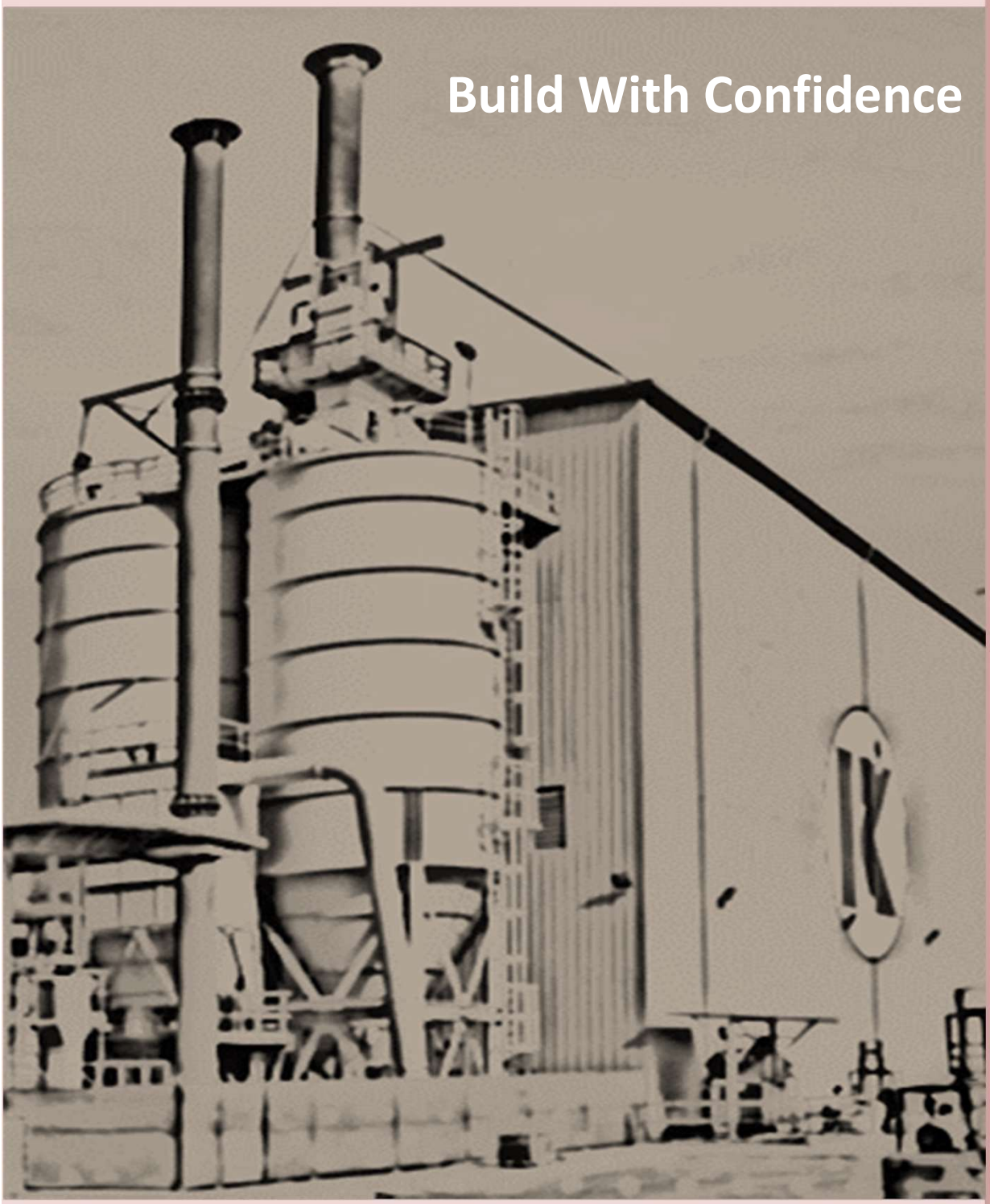
EL KHAYYAT GYPSUM COMPANY

COMPANY PROFILE

EL-KHAYYAT

FIBER CEMENT BOARD



EL-KHAYYAT

FIBER CEMENT BOARD

Technical Data Sheet

EL-KHAYYAT

FIBER CEMENT BOARD

DESCRIPTION

EL-KHAYYAT Fiber Cement Boards consist of a composite material comprising of reinforced fibers, cement, sand, and silica. Fiber cement boards provide non-combustible properties, rendering them suitable for a diverse range of applications. Various thicknesses and sizes are available for these materials, enabling them to be cut, molded, and placed in a manner akin to conventional wood. These entities exhibit a significant degree of resistance to fire, water, moisture, and heat.

EL-KHAYYAT Fiber cement boards are very resistant to stress-related cracking or breaking because of how they are made. The board is made of cement, sand, and cellulose fibers. The cement and sand give the board a strong, fire-resistant base, while the cellulose fibers strengthen the board's structure. Also, these materials are resistant to termite infection and don't break down or fall apart when exposed to rain

EL-KHAYYAT Fiber cement boards are used in both exterior and interior building construction for a variety of purposes, such as wall cladding, fake ceilings, drywall partitions, flooring, furniture, and gates.

BENEFITS

FIRE RESISTANT
EL-KHAYYAT Fiber cement boards are highly fire-resistant. The mix of fiber-reinforced cement and cement makes these boards highly fire-resistant in nature. So, fiber cement board is the perfect building material.

WEATHER RESISTANT
Fiber cement boards have a high level of resistance to heat, moisture, and water. Gypsum boards can be replaced with these because they are entirely weatherproof and can be installed externally.

ECO FRIENDLY
Fiber Cement Boards don't contain asbestos and are environmentally safe. They pose no damage to the environment or to human health because they don't release any dangerous chemicals while being installed.

STRONG AND DURABLE
Fiber Cement Boards have an exceptionally long lifespan. They are made from cellulose fibers, sand, and cement and serve as sustainable building materials as well as ones that withstand weather, wear, and termite infestation.

SOUND AND THERMAL INSULATION
Fiber cement boards provide high sound & thermal insulation properties.

TERMITE-RESISTANT
Fiber cement boards are having excellent Termite resistance properties.

EL-KHAYYAT

FIBER CEMENT BOARD

SPECIFICATIONS			
PROPERTIES	**UNIT**	**VALUES**	**STANDARD**
Dimensional Characteristics:			
Thickness	mm	6, 9, 12,16 and 18	IS 14862:200 & BS EN 12467
Nominal Length	mm	2400, 3000	IS 14862:200 & BS EN 12467
Nominal Width	mm	1200	IS 14862:200 & BS EN 12467
Apparent Density (Dry)	Kg/m3	>1200	IS 14862:200 & BS EN 12467
Modulus of Rupture (EMC)	MPa	14-Parnllel, 8-Perpendicular	IS 14862:200 & BS EN 12467
Impact Strength	J/m2	>2100	-
Compressive Strength	MPa	>30	ASTM D1037
Tensile Strength	MPa	20-Parallel, 18-Perpendicular	ASTM D1037
Screw Withdrawal Strength	N	>1800	IS:2380 Part XIV
Moisture Content (EMC)	%	<12	Ambient
Chemical Characteristics:			
Alkalinity	pH	8 - 9	-
Acoustic Characteristics:			
Acoustic Insulation (Single Board)	dB	32-34	IS:9901 Part 3:1981
Acoustic Insulation (partitions System)	dB	STC 48- 52*	IS:9901 Part 3:1981
Thermal Characteristics:			
Thermal Conductivity	W/m-K	0.18	ASTM C177 and ISO 8302

EL-KHAYYAT

FIBER CEMENT BOARD

SPECIFICATIONS			
PROPERTIES	**UNIT**	**VALUES**	**STANDARD**
Fire Characteristics:			
Combustibility	-	Non-combustible	BS 476:Part 4:1970
Ignitability	-	'P' Not Easily Ignitable	BS 476:Part 5:1979
Fire Propagation index	-	I = 0.7	BS 476:Part 6:1989
Surface Spread of Flame		Class - 1	BS 476:Part 7:1997
Flame Spread Index (FSI)	-	0	ASfME84
Smoke Developed index (SDI)	-	30	ASfME84
Fire Resistance*	-	120min	BS 476 Part 20 & 22
Durability and Aging Characteristics:			
Water Impermeability	-	Passes	BS EN 12467
Freeze Thaw Test	-	Passes	BS EN 12467
Warm Water	-	Passes	BS EN 12467
Soak Dry	-	Passes	BS EN 12467
Heat rain	-	Passes	BS EN 12467
Environmental Friendly Characteristics:			
Moulud / Fungal Growth	-	Free from Fungal Growth	IS 4873
Termite Resistance	-	No termite attack	IS 4873
Borer Resistance	-	No Borer Attack	IS 4873
VOC Organic Emission	-	Not Detected	ISO-16000-6
Asbestos Identification	-	Free From Asbestos	X ray Diffraction Method

EL-KHAYYAT Exterior

EL-KHAYYAT Exterior is a ready-mixed skim-coat for levelling exterior cement fiber board surfaces.

