTO ETERNIT BELGIUM)



RESIDENTIAL BUILDING, NEW ZEALAND (PHOTO EURO PANELS)



EVR HAVENBEDRIJF, ANTWERPEN, BELGIUM (PHOTO ETERNIT BELGIUM)

ETER-COLOR is a coloured throughout fibre cement board with a clear waterproof shield that protects and enhances the natural finish of the product.

The base sheet is a high density autoclaved fibre cement sheet. The panel's random cement configuration from panel-to-panel and within panels gives it the appearance of finished concrete.

ETER-COLOR can easily compete with other natural cementitious exterior claddings. It offers high durability, low weight and fast and easy installation.



FT. LEWIS COLLEGE, DURANGO - COLORADO (PHOTO RYAN HUNTER, USA)

ADVANTAGES

- **Budget-friendly** high density board
- **Non combustible**, no fire ignition, no spread of fire
- Resistant to extreme temperatures
- **Sound insulating**
- Water resistant (if in compliance with application guideline)
- Resistant to many living organisms (fungi, bacteria, insects, vermin, etc.)
- Resistant to many chemicals
- Environmentally friendly, no harmful gas emissions
- Strong and rigid sheet
- **Smooth aesthetic surface** with natural hues
- Natural **pure** colour

DIMENSIONS AND TECHNICAL PROPERTIES (AVERAGE VALUES)

Thickness	8 mm
Size untrimmed	1240 x 2520 mm - 1240 x 3070 mm
Size trimmed	1220 x 2500 mm - 1220 x 3050 mm
Weight	14.9 kg/m ²

Density	1.580 kg/m ³
Bending strength Ambient	⊥ = 32,0 N/mm ² & // = 22,0 N/mm ²
Modulus of elasticity Ambient	⊥ = > 14.000 N/mm ² & // > 12.000 N/mm ²
Hygic movement	0-100%, mean 1,60 mm/m
Porosity	0-100% < 25 %
Reaction to fire according to EN13501-1	A2-s1,d0
Thermal conductivity	λ 0,390 W/mK

ETER COLOR meets the requirements of the European Norm EN 12467 and is CE-marked

CEDRAL



SHEEPWORLD, ARNBERG, GERMANY (PHOTO : PLANUNGSGRUPPE MDP, ARNBERG)



BUILDING, WOLUWE, BELGIUM (PHOTO: ETERNIT BELGIUM)



WANSEA STREET, LONDON, UK (PHOTO: JONAS LENCER, LONDON)

CEDRAL planks resemble natural wood but incorporate elements not found in the natural material: rot resistance, fire resistance and superior paint holding capabilities.

The CEDRAL planks have become a product of choice for both residential and commercial buildings.

The standard range of more than 22 colours also incorporates wood colours.

Fibre cement weatherboard is the ideal low maintenance, rot free alternative to traditional timber weatherboarding.



RESIDENTIAL HOUSING COMPLEX, DEN BOSCH, NETHERLANDS (PHOTO: ETERNIT BELGIUM)

ADVANTAGES

- **Non combustible** no flame spread, no fume development, no toxic gasses
- Resistant to high temperatures
- Water & frost resistant
- Resistant to fungae, bacteria, insects, vermin, etc.
- Resistant to many chemicals
- Environmentally friendly, no harmful gas emissions
- High dimensional stability
- Can be worked with wood processing machinery and tools
- Can be screwed and nailed without pre-drilling
- **Very little maintenance** in comparison to wood because of its fiber cement composition
- **Aesthetic surface in different colours**

DIMENSIONS AND TECHNICAL PROPERTIES (AVERAGE VALUES)

Thickness	10 mm <i>(on special request, 8 mm thick panels are available)</i>
Dimensions	190 x 3600 mm
Weight	11.2 kg/piece in standard length

