KNAUF INSULATION

اصنع في الإمارات
MAKE IT
IN THE EMIRATES

FAÇADE SLAB INSULATION DESIGN GUIDE

Sustainable, non-combustible, high performance insulation solutions.

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For more information please visit www.knaufinsulation.ae

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FOR A
BETTER
WORLD
Learn more about our sustainability strategy at
www.knaufinsulation.com/en/sustainability

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CLADDING AND CURTAIN WALL SYSTEMS

CLADDING SYSTEMS

There are a wide variety of proprietary cladding systems available most of which have the insulation installed on the external face of a masonry or concrete wall. This setup keep internal temperatures stabilized by preventing heat losses in the winter and reducing heat gains in the warmer months. Cladding systems are also lightweight when compared to brick and masonry solutionsand provide the designer with a wide range of aesthetic options.

CURTAIN WALL SYSTEMS

Curtain walls usually consist of a proprietary non load bearing lightweight frame, often designed to incoprorate glass panels acting as the weatherproof facade and allowing daylight to penetrate into the building. There are several types of curtain walling including factory built unitized systems which are typically comprised of in sulation behind a glass, natural stone or metal facing.

Whenever a proprietary cladding or curtain wall system is used, the manufacturer's recommendations should be followed.

WEATHER PROTECTION

Cladding systems are designed to keep both structural frame and insulation dry, due to the design of the envelope itself and the airspace between the thermal insulation and the cladding panels. Drained and ventilated systems work by allowing air to enter at the base and escape at the top. The ventilated cavity allows water penetrating the panel joints to be partly removed by the 'stack effect' and partly removed by running down the rear face of the panels and out by the base of the system. Curtains walls typically consist of a glass facade which is both waterproof and weather resistant.

THERMAL AND ACOUSTIC PROTECTION

The insulation layer behind the cladding, glass or stone panels contribute greatly to meet energy and green building U-value regulations, keeping the interior temperatures at a comfortable level and energy costs controlled. Due to the nature of the material, as airborne sound waves hit the insulation, a fraction of them are reflected or absorbed thus minimizing incoming exterior noise and maintaining pleasant acoustic levels for occupants.

FIRE PROTECTION

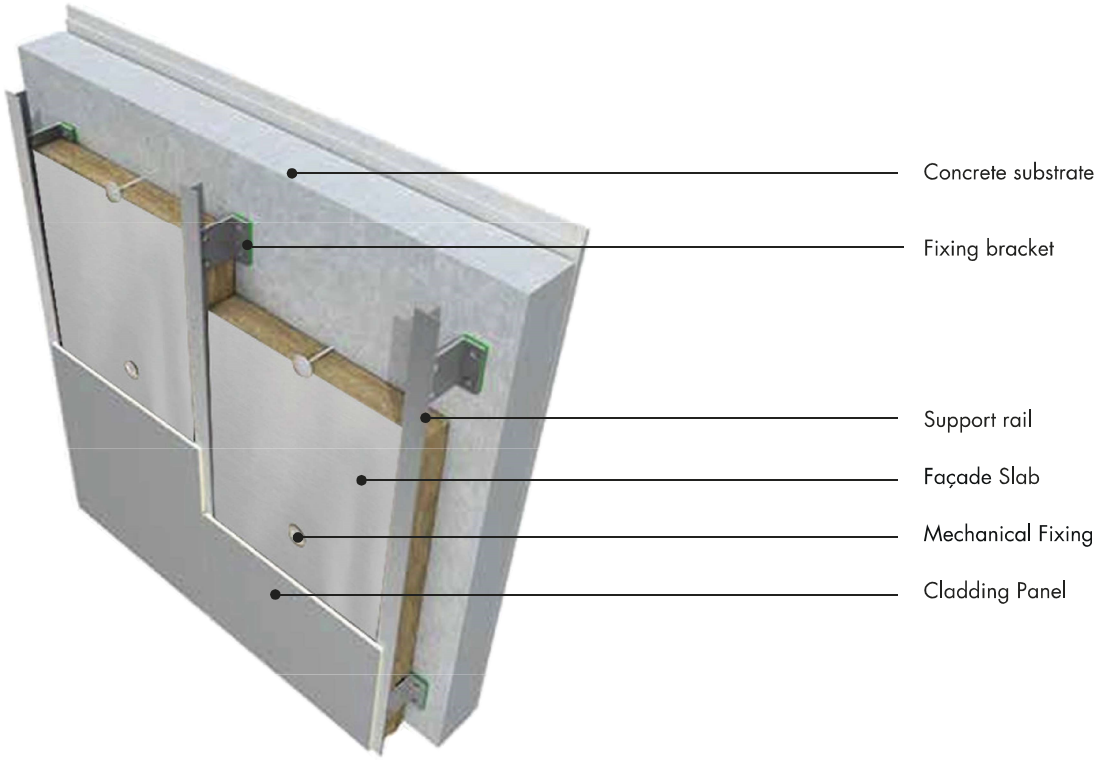
The cavity barrier needs to be as per the system performance requirement and ensure compartmentation is established between the façade skin and the primary substrate. The fire barrier should be selected and installed as per Civil Defense Regulations, at the junctions between the wall and every compartment floor, wall or door assembly that forms a fire-resisting barrier.