Product Overview

EL-KHAYYAT Exterior is a ready to use filler for use on all common building surfaces, including timber. It gives a high quality, even surface for painting. EL-KHAYYAT Exterior is specifically manufactured for the painter to repair and touch up exterior and interior surfaces, both new and old, prior to painting. It is designed for filling joints, hairline cracks etc. by hand application.
Unlike conventional fillers, EL-KHAYYAT Exterior has elastic properties, does not flake off, is permanent and retains its adhesion.

Properties

EL-KHAYYAT Exterior is formulated using acrylic binders and precisely graded fillers.
Properties include:

- Tough durable filler
- Weather resistant
- Alkali resistant
- Easy to apply
- Quick drying
- High crack resistance
- Excellent adhesion

Areas Of Use

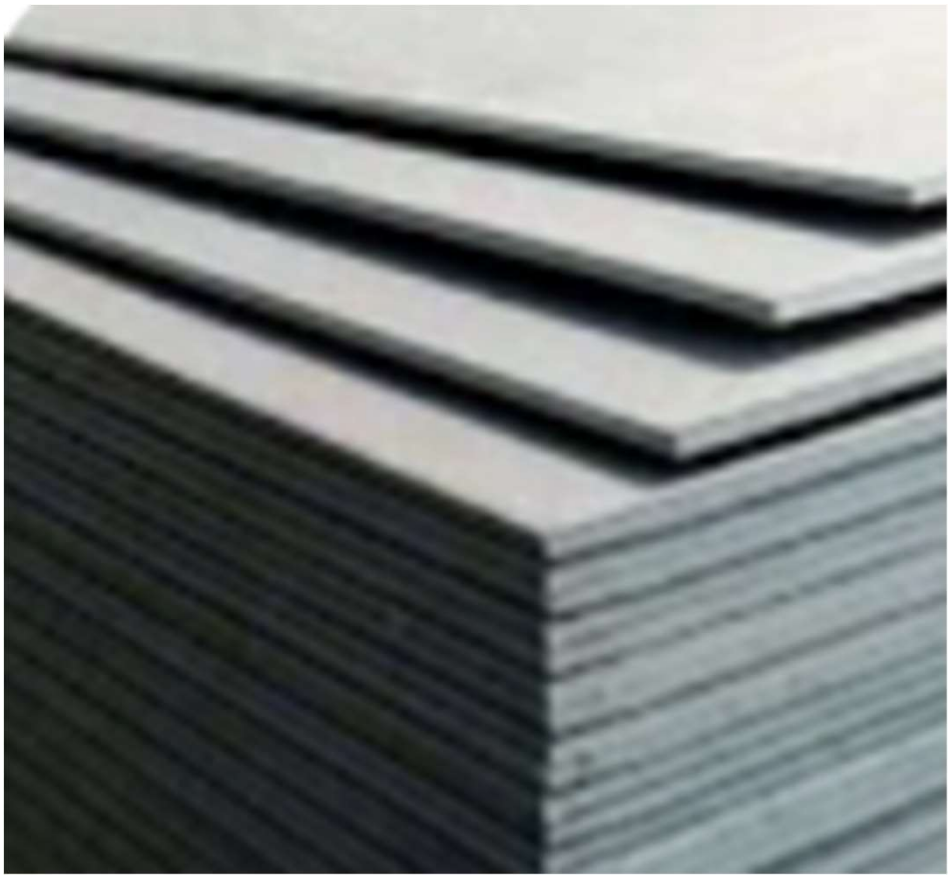
EL-KHAYYAT Exterior is suitable for exterior as well as interior surfaces. When dry, EL-KHAYYAT Exterior is weather resistant and bonds extremely well to cementitious materials, gypsum, gypsum boards, Spray-plaster and wood.
It is used as a thin coat filler for patching hairline cracks in walls, ceilings, soffits, repair to damaged plasterwork, paintwork, filling holes and defects in woodwork, making good to exposed concrete, filling of dents in galvanized and anti-rust primed metal.

EL-KHAYYAT Exterior

Application Method

Surface Preparation
Ensure dust, dirt, foreign matter are brushed away. Ridges and form oil should be removed. When applying filler to old painted surfaces first wash down with soda / water solution, rinse and allow to dry before filling.
To stabilize a surface which shows signs of dusting or flaking, the use of Penetrating Primer is recommended.

Application:
Apply the filler in a thin, even layer; if the area under repair requires a thick coat, apply several thin layers, allowing each layer to dry before adding the next. Lightly sandpaper over the dry final surface before painting preferably within 9 hours of application.
Clean tools and equipment with water after use.



EL-KHAYYAT Exterior

Tough and Durable Finish.

EL-KHAYYAT Exterior is a ready-mixed filler used for skimming surfaces and as a patching compound for filling wall holes, joints & repairing hairline cracks.
It is formulated for exterior use to ensure high strength, exceptional weather and crack resistance to provide a durable finish.
Unlike conventional fillers, EL-KHAYYAT Exterior has elastic properties, does not flake off and retains its adhesion.

When using EL-KHAYYAT Exterior, it is easier to prepare surfaces and get an even surface for painting when repairing and touching up old or new surfaces.

WHY CHOOSE EL-KHAYYAT EXTERIOR?

WEATHER RESISTANT

The product is specially formulated for exterior use.

It demonstrates excellent resistance to water. This greatly enhances the systems durability in the most extreme weather conditions.

EASY TO APPLY

EL-KHAYYAT Exterior is designed for applicators to repair and touch up surfaces in an easy and efficient way.

EVEN SURFACE FOR PAINTING

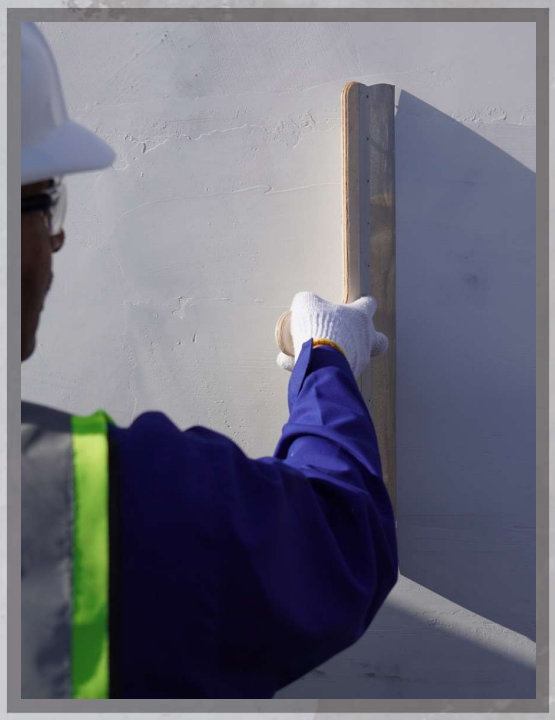
EL-KHAYYAT Exterior provides superior surface preparation with excellent whiteness and a uniform finish for a lower paint consumption.

OTHER FEATURES AND BENEFITS

- Quick drying compared to conventional fillers resulting in faster application and saving time .
- Good alkali and crack resistance enhance durability of the system
- High adhesion power prevents flaking thus reducing the need for repair.

