Promat

Compartmentation

Ventilation & smoke extraction

SUPALUX® Passive fire protection

Building & Construction Solutions

HKGLS Code No. GL-008-011
Certification No. HK02148

SINGAPORE GREEN BUILDING PRODUCT SGBC VERY GOOD

Technical manual

Singapore version

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Contents

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Defining types of fire

The fire resistance performance of a specimen of an element of building construction varies. It depends on the ability of the system to withstand exposure to defined heating and pressure conditions. The defined heating condition refers to recognised temperature/time fire curves (Figure 1).

Fire curves are the simplest hypothesis accurately representing a fire by predefined temperature and time relationships. Fire curves have evolved historically for fire resistance furnace tests of building materials and elements of construction for classification and verification.

Fire curves recognised by national and international standards organisations are as follows:

1. Standard Cellulosic Time-Temperature Curve

This fire curve covers the basic scenario of a fire of general combustible items of building content and materials of construction. It is based on ISO parameters and is used with – in some cases minor modifications – in test standards throughout the world, including AS 1530: Part 4, ASTM E119, BS 476: Part 20, BS EN 1363: Part 1, DIN 4102: Part 2 and ISO 834: Part 1. It is a model of a ventilated controlled natural fire of general building materials and contents.

2. Hydrocarbon Curve

This curve is a simulation of a ventilated oil fire with a rapid temperature increase. The curve represents combustible hydrocarbons and is applicable where petroleum fires might occur, i.e. petrol or oil tanks, certain chemical facilities etc. In fact, although the hydrocarbon curve is based on a standardised type fire, there are numerous types of fire associated with petrochemical fuels which have wide variations in the duration of the fire, ranging from seconds to days. Please consult Promat for further information.

3. Modified Hydrocarbon (HCM) Curve

As a result of French tunnel regulations for an enhanced version of the Hydrocarbon Curve, the maximum temperature of HCM is 1300°C, instead of the 1080°C benchmark of Standard Hydrocarbon Curve. However, the temperature gradient in the first few minutes of HCM fire is as severe as all other hydrocarbon based fires (e.g. RWS, HC), possibly causing thermal shock to the surrounding concrete structure and concrete spalling is a likely result.

4. RABT Curve

Developed in Germany as an outcome of a series of large scale test programmes such as the Eureka project. In the RABT curve (Richtlinien für die Ausstattung und den Betrieb von Straßentunneln or "Guideline for equipment and operation of road tunnels"), temperature rise is very rapid up to 1200°C, typically within 5 minutes. Duration of the 1200°C exposure is shorter than other curves with the temperature drop off starting to occur at 30 or 60 minutes.

5. RWS Curve

The curve was developed by Rijkswaterstaat (RWS), the Ministry of Transport in Netherlands. This model of a petroleum based fire of 300MW load fire in an enclosed space such as a tunnel, is often specified and internationally accepted for use in tunnels. Temperature increase is 1200°C at 5 minutes and after 30 minutes is 1300°C.

6. External Fire Exposure Curve

This model is for fire exposure external to a building and open to the atmosphere, where there are additional avenues for heat dissipation. There is a lower level of heat exposure, and the temperature increase is approximately 680°C after 20 minutes and remains constant throughout.

7. Slow Heating Curve

This curve simulates a slow growing fire. It is basically a combination of two curves, one for the first 21 minutes representing the smouldering effect of materials and one for subsequent periods representing the growth of the fire towards flashover.

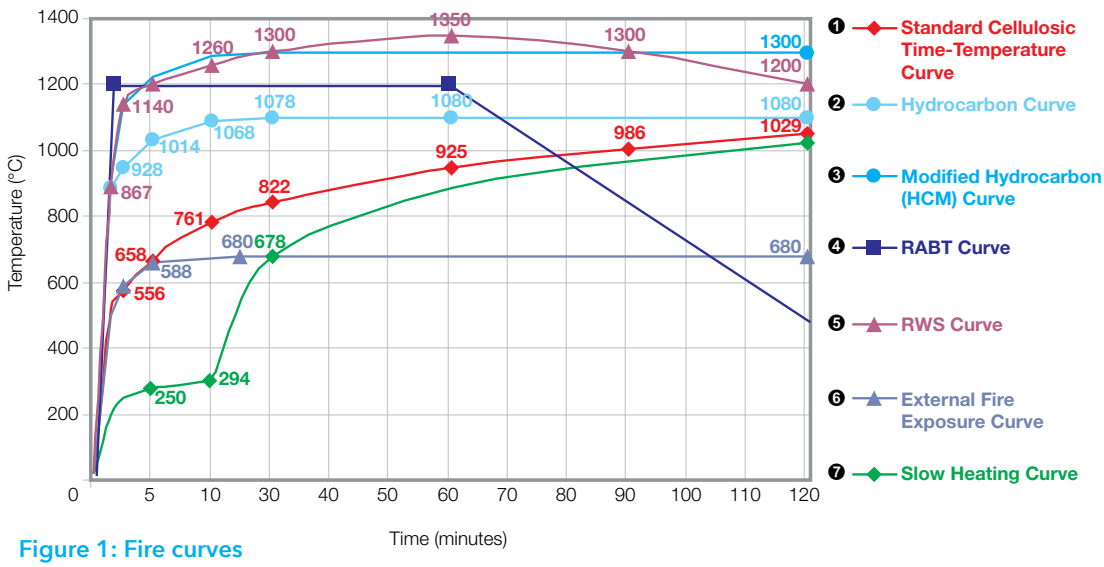

Figure 1: Fire curves

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Fire resistance test standards – fire reaction in testing of materials and products

This category provides details of anticipated extent to which materials or products burn and contribute to the development of fire.

Australian / New Zealand Standards

AS 1530: Part 1: 1994

"Combustibility tests for materials"

This describes a classification of materials as either non combustible or combustible. It is the most stringent standard for fire performance of materials and gives a measure of heat and flames generated by the material under standard heating conditions. Non combustible materials can be used without restriction in any part of building construction and finishing. Their use ensures that hazards due to smoke and toxic gases are minimised and that the fabric of a building makes no contribution to a fire. All Promat board and cementitious spray products are classified as non combustible.

AS 1530: Part 3: 1999

"Simultaneous determination of ignitability, flame propagation, heat release and smoke release"

This standard is used to assess early fire hazard of building materials and components according to their tendency to ignite and to propagate flame, their heat release once ignition has occurred and the likelihood of smoke release. Four indices generated by the test are ignitability, spread of flame, heat evolved and smoke evolved.

AS/NZS 3837: 1998

"Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter"

The test method is used to determine the ignitability, heat release rates (HRR), mass loss rates, effective heat of combustion and smoke release of materials and products. The method of performance measurement uses a cone calorimeter for measurement of the HRR time to ignition and smoke production.

British Standards

BS 476: Part 4: 1970

"Non combustibility test for materials"

This describes a classification of materials as either non combustible or combustible. It is the most stringent standard for fire performance of materials and gives a measure of heat and flames generated by the material under standard heating conditions. Non combustible materials can be used without restriction in any part of building construction and finishing. Their use ensures that hazards due to smoke and toxic gases are minimised and that the fabric of a building makes no contribution to a fire. All Promat board and cementitious spray products are classified as non combustible.

BS 476: Part 6: 1989

"Method of test for fire propagation for products"

The standard specifies the method to determine a fire propagation index of materials. The test method takes into account the ignition characteristics, the amount and rate of heat release and thermal properties evolved by the product while subjected to standard heating conditions in relation to their ability to accelerate the rate of fire growth. Test results are given by an index of overall performance. Fire propagation index (I) is based on index of performance (S); and three individual sub indices of specimens. The higher the value of the sub indices, the greater the ease of ignition and flame spread.

BS 476: Part 7: 1997

"Method of test to determine the classification for the surface spread of flame of products"

The standard specifies the test to measure lateral spread of flame along the surface of a product and classification system. Classification 1 to 4, in descending order, is based on rate and extent of flame over the surface under standard heating conditions. As all Promat products are non combustible they are also classified as Class 1, the highest rating in surface spread of flame.

Class O (as defined in relevant building regulations)

- → Composed throughout of materials of limited combustibility, or
- → Class 1 surface spread of flame (in accordance to BS 476: Part 7) material which has a fire propagation index (I) of not more than 12 and a sub-index (i1) of not more than 6 (in accordance to BS 476: Part 6).

It should be noted that there is no test standard which can provide a report confirming that a product has a Class O status. The test reports for non combustibility (BS 476: Part 4) or surface spread of flame (BS 476: Part 7) and fire propagation (BS 476: Part 6) must be used to ascertain the classification status of the product.

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Fire resistance test standards – fire reaction in testing of construction systems

This category provides the necessary details related to the ability of a specimen of system construction to prevent the spread of flame or smoke in a fully developed fire and maintain structural stability of the tested specimen.

Testing the fire resistance of a building element involves determining its behaviour when exposed to a particular heating condition and pressure, normally those representing a fire in an enclosed space, e.g. a room. Fire resistance is one of several properties of the structure or system, and thus is not simply a property of the specific materials used in the structure or system.