Insulation products in this document meet the requirements of non-combustibility mandated in the Fire Safety Regulations and are approved for use in building envelope applications.

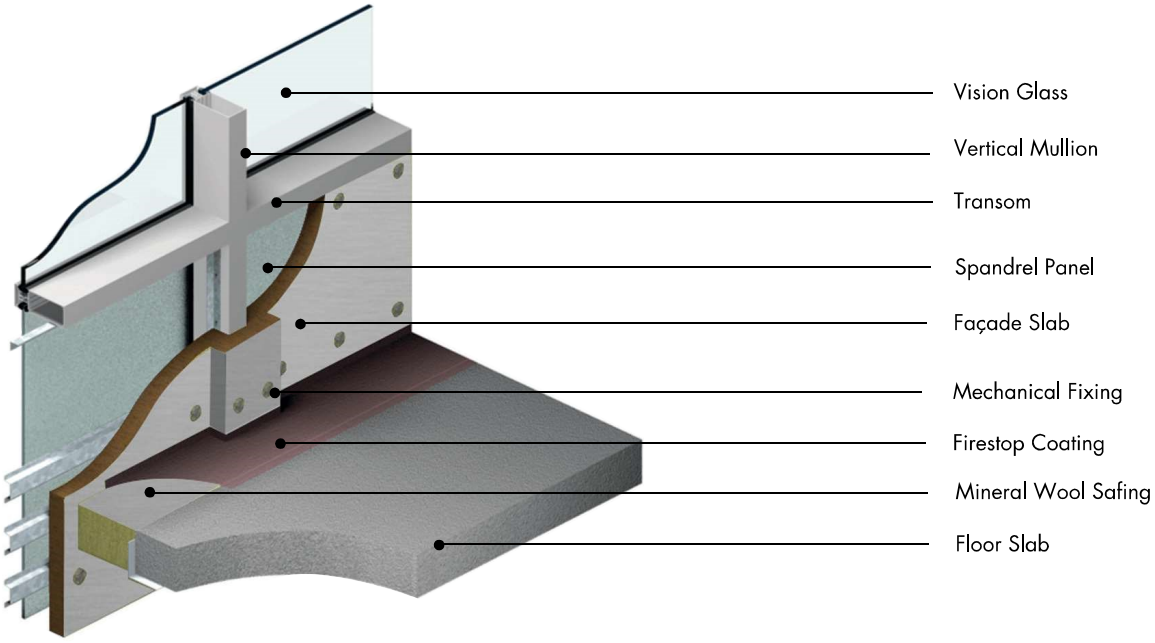
Project: One Za'abeel
Location: Dubai, UAE

TYPICAL FAÇADE SYSTEMS

CONCRETE CLADDED WALL INSTALLATION



CURTAIN WALL INSTALLATION



PERFORMANCE BENEFITS

FIRE PERFORMANCE

Façade Slab products achieve the highest possible Euroclass reaction to fire classification in accordance with BS EN 13501-1 and are classified as non-combustible, with A1 and A2-s1,d0 ratings.