AREAS OF USE

Cementitious
Materials Concrete
Precast
Concrete
Cement Boards
Mineral Boards
Exterior Gypsum Boards
Other Common Building Surfaces



EL-KHAYYAT EXTERIOR IS PERFECT FOR

Patching hairline cracks

Repairing damages in plaster & paint work

Jointing cement and mineral boards

Filling nail holes

Filling honeycomb in concrete substrate Repairing defects in exposed concrete Skimming of façade walls

HOW TO USE

1. Apply the filler in a thin even layer
2. If a thick coat is necessary apply several thin layers Allow to dry between layers
3. Lightly sand the final surface within 4 hours before painting

TECHNICAL DATA

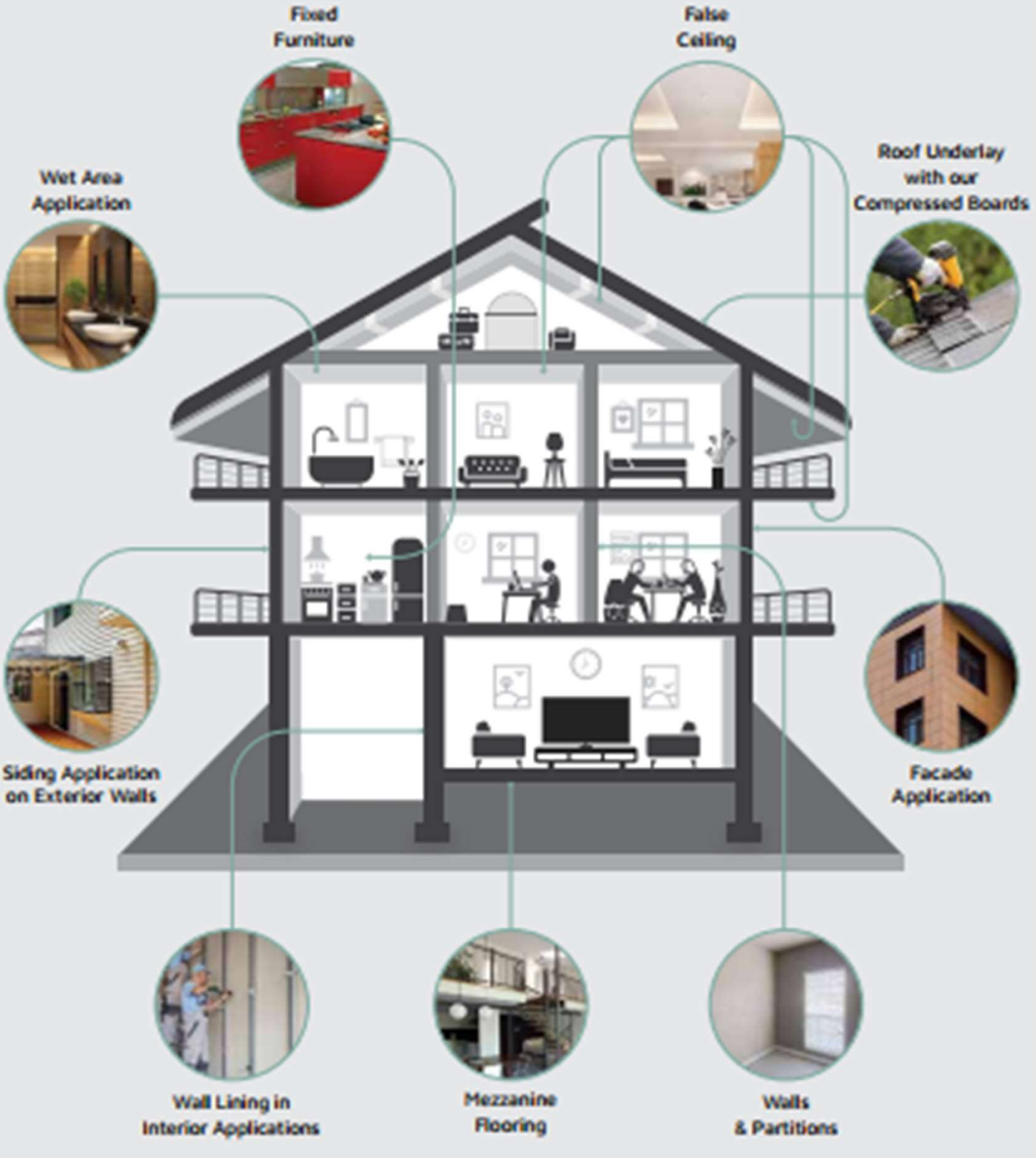
Dilution	With a small quantity of water if required
Coverage	0.5 -1.5kg/m^2 depending on substrate conditions
Layer Thickness	Maximum thickness 1mm/layer
Specific Gravity	1.65 +/-0.05
Colour	White
Packaging	5 and 25 kg plastic pails
Storage	12 months in original unopened containers

EL-KHAYYAT

FIBER CEMENT BOARD

Installation Guide

Possible Applications



External Cladding

EL-KHAYYAT Fiber Cement Boards are highly resistant to water, moisture, and heat. Low-maintenance and highly resistant to decay, fire, impact, moisture damage, water, and termites make fiber cement boards an excellent exterior wall cladding material.

Internal Wall Lining

These Boards are suitable for internal wall linings in both residential and commercial spaces, including living rooms, corridors, bathrooms, etc. It can be applied to timber, light gauge G.I., and steel-framed dwellings.

Drywall Partitions

EL-KHAYYAT Fiber cement boards can be used for Drywall Partitions in both residential and commercial settings. Compared to Gypsum board partitions, they are considerably more durable, dependable, and low-maintenance. They can also be used to construct partitions for floors that do not support weight.

False Ceiling

The use of fiber cement boards in the construction of artificial ceilings for living rooms, bedrooms, kitchens, and offices is an excellent alternative. In contrast to Gypsum Board, they are naturally robust and resilient. They are extremely durable and require minimal maintenance.

Sound Proofing

These boards stop sound from passing through the false ceiling or partition when they are combined with an infill insulation material like mineral rockwool or fiber glasswool insulation. Within the room, the sound is kept. Being the perfect option, it may be used in conference rooms, theaters, home theaters, recording studios, and more.

Mezzanine Flooring

EL-KHAYYAT Fiber cement boards are a common material for mezzanine floors. They are also resistant to rot, bugs, mold, and bacteria. Fiber cement boards are gray with a sanded surface. The cement in the boards makes them more durable and waterproof. They're also resistant to moisture and pests.

Application Areas

Fire-rated Acoustic Partitions
Acoustic Partitions
Wall Paneling
Grid False Ceiling
Seamless False Ceiling
Mezzanine Flooring
Mezzanine Flooring
Kitchen Cabinets & Shelves
Wardrobes

EL-KHAYYAT Fiber Cement Board has set the standard for proven performance in the backerboard category. offers enhanced, proprietary edge performance and minimizes spin-out and crumbling. installs quickly and easily, while maintaining the brand's tradition of quality and reliability.

Benefits include:

- Easy to cut and fasten
- Water durable and mold resistant
- Exceptional tile bond
- Warranted for interior and exterior application

Water durable and mold resistant, with better tile bond than bare plywood, EL-KHAYYAT Fiber Cement Board is an outstanding backerboard for a wide variety of reasons. Choose this high-performance alternative to bare plywood surfaces for:

Superior Tile Bond

Prevents tile pops and grout cracks, up to 40% greater tile than other plasterboard.

The Strength of Portland Cement

Will not swell, soften, rot, warp, delaminate or disintegrate if exposed to water. Backed by a 15-year limited warranty.

Superior Mold Resistance

Receives rating of "0" for no mold growth as tested per ASTM G21. Scores a 10 out of 10 on ASTM D3273.

Floors thickness 9 mm, 12 mm, 16 mm

Subfloor should be APA span- rated plywood or OSB with an Exposure 1 classification or better.

Countertops 9 mm, 12 mm, 16 mm thickness

APA span-rated plywood or OSB with an Exposure 1 classification or better.

Cover base with Tile Membrane, (6.8 kg) felt or 4-mil polyethylene and attach with 6 mm galvanized staples.

Walls and Ceilings 12mm and 16 mm thickness only

Maximum stud spacing:
600 mm o.c. Maximum allowable deflection, based on stud properties only, L/360. Maximum fastener spacing: 300 mm o.c. for steel framing;
200 mm o.c. for ceiling applications.

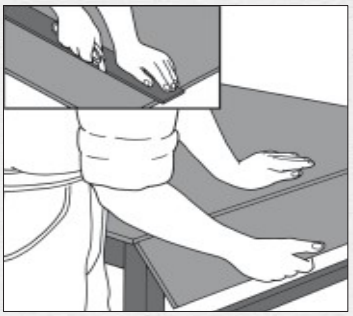
Waterproofing

If waterproofing is desired, use Waterproofing Membrane or.

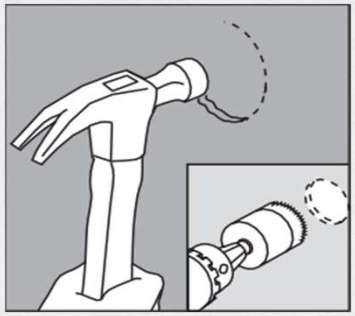
Cutting

EL-KHAYYAT Fiber Cement Board panels should be cut to size with a knife and straightedge. A power saw should be used only if it is equipped with a dust collection device. Always wear approved mask and eye protection when cutting panels.