The resistance to fire performance test standards most commonly referred to are the British Standards (BS 476: Parts 20 to 24).

The European Norms (EN 1363 to 1366) will replace BS 476 gradually; please consult Promat for the current equivalents. In the European Norms, the building elements and structures are to be tested and classified in respect of their fire separation performance and smoke tightness according to a system that indicates the properties by a letter (e.g. R, E or I) and an index that indicates the time for each specific property is maintained.

Australian Standards

AS 1530: Part 4: 2014

"Fire resistance test of elements of construction"

The standard follows general principles and procedures contained in ISO 834 series, and other related documents but consolidates them in one document. This standard provides a method for determining the fire resistance of building elements including walls, floors, roofs, ceilings, columns, beams, doorsets, uninsulated glazing, air ducts, service penetrations and fire damper assemblies. The Building Code of Australia (BCA) recognises compliance to the code when the relevant system of construction is tested in accordance to this standard.

AS 4072: Part 1: 2005

"Components for the protection of openings in fire resistant separating element (Part 1: Service penetrations and control joints)"

This part specifies requirements for the testing, interpretation of test results, and installation of penetration sealing systems and control joints sealing systems in fire resistant elements of construction. The standard is based on the testing of standard configurations and provides minimum requirements for these fire stopping systems. It is intended to complement the fire protection requirements of the BCA and is to be read in conjunction with the testing regimes outlined in AS 1530: Part 4.

British Standards

BS 476: Part 20: 1987 (BS EN 1363: Part 1: 2012)

"Methods for determination of the fire resistance of elements of construction (general principles)"

This part describes the general procedures and equipment required to determine the fire resistance of elements of construction. It should be read in conjunction with BS 476: Parts 21 to 24 as appropriate, which describe the detailed procedure for the testing of individual elements of construction.

BS 476: Part 21: 1987 (BS EN 1365: Parts 1 to 4)

"Methods for determination of the fire resistance of loadbearing elements of construction"

This standard describes methods for determining the fire resistance of loadbearing beams, columns, floors, flat roofs and walls. Beams and columns are assessed in terms of loadbearing capacity while dividing elements such as floors, flat roofs and walls are measured in terms of loadbearing capacity, integrity and insulation.

BS 476: Part 22: 1987 (BS EN 1364: Parts 1 and 2: 1999)

"Methods for determination of the fire resistance of non loadbearing elements of construction"

This standard describes methods for determining the fire resistance of non loadbearing partitions, doorsets, shutter assemblies, ceiling membranes and glazed elements of construction with respect to integrity, and where appropriate, insulation.

BS 476: Part 23: 1987

"Methods for determination of the contribution of components to the fire resistance of a structure"

This standard describes test methods for:

determination of the contribution of suspended ceilings to the fire resistance of steel beams, and

determination of the contribution of intumescent seals to the fire resistance of timber door assemblies.

BS 476: Part 24: 1987 (BS EN 1366: Part 1: 1999)

"Methods for determination of the fire resistance of ventilation ducts"

This standard describes the methods used to test and measure the ability of a duct assembly to prevent the spread of fire from one fire compartment to another. Results are expressed in terms of stability, integrity and insulation.

BS 7346: Part 3: 1990

"Components for smoke and heat control systems"

This standard describes methods for determining the fire resistance of smoke curtains where those items are used as part of a smoke control system.

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European Standards

BS EN 13501: Part 2: 2007

Fire classification of construction products and building elements (Part 2: Classification using data from fire resistance tests, excluding ventilation services)

This standard aims to harmonise procedures for classification for resistance to fire of construction products and elements based on defined test procedures using data from fire resistance and smoke leakage tests.

EN 1363: Part 1: 1999

Fire resistance tests (Part 1: General requirements)

This part establishes the general principles for determining fire resistance of various elements of construction, where aspect and test procedures are common to all specific test methods.

EN 1363: Part 2: 1999

Fire resistance tests (Part 2: Alternative and additional procedures)

This part identifies a specific heating scenario where standard conditions given in EN 1363: Part 1 are inappropriate due to other additional factors that need to be considered such as the nature of the products or systems, intention of use and regulatory requirements. Alternative conditions include the hydrocarbon curve, slow heating and external fire exposure curves.

EN 1364: Part 1: 1999

Fire resistance tests for non loadbearing elements
(Part 1: Walls)

Purpose of test is to measure the ability of representative specimens of non loadbearing wall, with and without glazing for internal and external construction, except for curtain wall and walls with doorsets.

EN 1364: Part 2: 1999

Fire resistance tests for non loadbearing elements
(Part 2: Ceilings)

This test is applicable to ceilings which are either suspended by hangers or fixed directly to a supporting frame, and self-supporting ceilings. Test of ceilings are carried out in two modalities, i.e. fire from below the ceiling with no cavity above, and fire from above the ceiling where fire is contained in a closed cavity.

EN 1364: Part 3: 2006

Fire resistance tests for non loadbearing elements
(Part 3: Curtain walling – full configuration, complete assembly)

This method is applicable to curtain walling systems, supported by floor slab(s) designed for the purpose of providing fire resistance determined under internal or external exposure conditions.

EN 1364: Part 4: 2007

Fire resistance tests for non loadbearing elements
(Part 4: Curtain walling – part configuration)

This standard specifies the method for determining fire resistance of parts of curtain walling incorporating non fire resistant infill product to internal or external fire exposure. The test method includes assessment regarding falling parts that are liable to cause personal injury. It can also be used to determine any increase in the field of application for fire resistance of parts of curtain walling tested to EN 1364: Part 3.

EN 1365: Part 1: 1999

Fire resistance tests for loadbearing elements (Part 3: Walls)

This test measures the ability of a representative specimen of a loadbearing wall to resist spread of fire from one side and to maintain its loadbearing capacity. The test is applicable to internal and external walls under internal or external exposure conditions.

EN 1365: Part 2: 2000

Fire resistance tests for loadbearing elements (Part 2: Floors and roofs)

This part specifies the method for determining the fire resistance of floor construction without cavities or with unventilated cavities, roof construction with or without cavities (ventilated or unventilated) and floor or roof construction incorporating glazed elements. Fire exposure is from the underside.

EN 1365: Part 3: 2000

Fire resistance tests for loadbearing elements (Part 3: Beams)

This part specifies the method for determining the fire resistance of beams with or without applied fire protection systems, and with or without cavities. Fire resistance of beams is assessed against loadbearing capacity criteria.

EN 1365: Part 4: 1999

Fire resistance tests for loadbearing elements (Part 4: Columns)

This part specifies the method for determining the fire resistance of columns when fully exposed to fire on all sides. The fire resistance of the column is assessed against loadbearing capacity criteria.

EN 1366: Part 1: 1999

Fire resistance tests for service installations – ducts

This part specifies the method for determining the fire resistance of vertical and horizontal ventilation ducts under standardised fire conditions. The test examines fire for ducts exposed to fire from outside (Duct A) and fire inside the duct (Duct B). Performance of ducts is assessed against integrity, insulation and smoke leakage criteria.

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EN 1366: Part 2: 1999

Fire resistance tests for service installations (Part 2: Fire dampers)

The purpose of this test is to evaluate the ability of mechanical devices such as fire dampers to prevent fire, smoke and gases spreading at high temperature from one compartment to another through the air ductwork system which may penetrate fire separating walls and floors. Temperature and integrity measurements are carried out on parts of test construction. Impermeability of a fire damper system is measured by direct flow measurement whilst maintaining constant pressure differential across the closed fire damper. Tightness of the fire damper in a closed position is measured at ambient temperature.

EN 1366: Part 3: 2004

Fire resistance tests for service installations
(Part 3: Penetration seals)

This part provides a method of test for assessing the contribution of penetration sealing system to the fire resistance of separating elements when penetrated by service(s). Purpose of the test is to assess effects of such penetration to the integrity and insulation performance of the separating element concerned, integrity and insulation of the penetration sealing system, insulation performance of the penetrating service(s), and integrity failure of a service.

EN 1366: Part 4: 2006

Fire resistance tests for service installations
(Part 4: Linear joint seals)

The purpose of this test is to assess the effect of a linear joint seal on the integrity and insulation of the construction, as well as the integrity and insulation performance of the linear joint seal. The effect of movement of the supporting construction on the fire performance of the linear joints seals is also assessed.

EN 1366: Part 5: 2003

Fire resistance tests for service installations
(Part 5: Service ducts and shafts)

The purpose of this test is to measure the ability of a representative horizontal service duct or vertical service shaft which passes through floor or walls and enclosed pipes and cables, to resist spread of fire from one compartment to another. The test examines the behaviour of ducts and shafts for fire attack from outside or inside. Performance of ducts and shafts are assessed against integrity and insulation criteria.