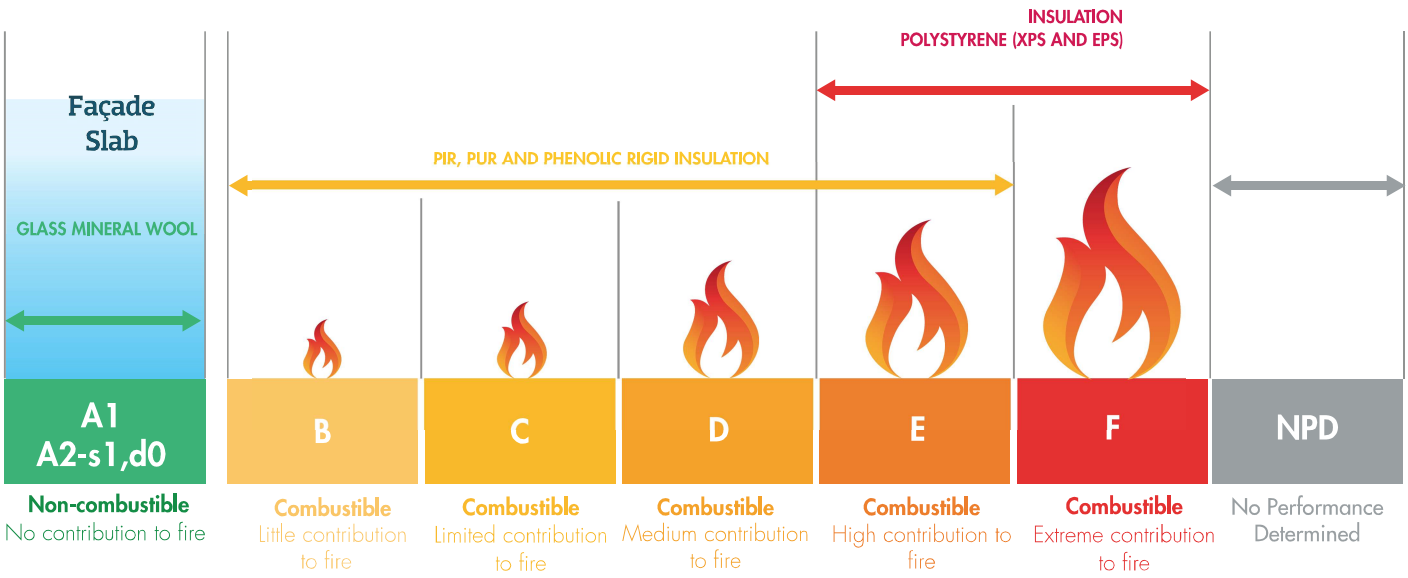
As the latest UAE Fire and Life Safety Regulations demand that materials intended for Cladding and Curtain Wall must meet a Euroclass reaction to fire classification of A1 or A2-s1,d0 when tested in accordance with BS EN 13501-1 , the Facade Slab product range fully complies with the Code.

This requirement is applicable to any building, from super high-rise (taller than 90m) and high-rise (between 23 to 90m) to malls, schools, hospitals, theme parks and industrial facilities.

Additionally, façade assemblies must be system tested and obtain a pass criteria in accordance with NFPA 285 or BS 8414 and all products must be registered with the local Civil Defense. Knauf Insulation has conducted a wide series of tests with several cladding manufacturers, ask your technical team for more details.