- Utility knife: Using a straightedge, score panel face with utility knife and cut through glass-fiber reinforcing mesh, then snap and cut backside mesh to break cleanly. Use a rasp to smooth any rough edges.



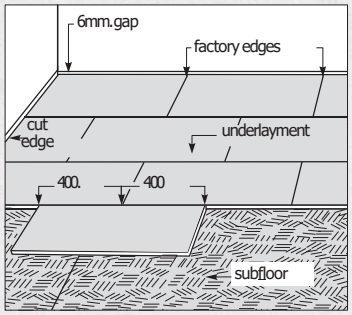
- Power saw: Use a low-RPM portable saw with 89 mm carbide-tipped blade. To make cutouts for pipes and fixtures, use utility knife to cut through mesh on both sides of panel and punch out with a hammer from back side. Or, use an electric drill with a hole-saw bit.



Floor Installation 6mm, 12mm, 16 mm

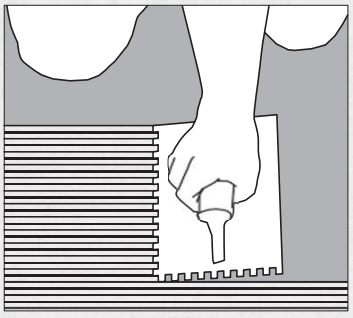
POSITIONING

Fit ends and edges of panels closely but not forced together, maintaining 6 mm. space between panels and perimeter walls. Stagger joints a minimum 400 mm so four corners never meet. Offset panel joints a minimum 203 mm from subfloor joints.



LEVELING BED

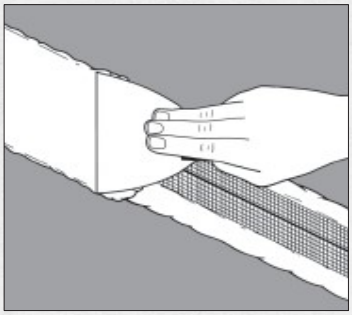
Apply Type 1organic adhesive with 5 mm v-notched trowel, latex-fortified mortar with 6 mm square-notched trowel. Comb out adhesive or mortar in straight, parallel rows (as shown below) and immediately cover with panel. Adhere panels to subfloor, one panel at a time.



FASTENING

Secure panels while adhesive is still wet. Space fasteners 200 mm o.c. around the perimeter and in the field of the board.

Wood framing and countertops: fasten with 38 mm 11-gauge hot-dipped galvanized roofing nails, or 32 mm Tile Backer Screws for wood framing or equivalent. Drive nails and screws so that bottoms of heads are flush with panel surface to ensure firm panel contact with subfloor. Do not overdrive fasteners.



JOINING

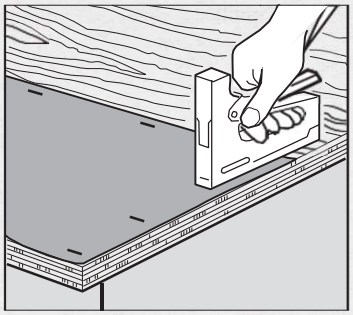
Fill joints with latex-fortified mortar or Type 1organic adhesive and immediately embed alkali-resistant, fiberglass mesh joint tape.

FINISHING

Tile or almost any flooring material.

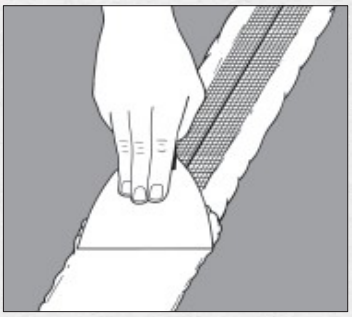
Countertop Installation
6 mm, 12 mm, 16 mm

Cover plywood base with Membrane, 6.8 kg felt or 4-mil polyethylene and attach with 6 mm galvanized staple.



POSITION
Fit ends and edges of panels closely but not forced together. Stagger panel joints from plywood base joints.

FASTEN
Space fasteners 200 mm o.c. around the perimeter and in the field of the board.



FINISH
Install tile.

Note: Because cement board fasteners may protrude through the plywood base when 6 mm cement board is used, 12.7 mm or 16 mm cement board is preferred in this application.

Wall & Ceiling Installation
12.7 mm & 16 mm only

FASTENING
Fasten to studs spaced 400 mm o.c. Space fasteners 8 in. 200 mm o.c. for walls, 6 in. 152 mm o.c. for ceilings. Fit ends and edges of panels closely but not forced together. Drive nails and screws so bottoms of heads are flush with panel surface to ensure firm panel contact with framing. Do not overdrive fasteners.

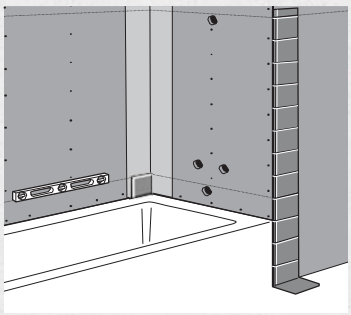
- Steel framing: 32 mm Tile Backer Screws for steel framing.

JOINING
Fill joints with latex-fortified mortar or Type 1organic adhesive and immediately embed alkali-resistant, fiberglass mesh joint tape.

Planning Your Tile Installation
6 mm, 12.7 mm, 16 mm

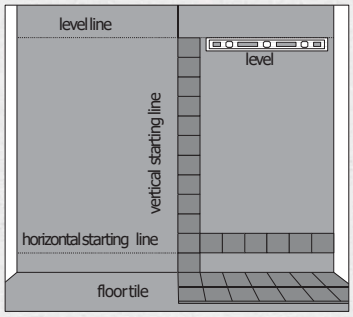
POSITIONING

Where tile will not cover entire wall surface, such as above tub and shower surrounds, determine where you want the tile to end and draw a level line at this height. Be sure to allow for height of tile cap, if applicable.

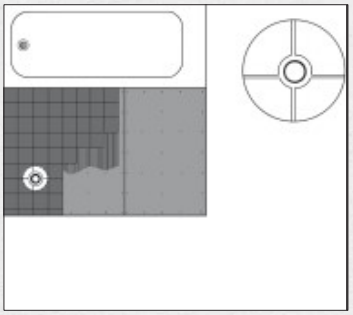


On walls where tile will reach the floor, determine whether floor is level by measuring distance to desired tile height on both sides of area to be tiled. If there is a difference (e.g., the floor is lower on one side), lay one vertical row of tile from highest point down to floor. Affix tiles with dabs of mastic.

Use this first row as a guide to keep tiles and grout lines level and ensure alignment with tiles of adjacent tub or shower surround. If new flooring will be installed, leave a sufficient gap between lowest tile and subfloor.

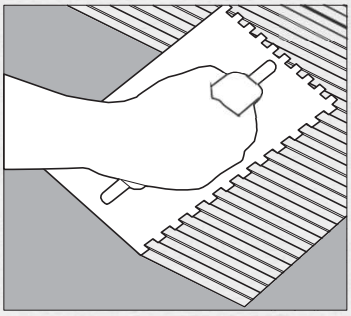


On bathroom floors, start by placing full tiles in front of bathtub or shower and along the adjoining wall to avoid cut tiles in this highly visible area.

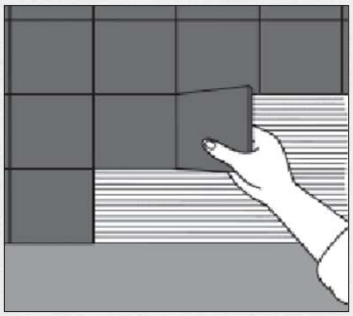


Installing Ceramic Tile

Apply latex-fortified mortar or Type 1organic adhesive with a notched trowel. Hold trowel at an angle to maintain uniform thickness. Refer to setting material manufacturer for specific information related to trowel type and size.



Working a small area at a time, press tile into place with a slight twisting motion to seat properly. Prevent adhesive buildup on tile edge and in grout space. If adhesive squeezes from under tile, remove excess before it dries.



Keep tiles and joints straight and uniform. Use tile spacers if desired.