EN 1366: Part 6: 2004

Fire resistance tests for service installations
(Part 6: Raised access and hollow core floors)

This part specifies the method of testing for representative samples of a raised or hollow floor when exposed to a specified regime of heating and loading. Exposure to fire is from within the plenum, beneath the floor. The fire exposure applied may be either the standard or reduced (maintained up to 500°C) time temperature curve. Performance criteria is assessed against insulation, integrity and loadbearing capacity.

EN 1366: Part 8: 2004

Fire resistance tests for service installations
(Part 8: Smoke extraction ducts)

This part has been prepared to evaluate fire resistant ducts tested to EN 1366-1 (Duct A and Duct B) and to function adequately as smoke extraction ducts. The smoke extraction ducts pass through another compartment from the fire compartment to be extracted in case of fire, and in a fully developed fire. The test is only suitable for four sided ducts constructed from non combustible materials (Euroclass A1 and A2). Leakage is measured at ambient and elevated temperatures. Performance criteria is assessed against leakage, insulation, integrity and mechanical stability.

EN 1634: Part 1: 2000

Fire resistance tests for door and shutter assemblies
(Part 1: Fire doors and shutters)

This part specifies the method for determining door and shutter assemblies designed for installation within openings incorporating vertical separating elements including hinged and pivoted doors, horizontal and vertical sliding doors and uninsulated steel single skin folded shutters. Performance criteria is assessed against insulation, integrity and radiation.

Assessments and/or appraisals

Test reports only state what has been tested and show no variations. Changes to a construction tested to Australian, British or European standards will require either another fire test or an engineering assessment.

An assessment is a desktop study undertaken by an independent fire consultant and allowing some variations from a tested design. The nature and scope of any variation will depend to a large extent on the size and configuration of the test specimen.

Project specific assessments can also be produced, tailored to the specific needs of a building project.

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Vocabulary of fire resistance performance criteria

Fire resistance

Ability of an item to fulfil for a stated period of time the required fire stability and/or integrity and/or thermal insulation and/or other expected performance specified in a standard fire resistance test.

Integrity

The ability of a specimen of a separating element to contain a fire to specified criteria for collapse, freedom from holes, cracks and fissures and sustained flaming on the unexposed face.

Insulation

The ability of a specimen of a separating element to restrict the temperature rise of the exposed face to below specified levels (140°C mean rise, 180°C maximum rise).

Loadbearing capacity

The ability of a specimen of a loadbearing element to support its test load, where appropriate, without exceeding specified criteria with respect to either the extent or rate of deformation. Please note that within AS 1530: Part 4: 2005, loadbearing capacity is described by the term "structural adequacy".

Stability

The ability of a system, e.g. ventilation and smoke extraction ductwork, to maintain in place and capable of fulfilling its intended function throughout the duration of exposure to fire. Please note that within AS 1530: Part 4: 2005, stability is described by the term "structural adequacy".

Fire resistance performance in accordance to EN 13501: Part 2 is described as follows:

R The structural element should not collapse or deflect beyond the permitted levels when subjected to the applied load.

E The integrity of the room must be maintained. No breakthrough of flames is permitted.

I The temperature on the non exposed side of the structural element must not rise more than 140°C above ambient as an average measurement and no more than 180°C at any one location.

SUPALUX®
Fire protective construction board

SUPALUX® consist of a calcium silicate matrix of reinforced fibres and fillers, 100% asbestos free. The product material formula is cured to form a dimensionally stable board through an autoclave process where the board is subject to pressurised steam and high temperature. The result is a board that is lightweight with high impact resistance, excellent fire resistance performance and with all the reliable qualities SUPALUX® is well known for its loyal customers and end users in the past 30 years.

Effect of moisture

Saturate a SUPALUX® board in water and allow it to dry, the product will return to its original condition with almost no degradation. Moisture and dampness have no permanent effect on the mechanical or fire resistance performance of the product material. It is therefore possible to install Promat SUPALUX® at any time of a building programme.

Impact resistance

A wall construction with SUPALUX® has fulfilled all the heavy duty application conditions for impact, crowd pressure, deflection and multiple cycles of door slam in accordance with the requirements of British Standard 5234, proving its excellent and high impact resistance.

Biological characteristics

SUPALUX® does not attract insects or vermin and it does not support mould growth.

Compatibility

SUPALUX® is compatible with most building materials because it is non caustic and will neither promote corrosion nor affect bituminous compounds.

The surface of the board is readily suitable to receive many forms of architectural treatments such as painting, wallpapering, waterproofing membranes, tiling, and other common aesthetic finishes. It is advisable to strictly adhere to the instructions of all decorative materials' manufacturers at all times.

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SUPALUX®

Fire protective construction board

Material properties	
General description	Calcium Silicate board made with Mineral Matrix Engineering technology
Surface condition & appearance	Off-white colour Front face: smooth Back face: sanded
Nominal dry density (average)	Approx. 975kg/m³
Moisture Content	Approx. 6.0% The moisture content varies and will reach an equilibrium over time with the atmospheric relative humidity of the environment
Alkalinity	pH 12
Thickness tolerance	Compliant with thickness tolerance of CE requirements (9mm thick standard sheets, +/-0.5mm)
Dimension tolerance	±5mm (standard board dimensions)

Product description

SUPALUX® is a non-combustible calcium silicate board manufactured under Promat's proprietary Mineral Matrix Engineering Technology. It does not contain formaldehyde or any asbestos. The product is dimensionally stable and resistant to the effects of moisture. Its performance characteristics are not degraded by moisture SUPALUX® has the following intended uses (according to EAD[1] 350142-00-1106): internal use (type Z2), internal use in high humidity conditions (type Z1) and external semi-exposed use (type Y). For fully exposed conditions, consult Promat Technical Department.

EAD[1]: European Assessment Document

Manufacturing Certification

SUPALUX® is manufactured under a quality management system certified in accordance with ISO 9001:2015. The manufacturing site is also certified to meet the environmental standards of ISO 14001:2015 and the occupational health & safety requirements of ISO 45001:2018.

Fire Resistant Applications

- → Structural steel fire protection
- → Internal drywalls
- → Internal lining to external walls
- → Suspended and self-supporting hanger free ceilings
- → Self-supporting airduct or cladding to steel sheet metal ducts
- → Enclosures to E&M services
- → Smoke screens
- → Flame barrier
- → Parapet & spandrel walls
- → Upgrading fire performance of
  - Reinforced concrete
  - Masonry construction

Static Values			
Modulus of Elasticity E	**Flexural Strength** F	**Tensile strength** T	**Compressive strength** ⊥
Longitudinal: 4.1kN/mm² Transverse: 4.0kN/mm²	Longitudinal: 10N/mm² Transverse: 7N/mm²	Longitudinal: 4.11N/mm² Transverse: 2.15N/mm²	9.3N/mm²

Reaction to Fire & Thermal Properties	
Combustibility	**Thermal conductivity**
A1 Classification: EN 13501-1 Non-combustible: BS 476: Part 4	0.242W/m°K

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SUPALUX®

Fire protective construction board

Standard thickness	Standard dimension	Number of boards per pallet	Surface area per pallet	Weight of standard sheet	Weight per pallet
9mm	2440mm x 1220mm	61	181.5m²	Approx. 29kg	Approx. 1,888kg
12mm	2440mm x 1220mm	46	136.9m²	Approx. 39kg	Approx. 1,896kg
15mm	2440mm x 1220mm	36	107.3m²	Approx. 49kg	Approx. 1,858kg
20mm	2440mm x 1220mm	27	80.4m²	Approx. 65kg	Approx. 1,859kg
25mm	2440mm x 1220mm	22	65.4m²	Approx. 82kg	Approx. 1,890kg

All physical and mechanical values are averages based on standard production and tested according to internal procedures. The typical values are given for guidance. The figures can change dependent on the test methods used. If a particular value is of prime importance for a specification, please consult Promat Technical Department.

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Loading/uploading, storage and handling of boards

Loading/uploading

SUPALUX® boards are supplied on pallets suitable for fork lift unloading. If off-loading by crane and slings is envisaged, care should be taken to avoid damaging edges of the boards. Pallets and crates can be safely handled by using a fork lift or hoisting equipment and straps. Steel cables or chains should not be used as they will damage both the pallet and the boards. Where crates are removed from a box container, care should be taken not to subject crates and pallets to any impact shock, as this could result in cracking of the boards.

Always drive the delivery vehicle as close as possible to where the boards are to be used. When transporting the boards, it is essential to secure the pallets to prevent sliding. If the boards are subsequently moved around the site, they should be placed on a rigid base suitable for lifting by forklift. SUPALUX® boards should always be stored on a rigid base.