EUROCLASS REACTION TO FIRE CLASSIFICATION TABLE

Depending on the level of contribution to the development of fire, materials are classified from the highest class A1 - no aid to fire buildout, to the lowest class F - severe contribution. Façade Safety Codes disallow the use of any combustible material classified as B or below.



Note:

The **s** and **d** part of the classification refers to the total smoke and number of droplets emitted during the first 10 minutes of exposure to fire, classed as:

a) s1 - contributes little or insignificantly to smoke development

b) d0 - does not create flaming particles or droplets

NPD = No Performance Determined. No performance declared and unknown reaction to fire peformance.

Flames are illustrative and the chart should only be used for guidance. Always confirm the declared Reaction to Fire Classification of a product before use.

PERFORMANCE BENEFITS

THERMAL PERFORMANCE

Facade Slabs are manufactured with densities ranging from 24 to 48 kg/m3, with declared thermal conductivities of 0.035 W/mK up to 0.031 W/mK, in accordance with BS EN 13162. These values are certified and regularly tested by DCL.

ACOUSTIC PERFORMANCE

Acoustic performance is becoming an increasingly important consideration when designing a building due to the increase in urbanization and, as such, the rise in noise levels around populated areas.

Our Glass Mineral Wool Facade Slabs have excellent sound absorption properties with a noise reduction rate between 90 and 100%, which contribute towards the acoustic performance of the structure onto which it is mounted.

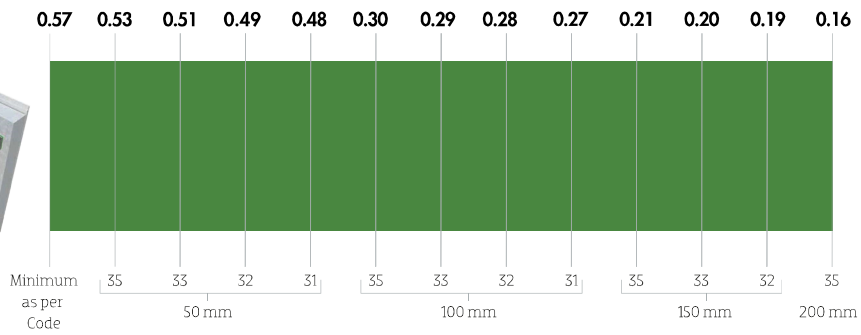
PRODUCT SPECIFICATIONS

Product Name	Facing	Thickness (mm)	Length (m)	Width (mm)	Area per pack (m^2)	Thermal Conductivity (W/m.K)	R Value (m^2.K/W)	Density (kg /m^3)	NRC
Facade Slab 31 Max	FS	50 to 100	1.20	1000	3.60 up to 7.20	0.031	1.612 up to 3.225	48	1.00
Facade Slab 32 Ultimate	FS	50 to 150	1.20	1000	2.40 up to 7.20	0.032	1.563 up to 4.688	36	0.95 to 1.00
Facade Slab 33 Super	FS	50 to 150	1.20	1000	2.40 up to 7.20	0.033	1.515 up to 4.545	32	0.95 to 1.00
Facade Slab 35	FS	50 to 200	1.20	1000	1.20 up to 7.20	0.035	1.429 up to 5.714	24	0.90 to 1.00

SOLUTION OPTIMIZER

Cladding System with Insulation

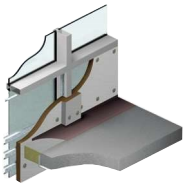
Products: Façade Slab 35, 33 Super, 32 Ultimate and 31 Max