CUSTOMER SERVICE

TECHNICAL SERVICE

PRODUCT INFORMATION
See

NOTE
The information in this document is subject to change without notice. EL-KHAYYAT assumes no responsibility for any errors that may inadvertently appear in this document. Consult your EL-KHAYYAT sales office or representative for information. Products described here may not be available in all geographic markets.

NOTICE
We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods.
For all terms and conditions see usg.com/terms-and-conditions

SAFETY FIRST!
Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read SDS and literature before specification and installation.

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EXPERIENCE BUILT

EL-KHAYYAT Exterior Wall with FIBER CEMENT BOARD

EL-KHAYYAT Exterior Wall comes in two basic types: drywall, or as a rear-ventilated rainscreen facade. It therefore offers an extremely flexible and adaptable solution which can accommodate an impressive range of designs, opening up new architectural possibilities and helping to turn vision into reality, whether it's being used to create commercial or residential buildings, or sports arenas or healthcare establishments. Truly, we are changing the way the world builds.

EL-KHAYYAT Exterior Wall

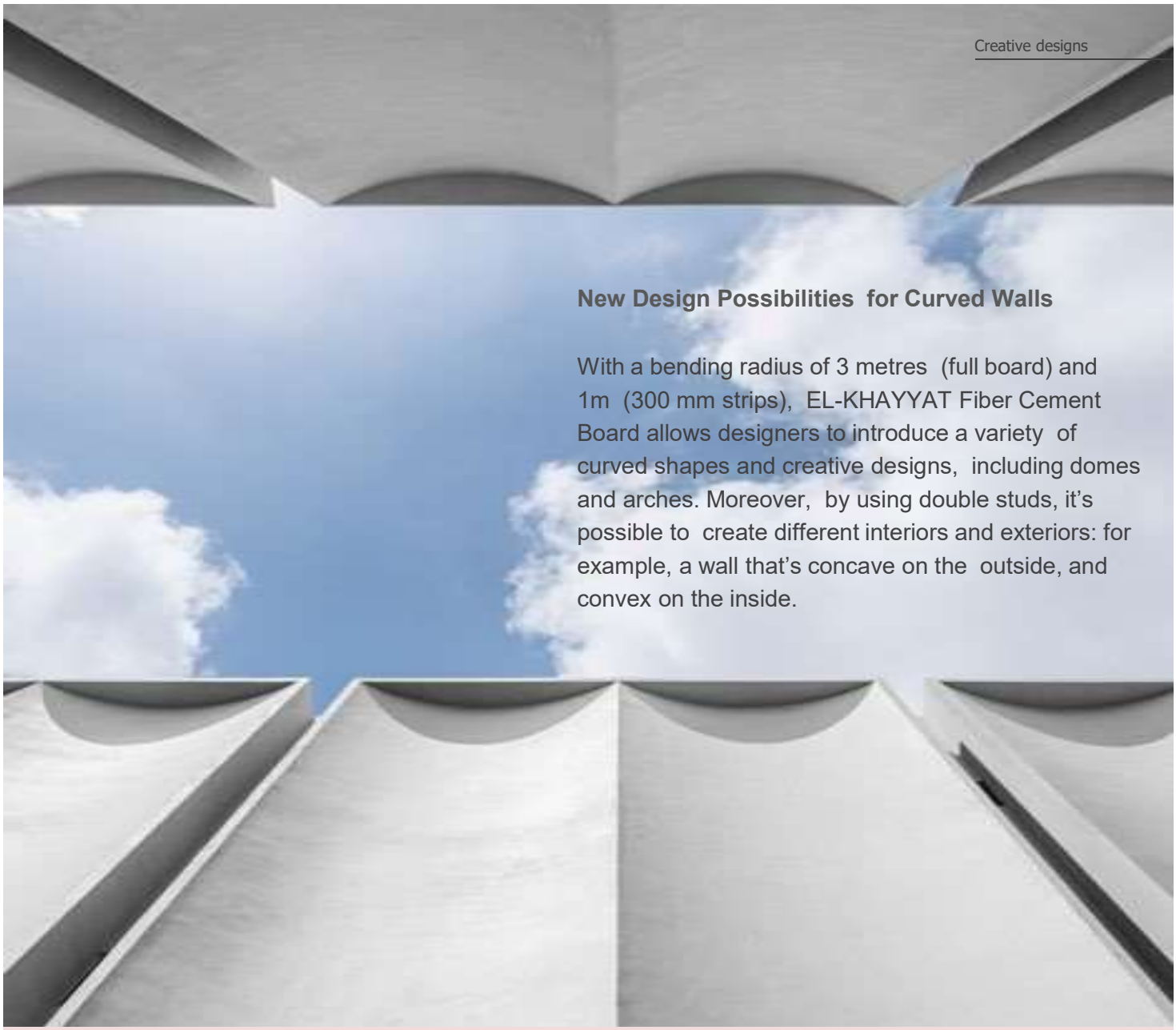
Rear-Ventilated Rainscreen Facade

With rainscreen facades for use above solid substructures such as brick or concrete, thermal insulation is separated from the weather protection materials ensuring a constant flow of air in the ventilated space to remove moisture from the building and to optimise indoor climate. Even if the facade is damaged, the insulation remains intact.

EL-KHAYYAT Exterior Wall

Drywall Solution

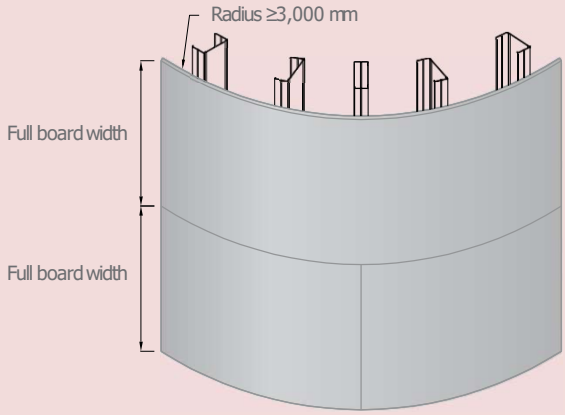
Drywall systems are available as single stud or double stud solutions with a variety of creative design options. And although it is most commonly used in skeleton constructions comprising reinforced concrete, drywall is also suitable for timber or lightweight steel-frame constructions.



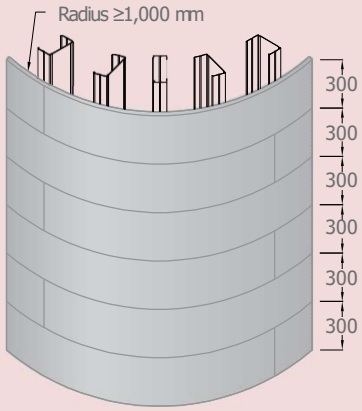
New Design Possibilities for Curved Walls

With a bending radius of 3 metres (full board) and 1m (300 mm strips), EL-KHAYYAT Fiber Cement Board allows designers to introduce a variety of curved shapes and creative designs, including domes and arches. Moreover, by using double studs, it's possible to create different interiors and exteriors: for example, a wall that's concave on the outside, and convex on the inside.

Arrangement of EL-KHYYAT Cement Fiber Board with different radius



Assembly with full board size panels for radius ≥3,000 mm



Assembly with 300 mmwidth panels for radius ≥1,000 mm

Stunning Surfaces and Finishing Options

Compatible with an extensive range of surface finishes, from paint and renders, through to adhered materials like clinker bricks, tiles or glass elements, EL-KHAYYAT Exterior Wall solutions offer unlimited scope for creative expression. Even a variety of cladding systems can be realised, resulting in very thin ventilated constructions, because the required insulation is already integrated inside the drywall.

Renders


Broom finish


Combing technique


Concrete look


Fine sponged render


Groove render


Modelling render


Paint finish

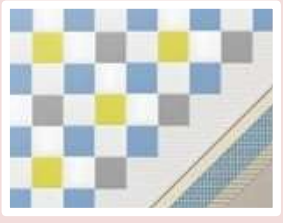

Pebble dash

Adhered materials


Ceramic facing bricks


Clinker bricks


Glass elements


Mosaic tiles

Ventilated Facades on Drywall Constructions


Aluminium panels


Ceramic tiles

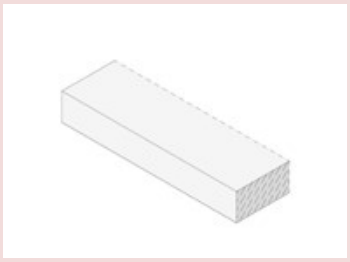

Glass panels


Granite plates

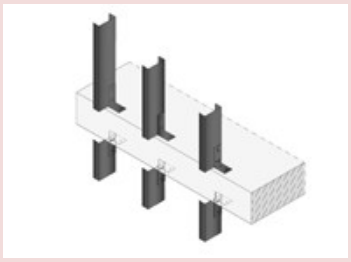
Accelerated Construction

The building envelope can be closed immediately after the joint treatment of the boards, significantly earlier than with conventional methods such as brick and block. (Once jointed, the boards can also be left for up to 6 months, providing added peace of mind). As a result, interior works (including screeding and the installation of stud frames, vapour barriers, lining and insulation) can progress simultaneously with exterior finishing, resulting in a more efficient construction.