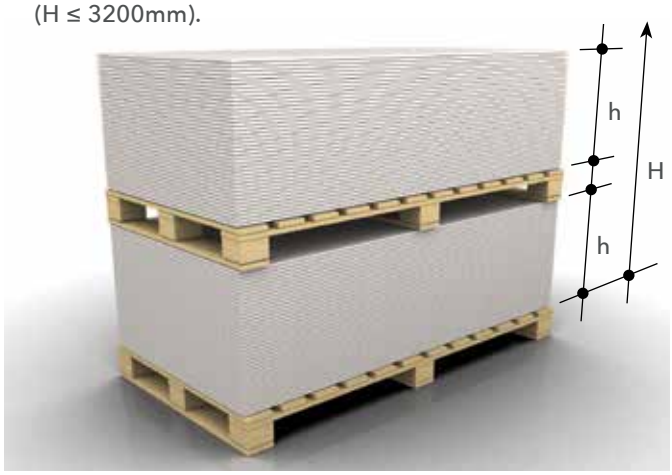
Storage

SUPALUX® boards are supplied with protective plastic sheet wrapped around the timber crates. This protection should not be removed until the boards are ready for use.

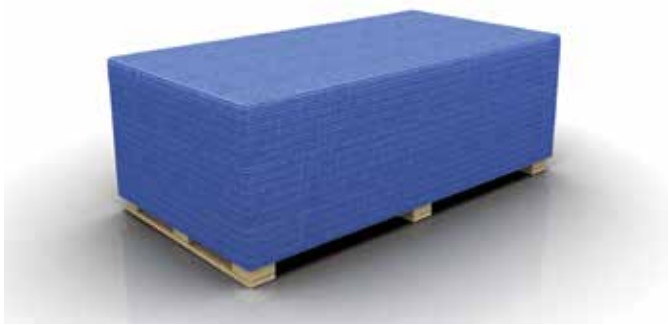
In general, the following steps should be taken to ensure that the boards remain in good condition during storage.

a) The boards should be stored and stacked on covered and dry, level ground, away from the working area or mechanical plant.

b) Pallets should be a maximum of 800mm height (h ≤ 800mm) on firm level ground. If two or more pallets are stacked, the total stack height must be less than 3200mm (H ≤ 3200mm).



c) The stacked boards must be stored under cover completely for protection from inclement weather.



Handling

Following recommendation must be always taken into account when handling SUPALUX® boards:

a) Wherever possible, always lift the boards from underside rather than slide the boards on each other on the stack to prevent damage or scratches on surface of the boards.

b) Always carry the boards on edge but do not store on the edge.

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Cutting

Promat recommends that all cutting be carried out in well ventilated spaces, using dust extraction facilities. Operators should wear protective face masks at all times.

There are a wide variety of applications and fixing methods possible with all SUPALUX® boards. The method to be used is dependent on a number of factors, including:

1) The shape of the board's final application, be it square, rectangular or circular etc.

2) The location where the work is to be carried out, be it industrial, commercial, on or off site etc.

3) The quality of workmanship required.

All SUPALUX® boards can be cut on site fairly easily. However, if a large number of boards are to be cut, it is recommended that cutting is carried out off site under controlled conditions as much as possible to ensure good quality of finished edges etc.

A few general rules should be observed when working with the boards as follows:

- → For industrial quality cutting and extended cutting life of tools, working with diamond tipped saws is recommended. Experience shows that tools with tungsten carbide blades provide a more than adequate cut.
- → High speed electric tools generate very fine dust. Inhaling fine dust can be harmful to health, dust extraction equipment or wet cutting is thus necessary. Although SUPALUX® boards contain no harmful fibres, inhalation of excessive nuisance dust can be detrimental. It is also recommended that when cutting or drilling the boards, appropriate face masks and personal protection equipment (PPE) should always be worn.
- → Slow running tools produce coarse dust or chips but are not as efficient at cutting.
- → The speed of cutting is best determined by thickness of the board, hardness of the board and condition of the blade.
- → Boards must be held securely during cutting to avoid slippage and vibration which can lead to chipping of the board edges.
- → The choice of the most appropriate tool for use in each country will depend on custom, practice and local regulations.

Guillotine

The knife of the guillotine is parallel to the board support so that a consistent, even cut is made at the same moment over the entire length of the board. Up to a maximum thickness of 6mm, a reasonably neat, square cut can be achieved but the edge remains rough. The machine cuts the sheets one by one and is not suitable for textured surfaces.

Tungsten carbide blades

Tungsten carbide tipped saws can be used with either a high or low speed electric motor. The cutting is done in a dry state so dust extraction is essential. The tungsten carbide teeth of the saw have a shorter life span than diamond tipped blades but they can be sharpened by a skilled professional.

Diamond tipped blades

Cutting with diamond tipped blades is carried out using high speed electric motor at 2500-3000rpm depending on diameter of blade. There are two types:

1) Machine with fixed table and moving saw support

2) Machine with fixed saw support and moving table

The saw support can be equipped with several parallel saws for multi cutting in a single pass of the blades over the boards. A diamond tipped blade can be used in either a wet or dry state.

The disadvantage of wet cutting is the generation of cement slurry which forms from the mixture of the dust and water. This must be drained off in an appropriate way. In addition, it is necessary to rinse the saw after each use to maintain the cutting quality. Wet cutting is not an ideal solution for SUPALUX®boards.

The boards should be cleaned after cutting to avoid leaving any dust on the surface.

Diamond blades can be used to cut more than one board at a time, depending on the diameter of the saw blade and the thickness of the boards.

Industrial machines

Industrial machines are used for continuous cutting over long periods of time, for large quantities and for better efficiency. Standard industrial machine is for dry cutting and is available in high and low speed electric motors.

High speed electric motor with diamond tipped blades can be used for other building materials such as concrete, natural stone, brick etc. Low speed motor with tungsten carbide tipped blades is more suitable for cutting fibre cement materials.

Cutting Promat boards with low speed motor provides a neat cut and smooth edges.

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On site machines

While working at site, hand tools and low speed electric tools are generally recommended.

When high speed electric tools are used, dust extraction is essential. Below are some conventional on site machines and tools:

Table saw (above) and circular saw (left) are both power cutting tools with a tungsten carbide tipped saw blade

Scoring knife

Vacuum apparatus for cleaning job sites

Jigsaw

Screw driver

Power tools with dust extraction equipment

Sawing machines such as Festool, Makita, Bosch, DeWalt etc work with a tungsten carbide tipped saw blade on a low speed electric motor and move over a fixed working table. It is a typical machine for occasional use on site producing very good results and is capable of cutting boards with maximum thickness up to 25mm.

A vacuum cleaner is recommended for use while cutting especially when using power saws. As an additional safety precaution, always wear eye, ear and dust protection when using power tools of any type. A portable version of the working table is available for the convenience of board cutting on site.

While working with power saws, the following important points should be observed:

- → Ensure that the boards to be cut are continuously and well supported on either side of the cut.
- → A straight edge should be clamped in position to guide the cutting operation.
- → Care must be taken to ensure the tool remains against the straight edge during the cutting operation.
- → The cutting rate should be such that the blade is not labouring or over-heating. Feed speed for fibre cement boards is normally slower than for natural timber.

Jigsaw

This is applicable for panels up to 25mm thick. The panels can be cut easily with a jigsaw to form various shapes. Blades with special hardened teeth are available for cutting the boards. As with all power tools, care should be taken to cut within the capacity of the tool and blade. Do not force the cutting speed.

Scoring knife

This tool is equipped with a tungsten carbide tipped point. It is suitable for use with panels up to 6mm thick. Several passes using a straight edge to guide the knife are required on the board surface to create an increasingly deep scored groove. The final break is obtained by applying pressure on the unsupported part of the board. The cut is relatively neat but the edge should be finished with glass paper or a manual or electric plane.

Drilling

Drilling can be carried out either by hand drill or any conventional power drill with or without dust extraction. For best results, the boards should be firmly supported behind the location of the holes. Generally when working on SUPALUX® boards, the use of drills with point angles of 60° to 80° rather than the more usual 120° type, are preferable and more efficient.

Rasp/surform

A rasp or surform can be used for edge finishing where necessary in order to trim away rough edging. For optimum edge finishing, dress the edges with fine glass paper.

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Fixing and fabrication

All SUPALUX® boards are easy to handle and work using conventional tools. However, basic standard safety precautions should be routine at all times during installation.

This section highlights some general guidance in fixing and fabrication of the boards for fire resistant applications. Following tools are recommended:

The type of fixings used when installing SUPALUX® boards are important as they determine the support of joints and stability of a structure. In general, a fixing should meet these rules and requirements:

1) Corrosion resistant.
2) Stainless steel or galvanised nails are recommended for timber framing. Do not use screws when the board forms part of the structural bracing, unless tested with such fixings.
3) Stainless steel, zinc or other plated self-drilling screws are recommended for steel framing.
4) Fixing points should be located at least 12mm from the board edge and 50mm and 100mm from board corners. Nominal centres of fixing are generally recommended at 200mm throughout this handbook.

Nailing

The most economical method of fastening is to use pneumatic nailing and stapling equipment.

When fixing SUPALUX® boards with nails, the following should be noted clearly:

→ Do not over drive the fixings, as this may reduce the holding capacity of the fixing to the board.

→ Fixings should be driven straight into the board and at best embedded no more than 0.5mm below the board surface.