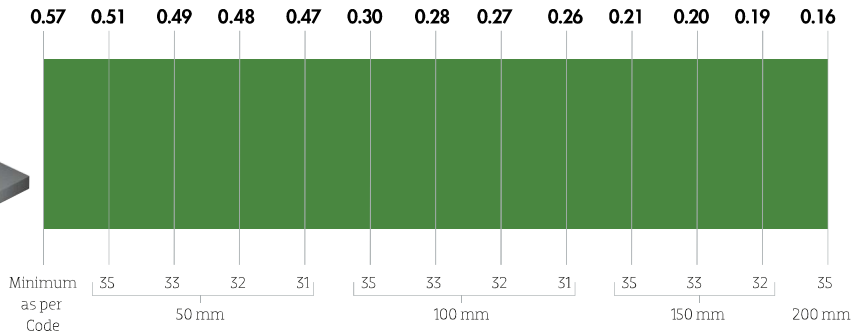


Achievable U-values of cladding assemblies may vary, depending on system configuration. Contact our technical support team for further information.

Curtain Wall System with Insulation

Products: Façade Slab 35, 33 Super, 32 Ultimate and 31 Max





Achievable U-values of curtain wall assemblies may vary, depending on system configuration. Contact our technical support team for further information.

Technical Support Team **+971 2 551 2453 | info@knaufexeedinsulation.ae | www.knaufinsulation.ae**

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PRODUCT QUALITY

PRODUCT CERTIFICATIONS

All products listed in this document have been assessed by independent third party laboratories and local authorities for use as thermal and acoustic insulation material on cladding systems, curtain walls and ventilated facade on new and existing reinforced concrete, masonry or steel-frame walls.

Façade Slab is regularly tested and certified by fire safety authorities in accordance with the latest building codes.

ASSEMBLY TESTING

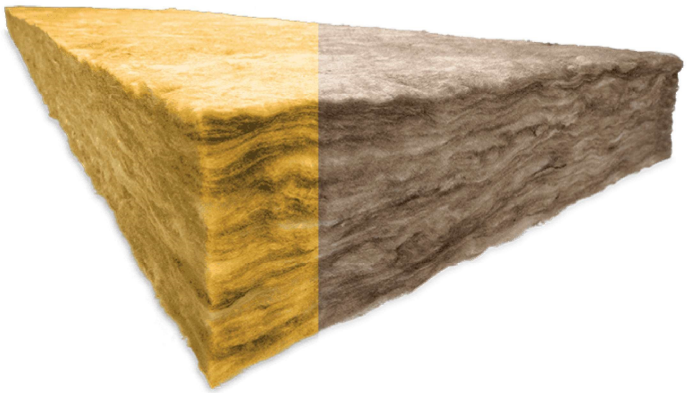
Facade Slab has been extensively tested under NFPA 285 as part of cladding facade assemblies along with major ACP local manufacturers. Contact our technical support team for more details.

Manufacturer	Cladding Product	Insulation	Cavity (mm)
Interplast	Alupex A2	Facade Slab 32 Ultimate	350
	Alupex FR	Facade Slab 32 Ultimate	70
Emirates Panel Manufacture	Alcopex FR & Corebond FR	Facade Slab 32 Ultimate	75
	Firebond FR, Pan Bond FR & Emirates Panel FR	Facade Slab 32 Ultimate	75
RMK Industries	Alcobond A2	Facade Slab 32 Ultimate	350
	Cladbond A2	Facade Slab 32 Ultimate	244
	Alcobond & Cladbond FR	Facade Slab 32 Ultimate	104
Eurocon	Alubond A2	Facade Slab 35	100
	Alubond A2	Facade Slab 32 Ultimate	300
	Alubond FR	Facade Slab 32 Ultimate	70
3A Composites	Alucobond A2	Facade Slab 33 Super	104
Alucopanel Middle East	Alucopanel A2	Facade Slab 32 Ultimate	100
	Alucopanel A1	Facade Slab 32 Ultimate	100
Mitsubishi Chemical Infratec	Alpolic A2	Facade Slab 32 Ultimate	75
Al Jaber ACP	Ajecobond FR	Facade Slab 32 Ultimate	129
Elval Colour SA	Etalbond A2	Facade Slab 33 Super	113
Eternit AG	Swisspearl Fibre Cement Tile	Facade Slab 32 Ultimate	105
Moeding Keramikfassaden	Alphaton Terracotta Tile	Facade Slab 32 Ultimate	100