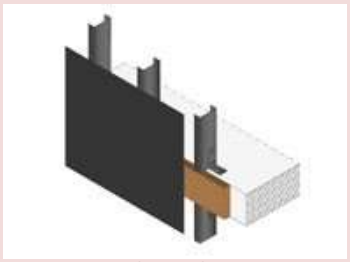
Working to precise plans and dimensions, manufacturers can build windows in advance and transport them to the site, ready for immediate installation. This adds reassurance to project delivery deadlines and significantly contributes to accelerated construction and weather independence compared to traditional ways of construction. In masonry variants, such as aerated concrete or sand lime brick, if the windows are not installed in the insulation layer, the openings must first be measured after erection of the exterior wall.



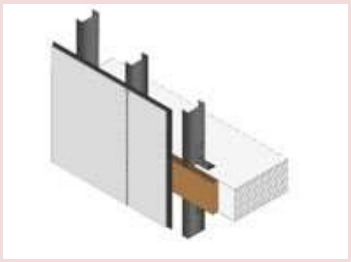
1. Install the scaffold



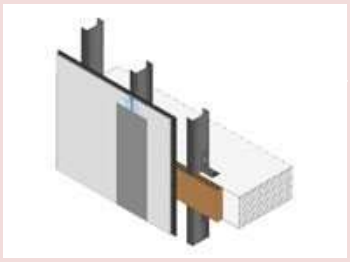
2. Install exterior stud frame



3. Insulate floor front and temporarily bond water barrier to the studs



4. Install ACP outdoor



5. Joint treatment

6. Apply base coat and finishing

Solid construction/traditional construction – example: office building 3,000 m² area

Weeks	–5	–4	–3	–2	–1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Build the solid wall						■	■	■	■	■									
Determination of the wall opening dimensions										■									
Window manufacturing in factory										■	■	■	■	■	■	■			
Window installation																■	■		
Apply the finishing and insulation (if required)																		■	■

EL-KHAYYAT Exterior Wall – example: office building 3,000 m² area

Weeks	–5	–4	–3	–2	–1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Accurate generation of the wall opening dimensions Window manufacturing in factory						■	■	■	■	■	■								
Window installation								■	■										
Building of EL-KHAYYAT Exterior Wall incl. finishing									■	■	■								

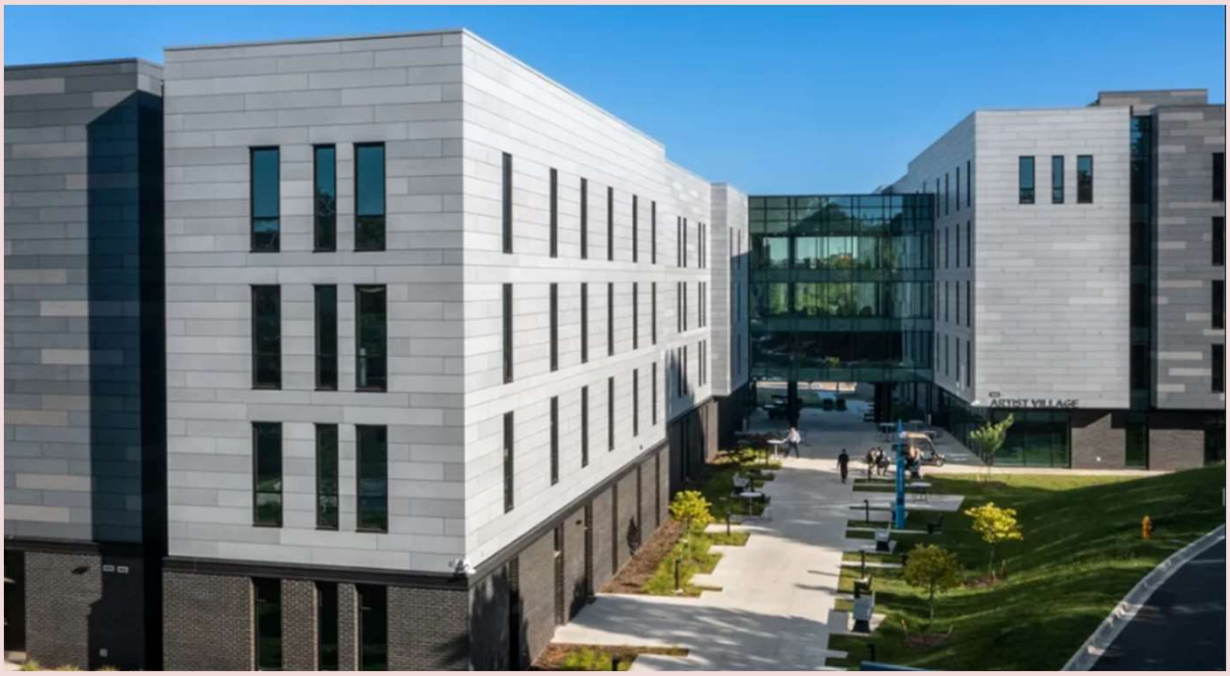
8 WEEKS FASTER

Increased Sale and Rental Value

With EL-KHAYYAT Exterior Wall, it is possible to achieve the same thermal performance as brick and block with a thinner wall thickness, meaning that more internal floor space is available for sale or for rent. The graphs at the bottom of this page show how much of the area occupied by the exterior wall in traditional ways of construction can be converted into usable, productive space by using EL-KHAYYAT Exterior Wall. Equally, speedy construction means that a sale – or rental return – can be achieved more quickly than with traditional construction methods. Both factors combine to ensure a faster and higher return on investment.

OPTIMUM DESIGN, MINIMUM IMPACT

In today's construction environment, there is a drive to reduce the impact of the building on human health and the natural environment. This must be considered at every stage of the process, from planning and design through to construction, use, renovation and demolition. There are various ways this can be achieved, and EL-KHAYYAT Exterior Wall solutions offer strong capabilities in each case.