Density	1300 kg/m ³
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Bending strength ³ (air dry)	// : 23.0 N/mm ²
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Modulus of elasticity	// : 7500 N/mm ²
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Maximum water absorption	35 %
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Moisture movement (30-90%, mean)	2.1 mm/m
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Thermal expansion coefficient	10*10 ⁻⁶ m/mK
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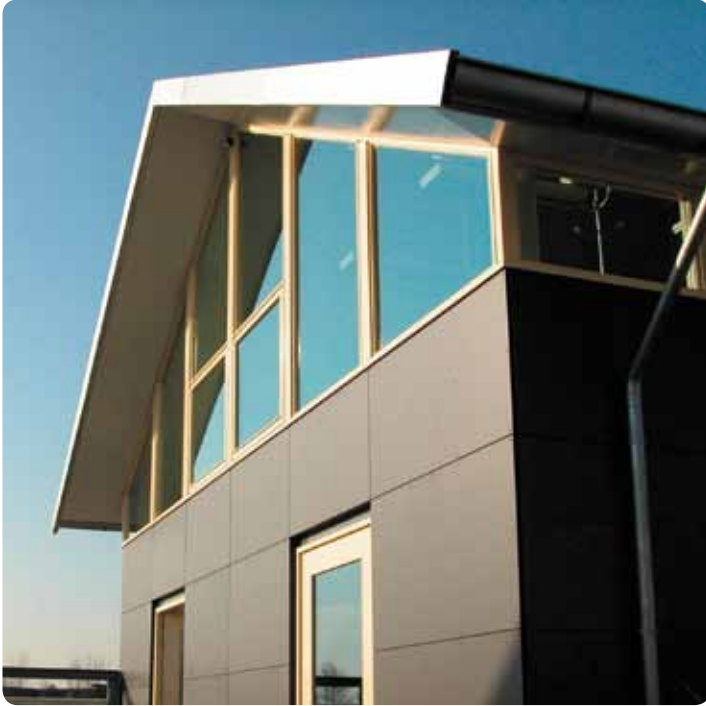
Thermal conductivity coefficient	0.19 W/mK
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Frost resistance	frost resistant
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Reaction to fire according to EN13501-1 :	A2-s1,d0
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CEDRAL meets the requirements of the European Norm EN 12467 and is CE-marked.

OPERAL



PROJECT DE KLUIJVER, NETHERLANDS (PHOTO ETERNIT BELGIUM)



OFFICE BUILDING, DUFFEL, BELGIUM (PHOTO ETERNIT BELGIUM)



RESIDENTIAL PROJECT, BRUSSELS, BELGIUM (PHOTO ETERNIT BELGIUM)

Durable, with minimal maintenance, easy to fix and work and a wide range of colours.

OPERAL offers a host of practical and aesthetic benefits to the designer requiring cost effective and attractive external cladding solutions.

OPERAL is a medium density board, finished with a high quality, granular and acrylic finish. It is impact resistant yet strong, light in weight and easy to use.

OPERAL is designed to be the perfect cladding for multi-purpose exterior applications.



BUILDING, BURGHHAAMSTEDE, THE NETHERLANDS (PHOTO ETERNIT BELGIUM)

ADVANTAGES

- **Fire safe** (no fire ignition, no spread of fire)
- **Sound insulating**
- Resistant to extreme temperatures
- Water resistant (*if in compliance with application guideline*)
- Resistant to many living organisms (*fungi, bacteria, insects, vermin, etc.*)
- Resistant to many chemicals
- Environmentally friendly, no harmful gas emissions
- Strong, rigid and versatile sheet
- Can be worked on with joinery machinery
- Screw and nail without pre-drilling
- Aesthetic **slightly structured** surface
- Available in a **very wide range of colours**

DIMENSIONS AND TECHNICAL PROPERTIES (AVERAGE VALUES)

Thickness	9 mm
Dimensions	1220 x 2500 mm - 1220 x 3050 mm
Weight	13 kg/m ²

Density	1230 kg/m ³
Bending strength ³ (ambient) //	17.0 N/mm ² & \perp = 23,0 N/mm ²
Modulus of elasticity //	7500 N/mm ² & \perp = 9500 N/mm ²
Maximum water absorption	38 %
Frost resistance	frost resistant
Reaction to fire according to EN13501-1	A2-s1,d0

OPERAL meets the requirements of the European Norm EN 12467 and is CE-marked

THE EFFECTIVE METHOD FOR EXTERIOR WALL CONSTRUCTION



PORSCHE OFFICE BUILDING, STÜTTGART, GERMANY (PHOTO DIERIG ARCHITECTEN, GERMANY)

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Technical status 04/2011

All notes, technical and graphic information correspond to the current state of the art and to our experience based on this. The installations described are examples and do not take in consideration the conditions particular to individual cases. The information given and the suitability of the materials for the proposed use must be checked by the purchaser in all cases. We (companies of the Etex Group) accept no liability. This also applies in respect of misprints and subsequent change of a technical nature.