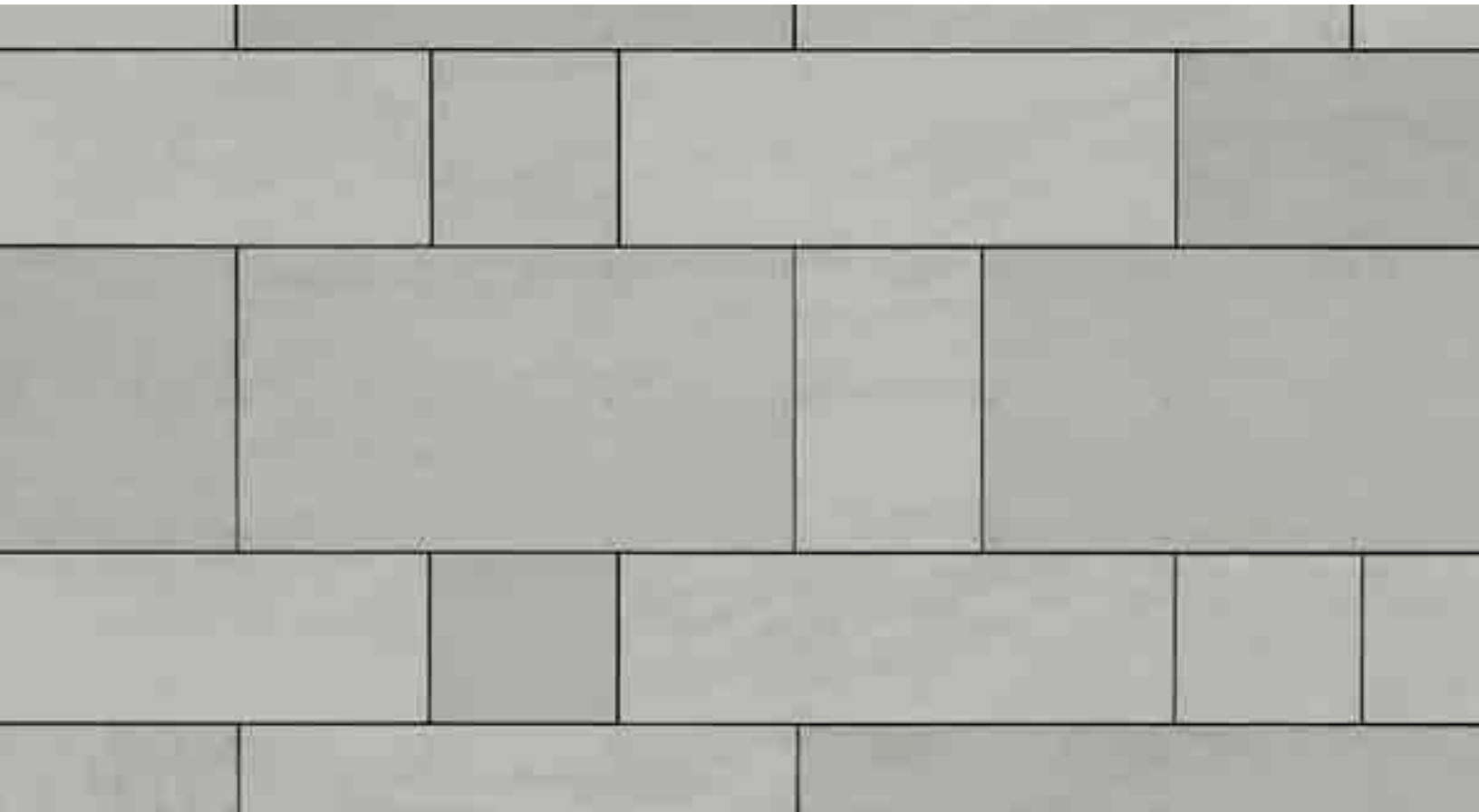
EQUITONE

Fibre cement facade materials



EQUITONE [linea]

Product Appearance

EQUITONE [linea] is a through coloured panel with no coating. As the panel has an honest, pure and natural appearance, colour differences are possible. The surface of the sheet is characterised by fine sanding lines and white spots. The EQUITONE [linea] features grooves to the front face of the board. The rear receives no back-sealing coating. The board receives a hydrophobation which prevents moisture ingress into the core of the panel.

Colour

As EQUITONE [linea] is an uncoated panel the Δ L is fluctuating more than a and b and is therefore the followed parameter.

	EQUITONE [linea]
Δ L brightness	1-5

Dimensions

EQUITONE [linea] is available in 10mm thicknesses.