Materials Efficiency and Waste Reduction

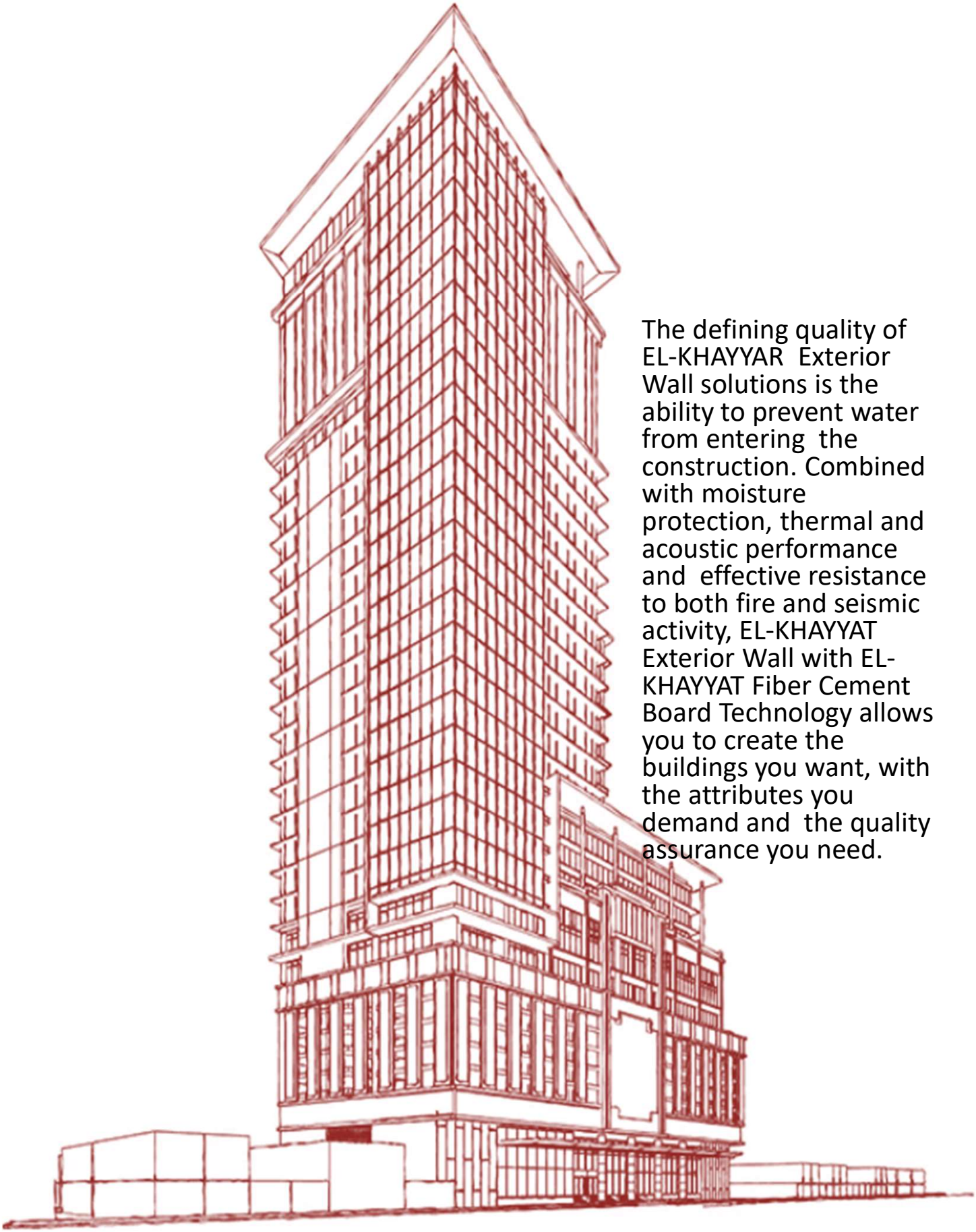
Efficient building materials include products that are reusable, renewable, and/or recyclable. The reuse and recycling of these materials require that buildings at the end of their useful life are not demolished and hauled to landfills. 'Deconstruction' is a method of harvesting and reclaiming useful building materials. Selective demounting and separation of EL-KHAYYAT Exterior Wall with Fiber Cement Board Technology can be carried out easily, reducing the volume of waste while increasing the potential for recycling.

Waste arising during production of EL-KHAYYAT Fiber Cement Board is fed back into the production process. The amount of recyclable materials in the composition of EL-KHAYYAT Fiber Cement Board is approximately 5 - 10% by mass.

Most of the products of EL-KHAYYAT Exterior Wall are classified A+ according to Standard VOC regulation requirement.

To achieve reliable moisture protection, EL-KHAYYAT Exterior Wall has a layered structure with a carefully designed sequence of vapour barring and breathable materials. In an unfavourable climate, this helps to diffuse condensate safely to the ambient air. To protect the insulation, the water and windproof Water Barrier is installed behind the EL-KHAYYAT Fiber Cement Board, while to avoid condensate formation inside the wall, a vapour barrier is installed behind the interior lining.

BUILDING ENGINEERING PHYSICS – A CERTAIN SOLUTION



The defining quality of EL-KHAYYAR Exterior Wall solutions is the ability to prevent water from entering the construction. Combined with moisture protection, thermal and acoustic performance and effective resistance to both fire and seismic activity, EL-KHAYYAT Exterior Wall with EL-KHAYYAT Fiber Cement Board Technology allows you to create the buildings you want, with the attributes you demand and the quality assurance you need.

Moisture protection
Exterior Wall solutions feature a layer design which combines a sequence of vapour barring and breathable materials to enable moisture and condensate within the construction to be safely released. The result is reliable protection in even the most unfavourable climates.

Corrosion protection
The Exterior Wall consists of a lightweight steel construction including fastener, connecting and anchoring materials. The steel components are to be protected against corrosion.
For higher requirements and the corrosion protection category to be chosen, a detailed analysis of the object-related atmosphere has to be carried out. Generally, the category of corrosion protection has to be determined by the planner on an object-related basis.

Fire protection
All components within Exterior Wall are non-combustible, with the exception of the membranes which dissipate quickly without causing damage. By exchanging or adding components, Exterior Wall can meet a variety of fire safety requirements.

Sound protection
Because of its construction and sequence of layers, Exterior Wall creates a spring-mass system which helps maximise sound reduction. Window installations and other penetrations of the wall can influence the sound protection of the exterior wall and have to be considered object-wise.

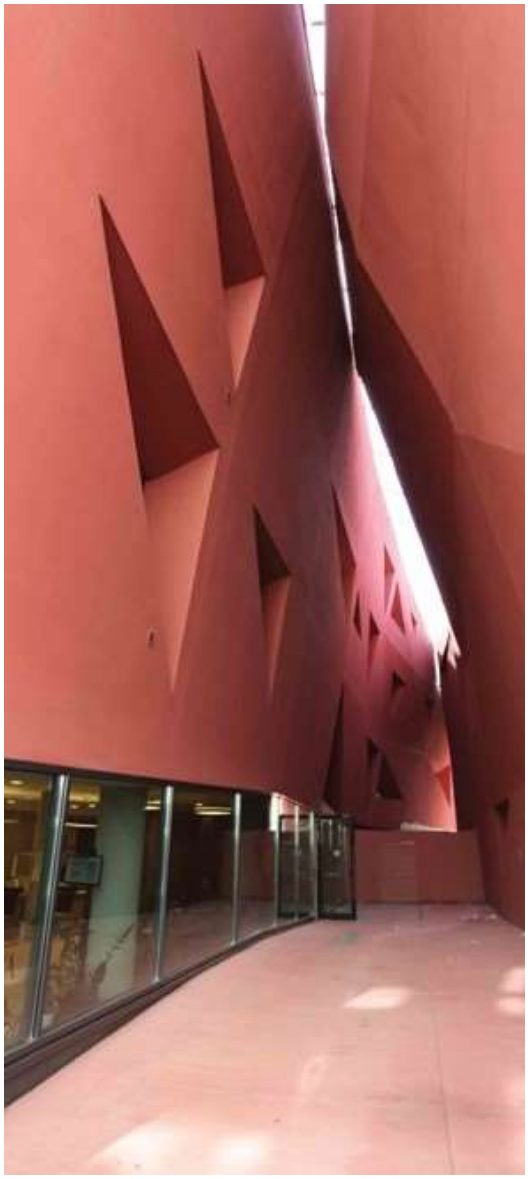
Thermal insulation
Exterior Wall provides superior thermal insulation compared with traditional constructions of an equal thickness. And the thermal performance of each Exterior Wall can be further enhanced with various measures, each helping to minimise the impact of thermal bridging.

Examples include using:

- A second insulation layer, such as ETICS
- A double stud system instead of a single stud
- Intermediate insulation between the stud frames in a double stud system
- Offset/staggered profiles
- Ventilated construction or a construction in front of floors to minimise thermal bridges between Exterior Wall and the concrete slabs

With respect to thermal insulation, the construction related advantages of the rear-ventilated rainscreen facade are the heat insulation and the good room climate conditions in the summer. The discharge of hot air over the ventilation gap prevents a potential heat accumulation or a heat up between facade and insulation. Furthermore the exterior wall warms up to a lesser extent and more slowly than with direct contact with solar radiation. That way the temperature inside the building remains comfortable in the summer, the room climate is less vulnerable to variations in outdoor temperature, and the energy demand for cooling is reduced.

Expansion joints
Expansion joints have to be provided at a distance of ≤ 15 m, in order to allow weather-related expansion and shrinkage. Building separation joints and expansion joints in the primary construction have to be incorporated into the facade. Some facade geometries such as complex surfaces and facades that are subject to increased stress may require additional expansion joints.



Exceptional Weatherproofing, Outstanding Benefits.

Exterior Wall with EL-KHAYYAT Fiber Cement Board Technology comprises comprehensive system solutions, made possible by a core product at the heart of each system – Fiber Cement Board. This key component is a premium product offering unrivalled performance in wet and humid conditions, helping to protect buildings quickly, effectively and permanently. Manufactured from aggregated Portland cement, Fiber Cement Board features coated glass fibre mesh in the back and front surfaces for added strength. The ends are square cut, and the edges reinforced with a smooth finish.