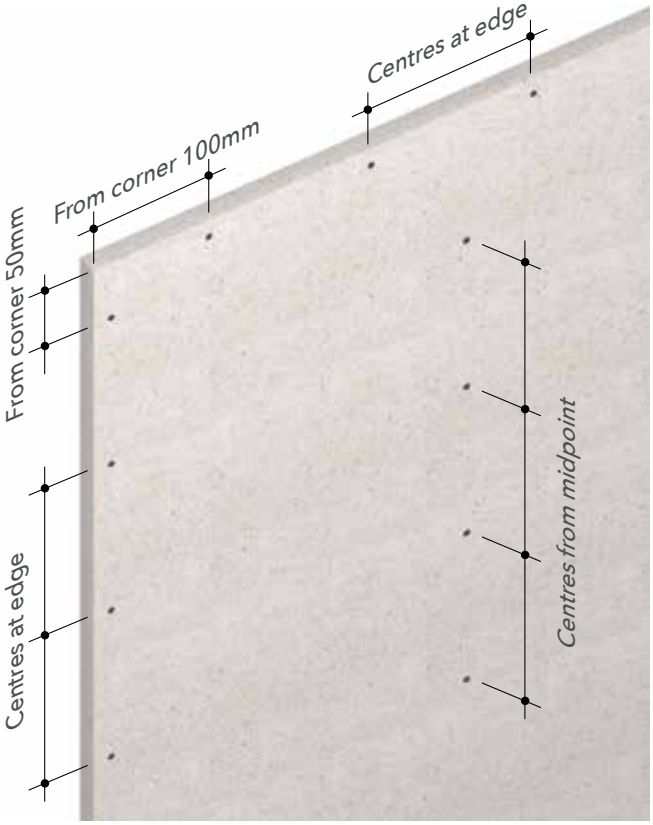
→ Do not damage the board around the fixing or at its edges. Cracked sheets should be replaced.

Nails can be driven directly through the boards into timber framing, without predrilling, provided they are at least 12mm from the edge of the board and the back face of the board is fully supported while drilling.

In areas of high humidity, galvanised nails should be used. Panel pins, oval or lost head nails should not be used. Wire or clout nails are acceptable. Nails should be located 50mm and 100mm from corners.

Use below fixing guide in conjunction with the illustration:

From edge	From corner	Centres at edge	Centres from midpoint
Minimum 12mm	50mm and 100mm	Depends on product and system. Please consult Promat.	



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Screw fixing

When fixing SUPALUX® boards, especially to steel frames, the following should be noted:

- → Always predrill fixing holes unless using specially designed self-drilling screws suitable for fixing fibre cement to steel.
- → Use a high torque, variable speed screw gun fitted with a depth gauge.
- → Do not over drive, as this may reduce the holding capacity of the screw. Reduce drill speed as the screw pulls the board against the framing.

When fixing to steel framing, always fix to the open side of the flange first in order to maintain a flush outside face (see the illustration for the correct sequence of installation).

Pilot holes should be predrilled not less than 12mm from the edge of the boards and countersunk if required. Use self-drilling or self-tapping screws when securing boards to steel.

In most other situations, drywall screws (e.g. Hilo) are generally suitable. Board thicknesses greater than 15mm can be screwed board to board.

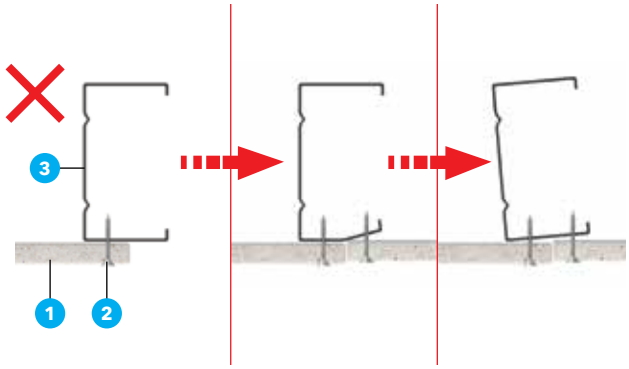
Self-drilling or self-tapping screws are suitable. If fixing board to board, minimum screw penetration should be 25mm or twice the board thickness, whichever is greater. If screws do not have a deep thread, pilot holes should be drilled and care should be taken not to over turn or over drive. Screws should be 50mm and 100mm from corners.

Adhesive fixing

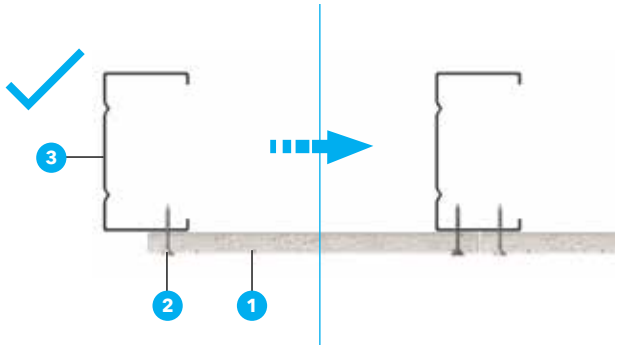
Multi purpose glue or bonding compound can be used for non fire resistant applications. Please consult Promat for further details.

Staple fixing

SUPALUX® boards may be stapled to timber supports using an industrial staple gun. Staples may also be used for edge to edge fixing of boards 15mm or greater in thickness. Staples may be used when fire resistance is required, please consult Promat for further information.



Incorrect sequence of fixing to steel stud



Correct sequence of fixing to steel stud

1. SUPALUX® board of appropriate thickness
2. Stainless steel or galvanised fixings of appropriate size and length
3. Steel stud of appropriate thickness and dimensions

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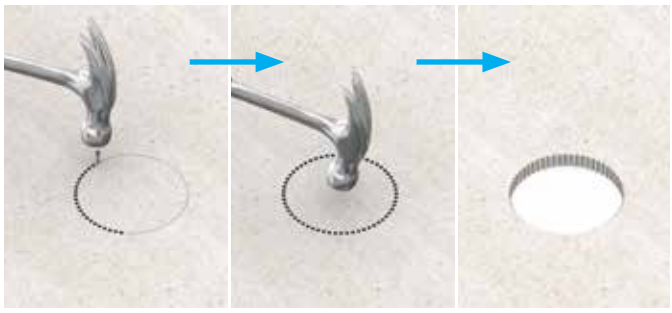
Forming holes

Apertures often need to be cut within a board to allow for penetration of services such as switchboxes, lights, access panels etc. The following procedures therefore serve as general guidelines only. Any method that allows for cutting of holes without damaging the board is acceptable.

1) For smooth, clean cut circular holes:
   - → Mark the centre of the hole on the board.
   - → Predrill a hole to be used as a guide.
   - → Cut the hole to the require diameter using a hole saw fitted to a heavy duty electric drill where the central bit is inserted into the predrilled hole or use a jigsaw.

2) For small irregular holes:
   - → Small rectangular apertures can be achieved by forming a series of small holes (using a drill) around the perimeter of the opening.
   - → Carefully tap out the waste piece from the panel face. Make sure that the edges are properly supported in order to avoid damage to boards.
   - → Rough edges can be cleaned with a rasp or 40 grit glass paper.

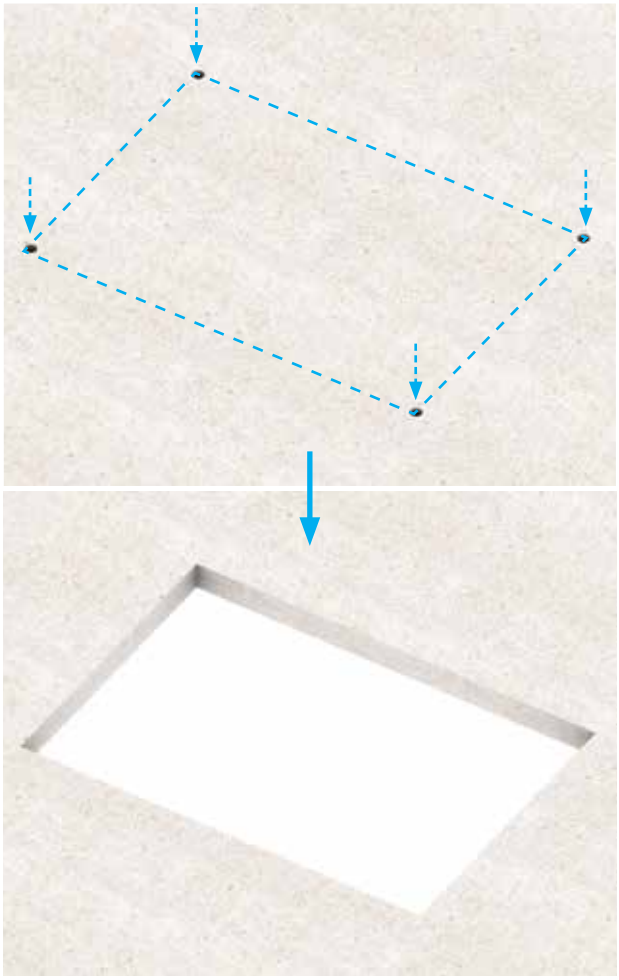
Below example of nailing and hammering for openings.