Factory supplied	3050 x 1220mm	2500 x 1220mm

Technical Properties

EQUITONE [linea] cladding boards conform to the requirements of EN 12467: 2012 "Fibre cement flat sheets – Product specification and test methods". The results below are presented as defined by the standard.

Test Result according to ISO 9001 Quality Management System

Minimum Density	Dry	EN12467	1580	kg/m³
Bending Strength Parallel	Ambient	EN12467	32.0	N/mm²
Bending Strength Perpendicular	Ambient	EN12467	22.0	N/mm²
Modulus of Elasticity	Ambient	EN12467	>14,000	N/mm²
Hygric Movement	0-100%		1.6	mm/m
Water Absorption of uncoated panel	0-100%		< 25	%

Classification

Durability classification	EN12467	Category A
Strength classification	EN12467	Class 5
Fire Reaction	EN13501-1	A2-s1, d0

Extra Tests

Water impermeability Test	EN12467	Pass	
Warm Water Test	EN12467	Pass	
Soak / Dry Test	EN12467	Pass	
Freeze Thaw Test for Category A Panel	EN12467	Pass	
Heat / Rain Test for Catagory A Panel	EN12467	Pass	
Dimensional Tolerances for Level I Panel	EN12467	Pass	
Thermal Movement		0.01	mm/mK
Thermal Conductivity		0.390	W/mK

Panel Weight (air-dried)

Panel	Weight	2500 x 1220mm	3050 x 1220mm
10mm	16.8 kg/m²	51.2 kg/panel	62.5 kg/panel

Tolerances in accordance with EN12467 Level I

Factory supplied	
± 1mm	Thickness 10mm Panel
± 2mm	Length 10mm
± 2mm	Width 10mm
1.0mm/m	Squareness 10mm

The dimensions of the grooves are purely indicative. These are nominal dimensions subject to manufacturing tolerances. The grooves are longitudinal in the sheet.

Manufacturing Plants

General

Etex is unique amongst fibre cement manufacturers in that it specialises in both Air-Cured and Autoclaved High Density flat panels. The manufacturing process for fibre cement has remained more or less the same for over 100 years. Only the ingredients used have changed over time. These high performance ingredients result in products which are :

- LIGHTWEIGHT
- STRONG
- VERY DURABLE
- EXCELLENT RESISTANCE TO FIRE
- FROST PROOF
- RESISTANT TO FUNGI AND INSECTS
- MINIMAL MAINTENANCE
- AESTHETICALLY PLEASING

Since the early days many millions of square metres of fibre cement products have been installed on facades, withstanding extreme climatic conditions all over the world. Large size fibre cement panels for back-ventilated facades have proved to be highly successful in everyday use.

Production Plants

Today the plant in Neubeckum, Germany covers over 30ha and is a specialist in Air-Cured technology. The plant went into production in 1963 and today runs the largest Hatschek machine in the world which is dedicated to the production of the EQUITONE air-cured panels.

The most advanced Autoclaved technology is used for the EQUITONE panels produced in Kapelle op den Bos, Belgium. This manufacturing plant moved to this site in 1924 once it had out-grown its previous factory. Its location was ideal as it is adjacent to the canal and railway. The canal is proving to be a real benefit today, as it now again is the supply route for raw materials, therefore reducing the CO_2 footprint of the factory.

Standards & Certificates

Both manufacturing facilities hold the latest versions of the following ISO certificates

ISO 9001	Quality Management System
ISO 14001	Environmental Management System
OHSAS 18001	Safety Management System

All EQUITONE panels are manufactured in accordance with the requirements of EN12467 "Fibre-cement flat sheets. Product specification and test methods."

This standard sets out the requirements that all fibre cement panels should meet. In addition to this all EQUITONE panels are labelled with CE Marking in accordance with this standard. This further ensures that the products conform to the highest standards.

The CE marking is the sole evidence of conformity required by law. The CE marking displays the following information

- The CE marking symbol
- Details of the manufacturer (address) and manufacture (year)
- Coded information on certain product properties
- Declaration of conformity by the manufacturer

The CE marking is a kind of "technical passport". Products bearing the CE marking can be traded within the European Union market. The manufacturer is responsible for affixing the CE marking.

In addition to the manufacturing certificates and European approvals, local approvals are also needed for some countries. Examples are; Irish Agrément Board, British Agrément Board, Avis Technique from France, Zulassung from Germany, ATG from Belgium, KOMO from Netherlands. Many of these approvals are acceptable in other countries.