Performance

- 100% water-resistant – dimensional stability
- Mold and mildew resistant
- Freeze-thaw cycle proven
- Non-combustible (A1) – complies with European standards
- Non-combustible - complies according to BS 476-4:1970
- Robust and reliable, safe and hygienic material

Finishing

EL-KHAYYAT Fiber Cement Board portfolio includes mineral finish, dispersion plaster, and silicon synthetic resin plaster.

Moreover it is compatible with...

- Paint
- Brick slips
- Tiles
- Claddings (e.g. aluminium, granite stone, glass and many more)

Installation

- Lightweight cement board – less effort in handling
- Easy to cut using a simple score and snap technique
- No pre-drilling required
- Bending radius of 3 m at full board size, and 1 m with 300 mm wide strips

Physical properties	
Length (mm)	2,400
Width (mm)	1,200
Depth (mm)	12
Min. bending radius for 1,200 mm wide board	3
Min. bending radius for 300 mm wide strip	1
Weight (kg/m^2)	approx. 16
Dry bulk density (kg/m^3) according to EN 12467	approx. 1,150
Bending strength (MPa) according to EN 12467	≥ 7
Tensile strength perpendicular to the plane of the board (N/mm^2) according to EN 319	0.65
Shearing strength (N) according to EN 520	607
pH- value	12
Thermal conductivity (W/mK) according to EN ISO 10456	0.35
Thermal expansion ($10^{-6} K^{-1}$)	7
Water vapour diffusion coefficient (–) according to EN ISO 12572	66
Length variation 65% - 85% humidity (mm/m) according to EN 318	0.23
Thickness variation 65% - 85% humidity (%) according to EN 318	0.2
Building material class according to EN 13501	A1 non-combustible
Certificate of conformity (COC) according to BS 476-4:1970 (Singapore)	non-combustible
Fungus Resistance according to ASTM D3273-16	Rating 10 (0 defacement by mold growth)
Fungus Resistance according to ASTM G21-15	Rating 0 (No fungal growth)

Available in a multitude of modular, dedicated systems, Exterior Wall with EL-KHAYYAT Fiber Cement Board Technology can be quickly and easily configured to meet a range of design challenges in the planning phase – from complex physical requirements to commercial or economic considerations. The examples on the following pages represent just a small sample of possible permutations.

Exterior Wall with EL-KHAYYAT Fiber Cement Technology comes in two basic types: as drywall in skeleton constructions (e.g. reinforced concrete) or as a rear-ventilated rainscreen facade for use above solid substructures such as brick or concrete. In both cases, the primary construction is carrying the structural load, while the lightweight Exterior Wall solutions carry their own dead weight and the wind loads.

Rear-ventilated rainscreen facade

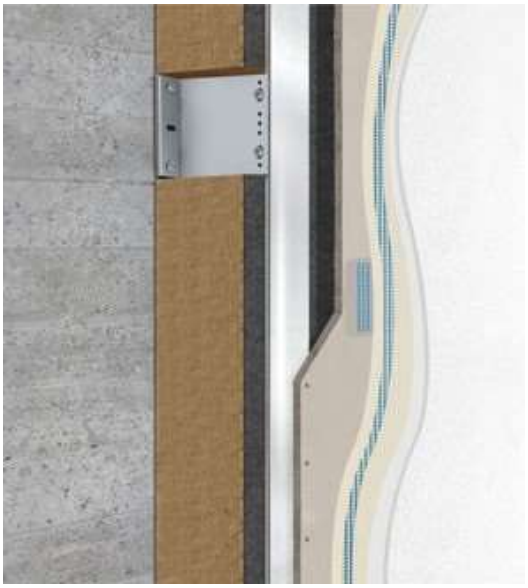
With classic rear-ventilated rainscreen facades in front of massive constructions such as brick or concrete, thermal insulation is separated from the weather protection materials ensuring a constant flow of air in the ventilated space to remove moisture from the building. On projects where insulation is not required – typically during some purely cosmetic renovations –Exterior Wall can be used to create very thin facade constructions.

EW-110

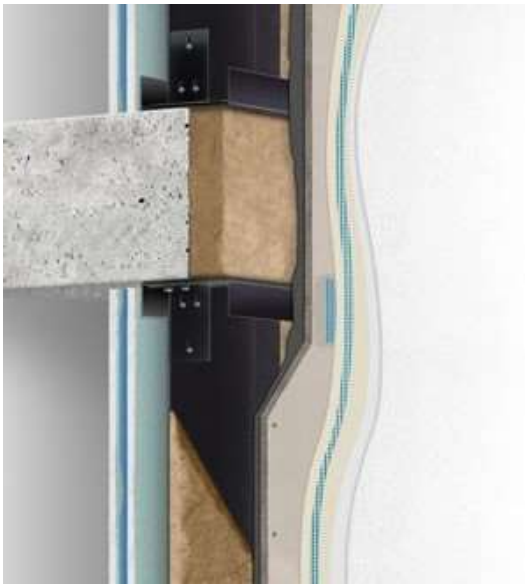
Single stud exterior wall

Where there are low or no special requirements for thermal and sound insulation, single stud system is an ideal solution. Lightweight and with a thin profile, it is quick and easy to install. Extra insulation can be added by attaching an external thermal insulation composite system (ETICS) to the front of EL-KHAYYAT Fiber Cement Board.

EW-111



- Rear-ventilated rainscreen façade
- With thermal insulation



- Single stud

r-ventilated rainscreen facade

classic rear-ventilated rainscreen facades in front of massive constructions such as or concrete, thermal insulation is separated from the weather protection materials ring a constant flow of air in the ventilated space to remove moisture from the ing. The rear-ventilated rainscreen facade EW-110 with Fiber Cement Board is an solution for new buildings or for renovations and upgrades. Capable of nmodating virtually any thickness of mineral wool insulation, it is able to meet even ıost demanding energy standard. Moreover, because of the non-combustibility of ıaterial, it is suitable for any height of building.

EW-111

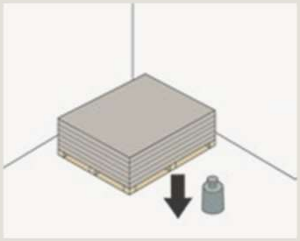
Single stud exterior wall

With metal profile systems and an installation time of 82 min/m², the EW-111 system is a straightforward solution for buildings with no remarkably challenging requirements for sound and thermal insulation and for regions with low seasonal differences in temperature and humidity. It consists of a single metal stud frame planked with Fiber Cement Board on the outside and with a double layer of gypsum boards on the inside. For rooms with special priorities such as water resistance, acoustic control or fire resistance, those interior boards can easily be replaced by high - performance boards from versatile range of wall linings.

PRODUCT HANDLING

Boards

- Always carry the boards upright, or use board rollers. Handle with fork lift or crane as palletted goods. Take care not to damage corners and edges when setting the boards down. Place boards down on their long edge before laying them flat.



- Ensure that the base is strong enough to support the boards.

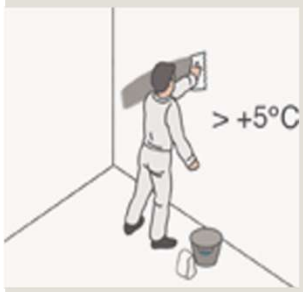
- Protect boards from moisture and weathering before they are installed. Boards which have become damp must be dried on both sides on a flat surface prior to fitting. Before installing, condition the boards to the ambient temperature and humidity.

Profiles

- Protect profiles from moisture and weathering before they are installed. Products should not be left permanently exposed to the elements.

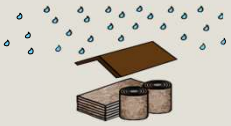
Powder materials

- Do not apply joint fillers, basecoat or finishing materials in temperatures less than +5°C.



- Store bags in a dry place and in original packaging.

Insulation



- Insulation materials are supplied enclosed in packaging which is designed for short term protection only. For longer term protection on site, the product should be stored either indoors, or under cover and off the ground. Products should not be left permanently exposed to the elements.

Health and safety

- Avoid unnecessary dust on job site when using electrical saw. Keep sanding and other dust generation to a minimum. Maintain adequate ventilation and/or wear suitable protection.
- Exercise care when using power tools and take all necessary precautions.
- Follow instructions on packaging when applying system accessories.
- When using powdered products, mix with water in well-ventilated conditions. Avoid contact with eyes and skin. In the event of contact with the eyes, irrigate with plenty of clean water immediately.
- When handling insulation or cutting boards which contain glassfibre, wear suitable protection including face mask and gloves. Wear protective glasses when working overhead.
- Follow national health and safety regulations at all times.