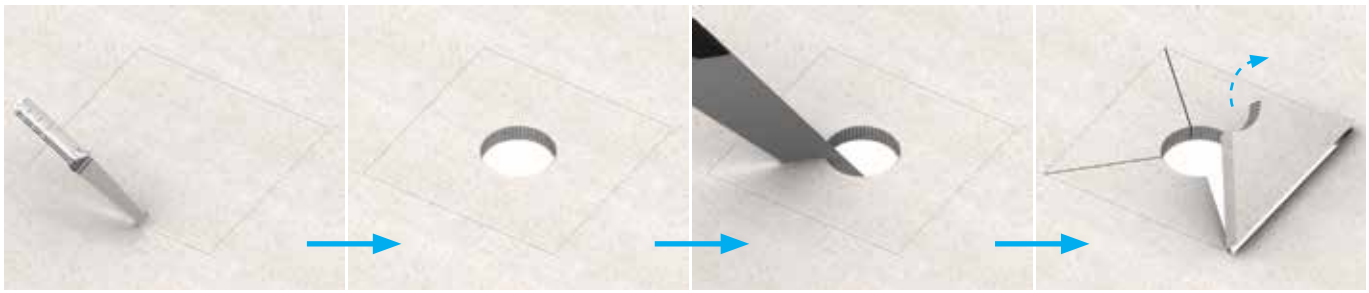
3) For large openings or apertures:
   - → Score deeply around the perimeter of the opening using a sharp tool (for thin boards only).
   - → Form a large round hole in the centre using the method previously described.
   - → Saw cut from the centre towards the corners of the opening.
   - → Tap waste pieces from the face side and if necessary clean rough edges with a rasp or with at least 40 grit sand paper. Radius corners with a half round rasp to eliminate any stress points.

Alternatively, for neater openings:

- → Predrill a hole of at least 10mm diameter at the four corners of the openings. Mark lines from hole to hole (forming a rectangular shape) as a guide and cut along the lines using a jigsaw or hand saw.
- → Clean rough edges of the hole with a rasp.



Apertures opening using alternative method: Never make holes by using heavy hammers, cold chisels or other "aggressive" methods. This will damage the underside of the boards and adversely effect the fire performance of the system.



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Flush jointing between boards

SUPALUX® boards can be simply butt jointed with sheets having square edges. If required, a filler may be used to finish joints before decoration.

Flush jointing is applicable to most partition and ceiling constructions. However, in some instances it may be also applicable to external wall constructions.

Generally, installations of concealed framed ceiling and partition systems require crack-free flush jointing. The method of constructing flush joints depends very much on the skills and expertise of the installer, as well as the stability of the supporting construction.

It is recommended that the thickness of panels used for flush jointing should be at least 7mm thick. Thinner boards are used only when they are to be rendered with synthetic binders or textures at a later stage.

Following are some guidelines for joint finishing that will help achieve the required professional appearance. To obtain a good flush joint, it is important that all panels have bevelled or recessed edges at the side where they abut other panels.

Note that when a panel is cut to size on site, the bevel or recessed edge is often cut away. For a flush finish, a flush joint with a double trowel width is required unless the recess is re-applied.

When the boards are ready for joint treatments, follow the steps below to obtain the required finish.

a) After the installation of the boards, wait until the moisture content in the sheet is equivalent with that of the ambient atmosphere. This will normally take approximately 24 to 48 hours to achieve. Once equilibrium moisture content is achieved, moisture induced movement will be lower, reducing the risk of joint cracking.

b) Clean the surface of the joint and surrounding area (approximately 300mm in width on each side of joint).

c) Always work with clean tools and containers.

d) The work should be carried out in an environment where the ambient air temperature is at least 5°C or above.

e) Prepare the joint filler as per instructions prescribed by the filler manufacturer. Always use clean water.

f) Fill the joint with sufficient joint filler.

g) Apply a layer of reinforcing fibre mesh tape over the filler and with a spatula cover the complete surface of the tape with an excessive amount of well-embedded joint filler.

h) Allow to dry completely and sand the surface slightly with fine grade sandpaper.

i) Apply a second layer of joint filler with wide trowel.

j) Wait until it is completely cured and sand the surface again slightly with same grade of sandpaper.

k) Depending on the level of finish required, an eventual final layer of joint finisher can be applied with a 280mm wide (preferably curved) trowel.

Normally joint fillers manufactured for use with plasterboards are suitable for flush jointing of Promat boards when installed within dry areas.

If primer is not going to be used, it is recommended that the areas to which the filler will be applied are pre-soaked. This prevents moisture from the filler being absorbed to rapidly into the boards and reduces the risk of cracking and/or delamination of the filler.

Fill joint with single, thin layer of plaster and then overlay reinforcing mesh.

Apply subsequent covering of plaster compound to finish.

Final joint after finishing with trowel.

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Finishing

Plastering

SUPALUX® boards have a high suction factor and while successful skim coats are relatively easy to obtain, some care is needed to retard the rapid drying of plaster coats, especially in areas of high temperature.

It is recommended that a small test area is plastered initially to ensure that the boards have been adequately sealed. Use of self-adhesive or hessian scrim applied over joints and internal angles is considerable. Paper scrim is not recommended.

The bonding agent and plaster manufacturer's recommendations must be followed at all times.

Plastering the board joints in partitions (left) and the junctions of wall and ceiling (above).

Tiling

SUPALUX® boards can be tiled, provided due consideration is given to the installation of the boards and the requirements for additional framing prior to applying the tiles.

It should be noted that all SUPALUX® board application systems are used for their fire resistance performance. Therefore placing additional weight on an application system, such as ceramic or marble tiling for instance, can have significant effect on the overall fire resistance performance of the system.

As such, additional framing is required for partition systems etc which bear the weight of tiles in order to maintain the fire resistance performance.

As a general rule of thumb, partition systems to be tiled should be constructed with framing at nominal 450mm centres in both vertical and horizontal orientations. Minimum board thickness is applicable.

Care must be taken in sealing the boards thoroughly before applying any tile adhesive as the boards' high suction load will accelerate the setting time of the tile adhesive.

Applying tile adhesive on any SUPALUX® boards prior to tiling.

Painting

All coatings should be supplied by a reputable manufacturer and their recommendations regarding surface preparation, sealing and finish coating should be followed at all times.

When using water based paints, a diluted first coat is recommended. For oil based paints a suitable alkali resisting primer should be used. Painted vapour barriers may be formed by the application of chlorinated rubber, epoxy resin or polyurethane paint.

Depending on the type of finish required and the viewing circumstances (e.g. under glancing light), some minor surface imperfections of the painting result may occur.

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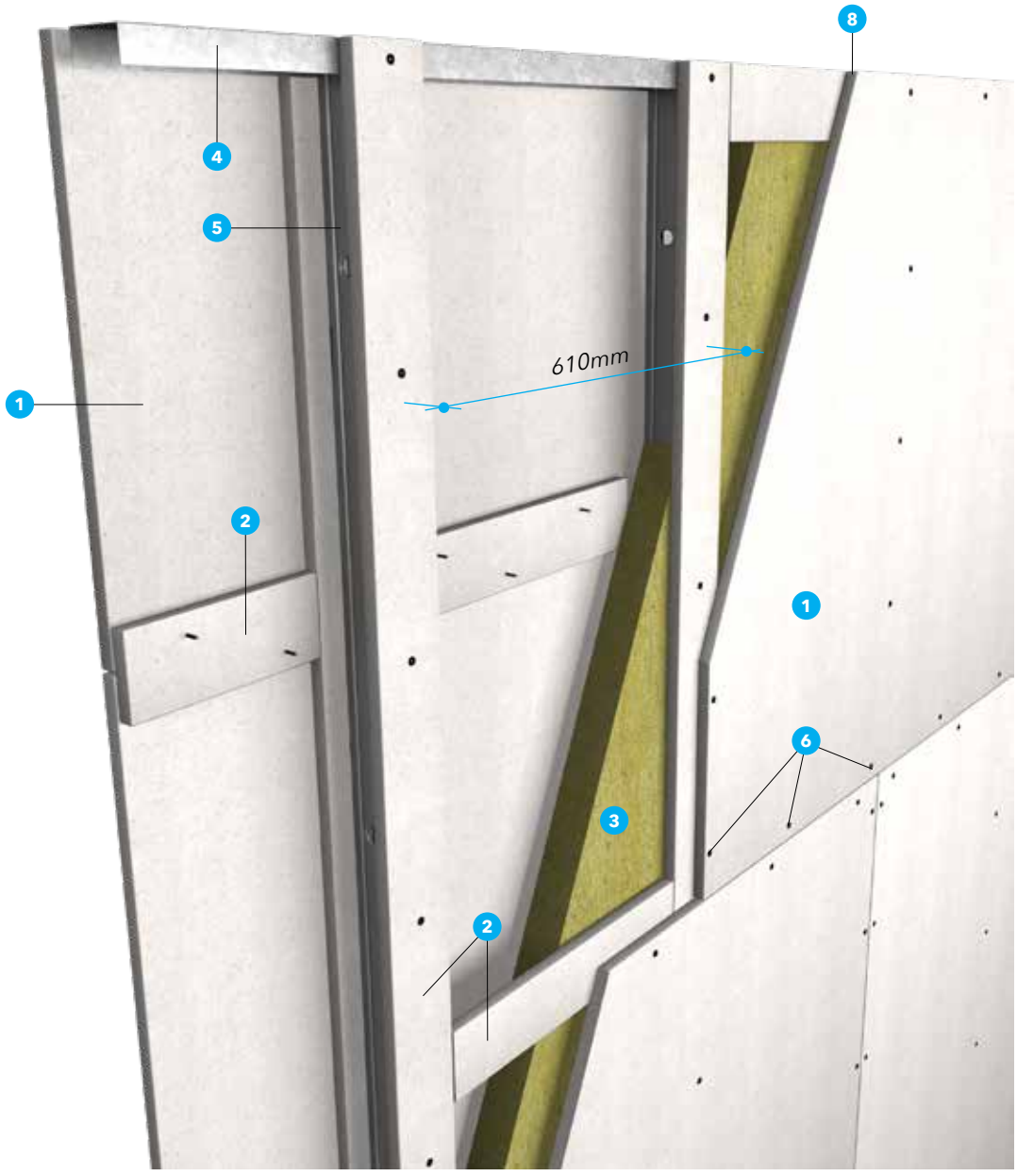
SUPALUX® – 1-hour fire rated steel stud partition