To keep up to date with the latest issues and to promote ventilated facades, some of our Sales Organisations are also active members of their local institutes, such as the FHVF in Germany, CWCT in UK or the CSTB in France.

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Autoclaved

Autoclaved fibre cement is produced from four main raw ingredients – silica (sand), cement, cellulose and water. These materials are mixed together to create a slurry. Then the mixture passes through the Hatschek process as explained on page 30. Following on from the pressing stage, the stacks then enter an industrial-size pressure cooker known as an autoclave and steam is added to the autoclave until the right temperature is reached. It then "cooks" for the required time.

Once the boards emerge from the autoclave, they have attained much of their final strength. At this stage, these boards are ready for finishing, cutting and other preparations needed for shipping to various market destinations.

General

While there are differences in the manufacturing processes between autoclaved and air-cured panels, the end results are quite similar. There are some minor technical differences between all the panels, none of which makes one panel better than the other for use on ventilated facades.

The main difference between the panels is all about the final appearance. It is not possible to achieve the EQUITONE [natura] fibre look with an autoclaved panel. The same goes for the EQUITONE [tectiva] panel as its unique natural finish is not possible with an air-cured panel.

Colour

Throughout the manufacturing process of the EQUITONE panels the colour of the panel is checked at regular intervals. If necessary the process is adjusted to ensure that the appearance of the panels is consistent. To define and describe the colour and tonal variations, the internationally recognised CieLab colour system is used. The panel's colour can be determined by parameters a, b and L.

The CieLab system consists of the two axes, "a" and "b", which are at right angles to each other and define the hue. Axis "a" represents green to red. Axis "b" represents blue to yellow. The third axis indicates the brightness "L". This is perpendicular to the "a", "b" axis. Colour variations are classified as Δ L , Δ a and Δ b. (Δ=delta).

Colour differences between the panels can not be entirely excluded from any facade. However, good on-site practice to reduce any risk of complaint would be to ensure that all panels on the same facade would be from just one batch and the material is all ordered within a reasonable time. Before fixing, any obvious panel colour variations should be set aside.

When viewing the panels, it is advised that they are viewed from a reasonable distance of approximately 3.0m and from different angles.

Colour differences can be accentuated by the orientation of the panel, the viewing angle and the effects of light and moisture.

For on site colour measurement, the device spectro-guide from Byk-Gardner GmbH can be used.

Sustainability

Manufacturing Plants

Each of the manufacturing plants are continuously working to make the process more environmentally sustainable. Some recent initiatives include the switch from heavy fuel to natural gas, sourcing lime and sand locally, using cellulose from fully renewable sources, changing the way raw materials are delivered, for example transport via the canal, introducing a new co-generation power unit which recovers the primary energy and reuses it and aiming to have all hard factory waste recyclable. Both manufacturing plants operate in accordance with ISO 14001 Environmental Management System.

Energy Performance of Buildings

Commonly referred to as the 2020 directive, in December 2002, the European Parliament adopted directive 2002/91/EC on the energy performance of buildings. Clear energy-saving requirements for buildings are formulated in this directive. From 2020 onwards, all new buildings must be 'nearly zero-energy', by means of high energy-efficiency standards. This will involve the installation of improved insulation and consuming energy from renewable sources. Buildings occupied and owned by public authorities are expected to lead by example, so the provisions of this directive should apply to the public sector from 2018 onwards.

Green Building Assessments

While this area of having a building assessed for its energy and environmental design is still in its infancy, it is growing and slowly becoming more popular. The goals of these schemes is to establish standards of measurement, promote good design practices, and recognize environmental leadership in building industry and to increase the awareness among customers by specifying the benefits of green building.

In Europe the predominant Green Building Scheme is BREEAM from the British Research Establishment, others include DGNB in Germany or HQE from France. Another, internationally-recognised green building certification system is the LEED, Leadership in Energy and Environmental Design from the U.S. Green Building Council. These all promote sustainable building and development practices through a suite of rating systems.

The BRE's Environmental Assessment Method (BREEAM) is a design and management stage assessment tool that provides an environmental label for buildings, based on good practice. One of the aims of BREEAM and the other schemes are to encourage the use of materials that have lower impact on the environment, taking account of the full life cycle of the materials in question.

This is a complex part of the industry and is changing regularly. It is a minefield of competing commercial interests. The assessment itself is a very complex area and experts are becoming more common especially with "signature" buildings.
There are different building ratings between each scheme. Therefore, it is not possible to rate one scheme against another as they all use information differently. They also give a different loading to the main elements of the scheme. For example, the materials section presents 22% in the DGNB, 13% in BREEAM and 14% in LEED.