EXPERIENCE A HIGHER LEVEL OF SUSTAINABILITY WITH OUR REVOLUTIONARY BIO-BASED BINDER

Traditional (mineral wool insulation with Phenol Formadehyde resin)

with ECOSE TECHNOLOGY



Benefits for Speficiers and Installers

Eurofins Gold Certified Indoor Air Quality

- Enhancement of indoor air quality
- Proved compliance to all relevant labels on VOC emissions
- No dyes, artificial colours or harmful substances

Sustainable Products

- Contribute extensively to several green building rating schemes such as LEED, BREEAM, ESTIDAMA, AL SA'FAT
- High environmental standards with ISO 14000 certifications
- Less energy intensive to make therefore more eco-friendly

Meets Technical Requirements

- Product properties meeting or exceeding requirements from DCL, AD, SASO, UL, ASTM, NFPA, BS and Civil Defense

Safety and Reliability

- Meets the requirements of EN 13501-1 A1/A2, ASTM E84 and BS 476 Class 0 & 1
- High manufacturing quality meeting ISO 9000 standards

User Friendly

- Low weight, high elasticity and resistance to handling or mechanical abuse
- Easy to cut
- No odours

SUPPORTING INFORMATION

MECHANICAL DAMAGE

If mineral wool insulation is subject to mechanical damage, where the overall physical dimensions of the product are changed, then the thermal performance of the product may be altered. If the product thickness is reduced then the thermal resistance will be reduced proportionally to the reduction in thickness.

If the product is damaged at edges and corners so that the slabs are no longer able to be tightly butted up to each other (with all joints closed), then the thermal performance of the system will be affected due to increased heat loss in these areas. This sort of physical damage could occur due to exposure to very high winds and resulting suction forces or transportation of debris, water jetting or high water flow rates typically from a gutter or an unintended drainage point. This sort of physical alteration could occur in all thermal insulation products under such conditions.

It is good practice to examine the insulation prior to installation of the rainscreen cladding, particularly if any product has been left exposed. This can be done by inspection in order to ensure that no damage has occurred in the time between the installation of the insulation and the weatherproof cladding. After extreme weather events, it is recommended that all materials making up the system should be inspected.

INSTALLATION

For better results, follow the system manufacturer's recommended build sequence for the system under construction or consideration. Before installing, check the physical condition of the insulation immediately prior to the installation of the rainscreen cladding and undertake any necessary repairs.

HEALTH & SAFETY

All products manufactured by Knauf Insulation are made with non-carcinogenic fibers, complying with the exoneration criteria of Note Q of the EC 1272/2008 and are certified by EUCEB.

Mineral Wool is not classified as chemical irritant, however some people may experience a temporary discomfort when handling mineral wool products. This is a mechanical reaction to the coarse fibers and generally abates shortly after exposure has ceased.

People who experience discomfort, or those with existing skin problems, should wear gloves or other suitable protection. Loose fitting clothing should be worn, avoiding constrictions at wrist and neck. If working with products above shoulder height, eye protection should be worn.

Any fibres that are inhaled do not constitute a health risk, since these are readily removed or dissolved by the body and do not cause asthma or respiratory disease. Nonetheless, it is always prudent to minimise exposure to any form of dust in the workplace.

STORAGE

Facade Slabs are supplied wrapped in polythene packs or shrink wrapped pallets which are designed for short term protection only. For longer term protection on site the product should either be stored indoors or under cover and off the ground. The product should not be left exposed to the elements.

OUR PROJECTS

Jewel of the Creek

Creek Beach

The Royal Atlantis

Marsa Al Arab

Sunset Square

The Cove

Downtown Views

Ajdan Rise

One Zabeel

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