FRL	Model number	Standard	Thickness	STC reading
-/60/60	SU.22.60	BS 476: Part 22: 1987	Nominal 93mm	42



1. 9mm thick SUPALUX® board.
2. SUPALUX® cover strips 100mm wide x 9mm thick.
3. Mineral wool 60mm x 45kg/m³.
4. Partition tracks, top and bottom 50mm x 32mm x 0.6mm thick*.
5. Vertical steel studs 50mm x 32mm x 0.6mm thick* at nominal 610mm centres.
6. 32mm long x M4 self tapping screws at nominal 200mm centres.
7. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.
8. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

Fixing of perimeter channels to substrate: M6 steel anchors bolts at nominal 500mm centres.

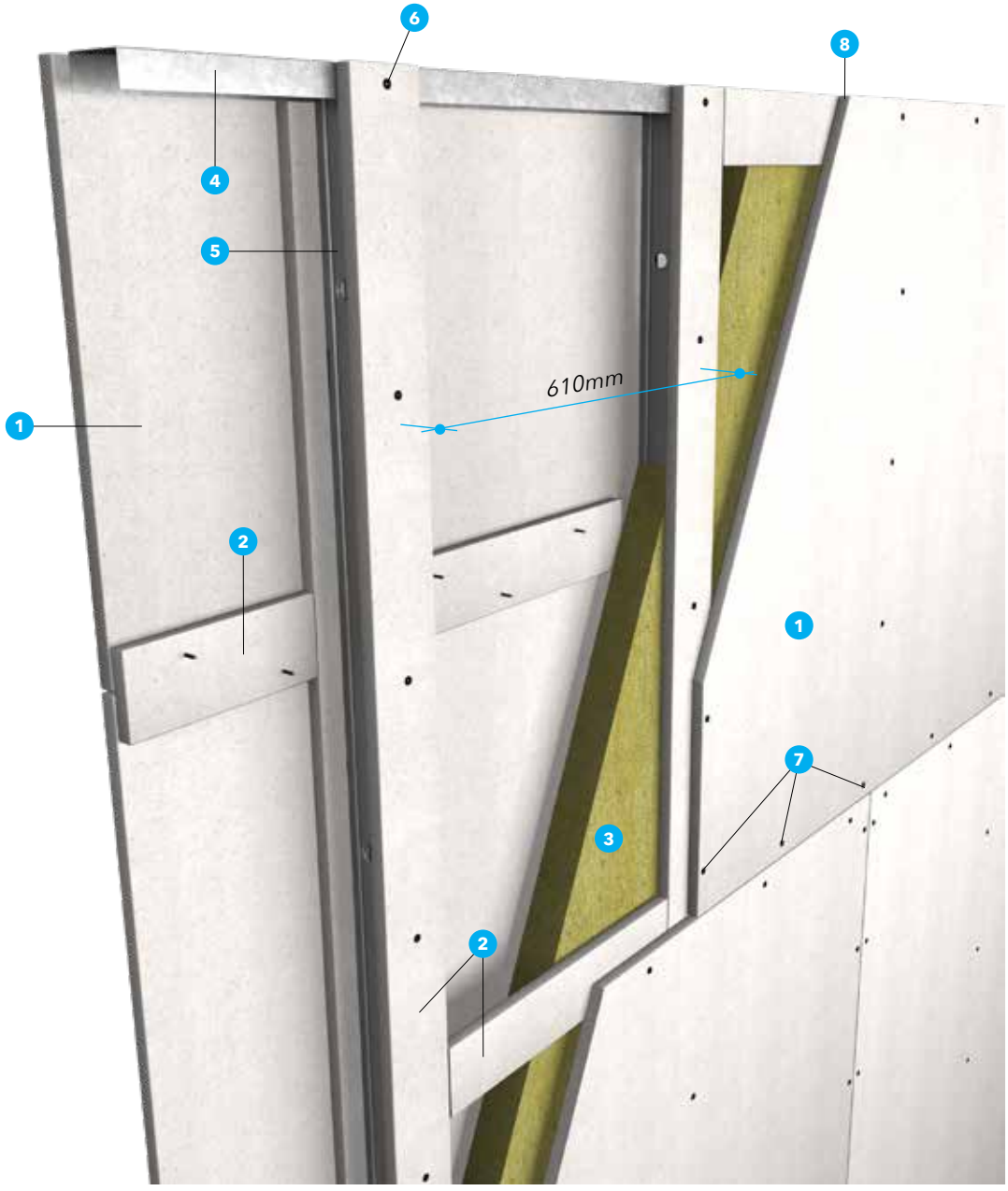
Please consult Promat for more details and for construction details of loadbearing steel stud partitions.

*Based on 3000mm height (please consult Promat for heights above 3000mm).

Promat

SUPALUX® – 2-hour fire rated steel stud partition

FRL	Model number	Standard	Thickness	STC reading
-/120/120	SU.22.12	BS 476: Part 22: 1987	Nominal 111mm	42



1. 9mm thick SUPALUX® board.
2. Promat SUPALUX® cover strips 100mm wide x 9mm thick.
3. Mineral wool 75mm x 100kg/m³.
4. Partition tracks, top and bottom 75mm x 50mm x 0.6mm thick*.
5. Vertical steel studs 75mm x 50mm x 0.6mm thick* at nominal 610mm centres.
6. 16mm long x M4 self tapping screws at 400mm centres for coverstrips.
7. 30mm long x M4 self tapping screws at nominal 200mm centres.
8. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

Fixing of perimeter channels to substrate: M6 steel anchors bolts at nominal 500mm centres.

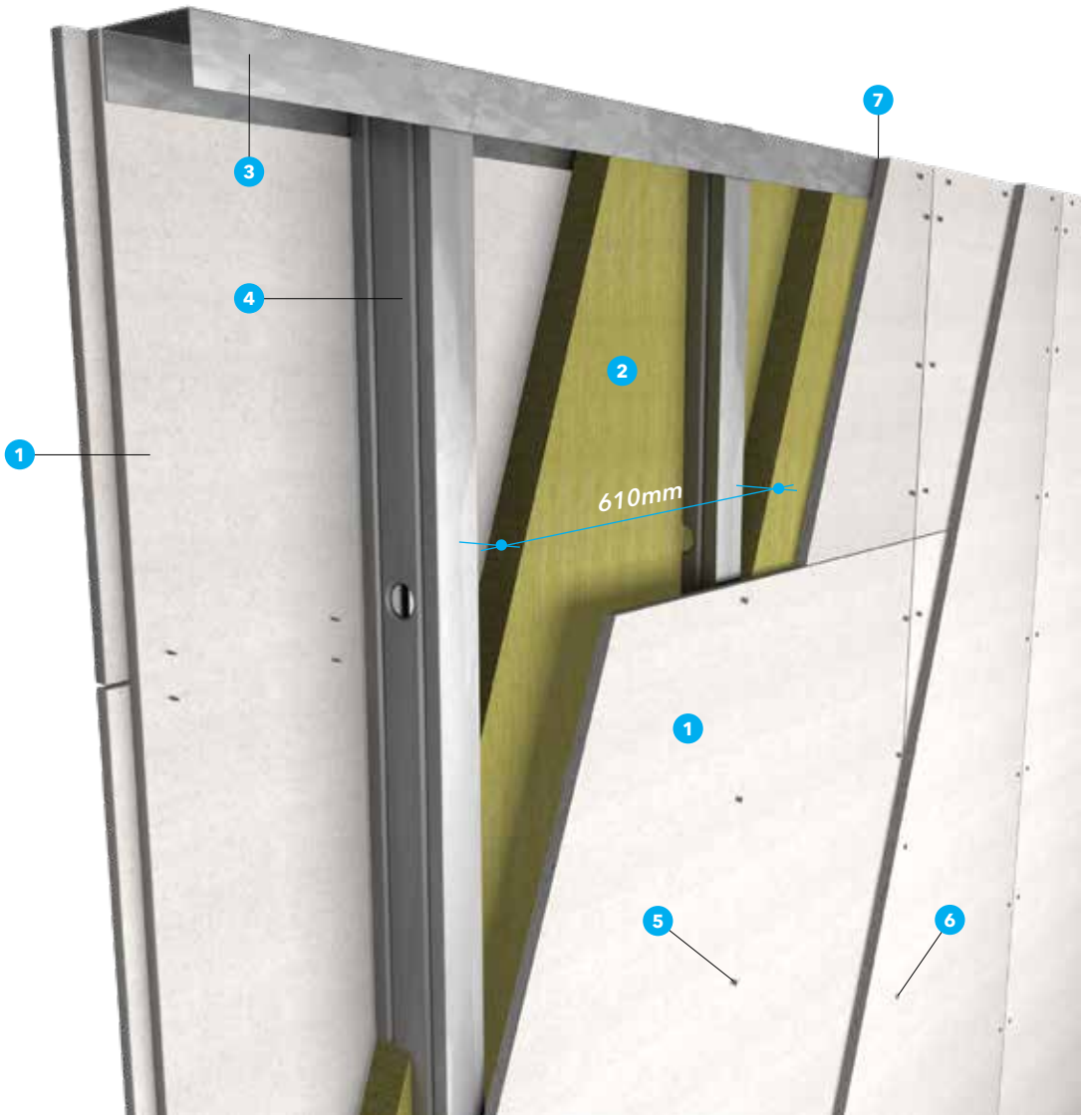
Please consult Promat for more details and for construction details of loadbearing steel stud partitions.

*Based on 3000mm height (please consult Promat for heights above 3000mm).

Promat

SUPALUX® – 4-hour fire rated steel stud partition

FRL	Model number	Standard	Thickness	STC reading
-/240/240	SU.22.24	BS 476: Part 22	Nominal 140mm	54



1. Two layers of 9mm thick SUPALUX® board with all vertical and horizontal joints staggered minimum 305mm.
2. Two layers of 50mm x 100kg/m³ mineral wool all vertical and horizontal joints staggered by 300mm, between layers.
3. Partition track, top and bottom. See table A.
4. Vertical steel studs at 610mm centres. See table A.
5. 38mm long x M4 self tapping screws at 300mm centres.
6. 48mm long x M4 self tapping screws at 200mm centres.
7. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

Fixing of perimeter channels to substrate: M6 steel anchors bolts at nominal 600mm centres.

Please consult Promat for more details and for construction details of loadbearing steel stud partitions.

Table A

Partition height (m)	Vertical stud (mm)	Top & bottom track (mm)	E* (mm)
Up to 5m	C100 x 50 x 1.2	U104 x 50 x 1.2	30
6m	C100 x 50 x 2	U105 x 55 x 2	35
7m	C100 x 50 x 2	U105 x 65 x 2	45

*E = expansion allowance

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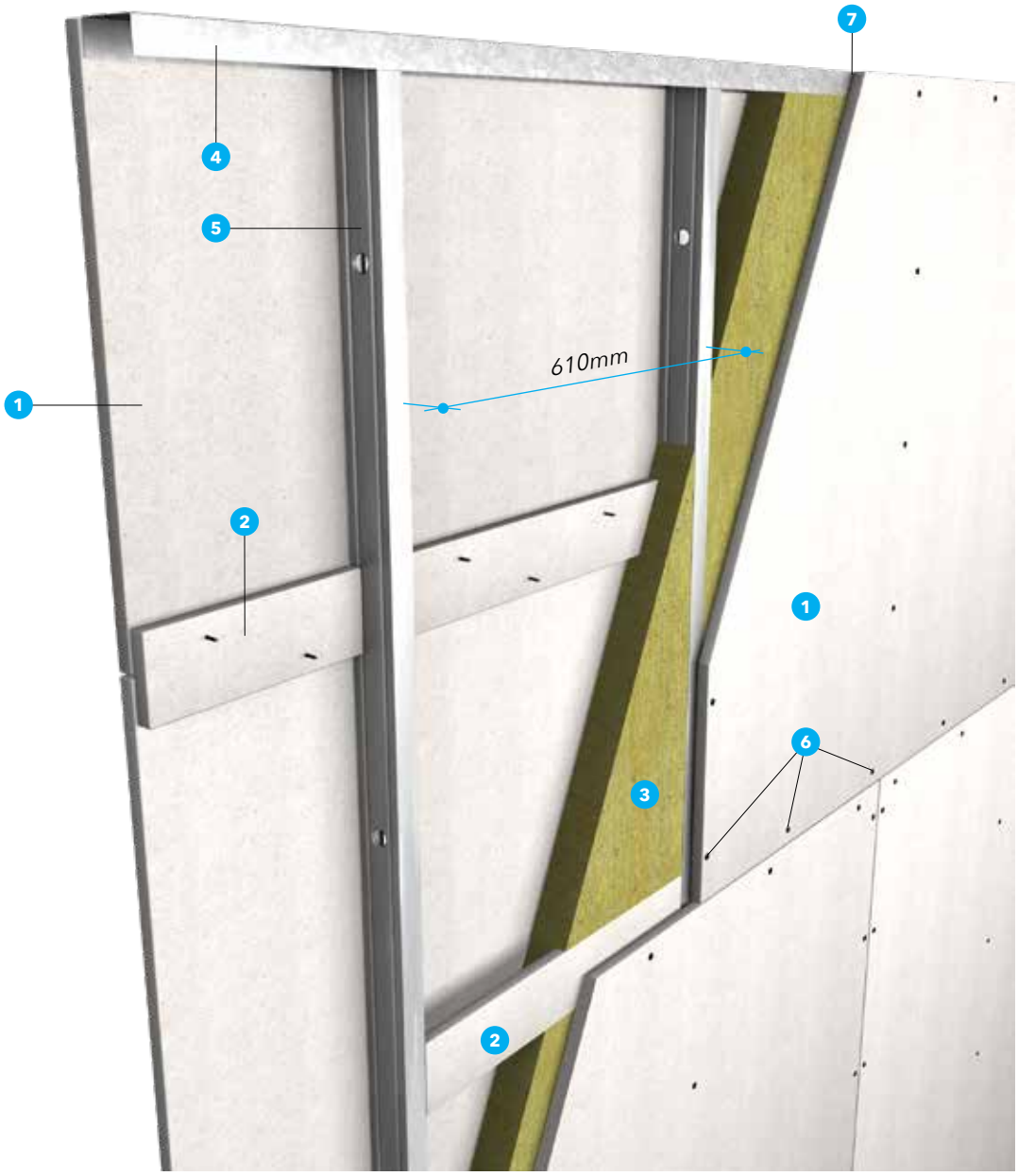
SUPALUX® – 1-hour fire rated steel stud partition

FRL	Model number	Standard	Thickness	STC reading
-/60/60	SU.22.60.EN	EN 1364: Part 1	Nominal 93mm	42



1. 9mm thick SUPALUX® board.
2. SUPALUX® cover strips 50mm wide x 9mm thick.
3. Mineral wool 60mm x 45kg/m³.
4. Partition tracks, top and bottom 50mm x 32mm x 0.5mm thick*.
5. Vertical steel studs 48mm x 32mm x 0.5mm thick* at nominal 610mm centres.
6. 32mm long x M4 self tapping screws at nominal 200mm centres and 25mm long x M4 self tapping screws at nominal 300mm centres for cover strips.
7. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

Fixing of perimeter channels to substrate: M6 steel anchors bolts at nominal 500mm centres.

Please consult Promat for more details and for construction details of loadbearing steel stud partitions.

*Based on 3000mm height (please consult Promat for heights above 3000mm).

Promat

SUPALUX® – 1 ½-hour fire rated steel stud partition

FRL	Model number	Standard	Thickness	STC reading
-/90/90	SU.22.90.EN	EN 1364: Part 1	Nominal 105mm	42

1. 15mm thick SUPALUX® board.
2. SUPALUX® cover strips 100mm wide x 9mm thick at horizontal board joints.
3. Mineral wool 30mm + 40mm x 140kg/m³ staggered between layers by 150mm .
4. Partition tracks, top and bottom 75mm x 40mm x 0.6mm thick*.
5. Vertical steel studs 75mm x 50mm x 0.6mm thick* at nominal 610mm centres.
6. 32mm long x M4 self tapping screws at nominal 200mm centres.
7. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

Fixing of perimeter channels to substrate: M6 steel anchors bolts at nominal 500mm centres.

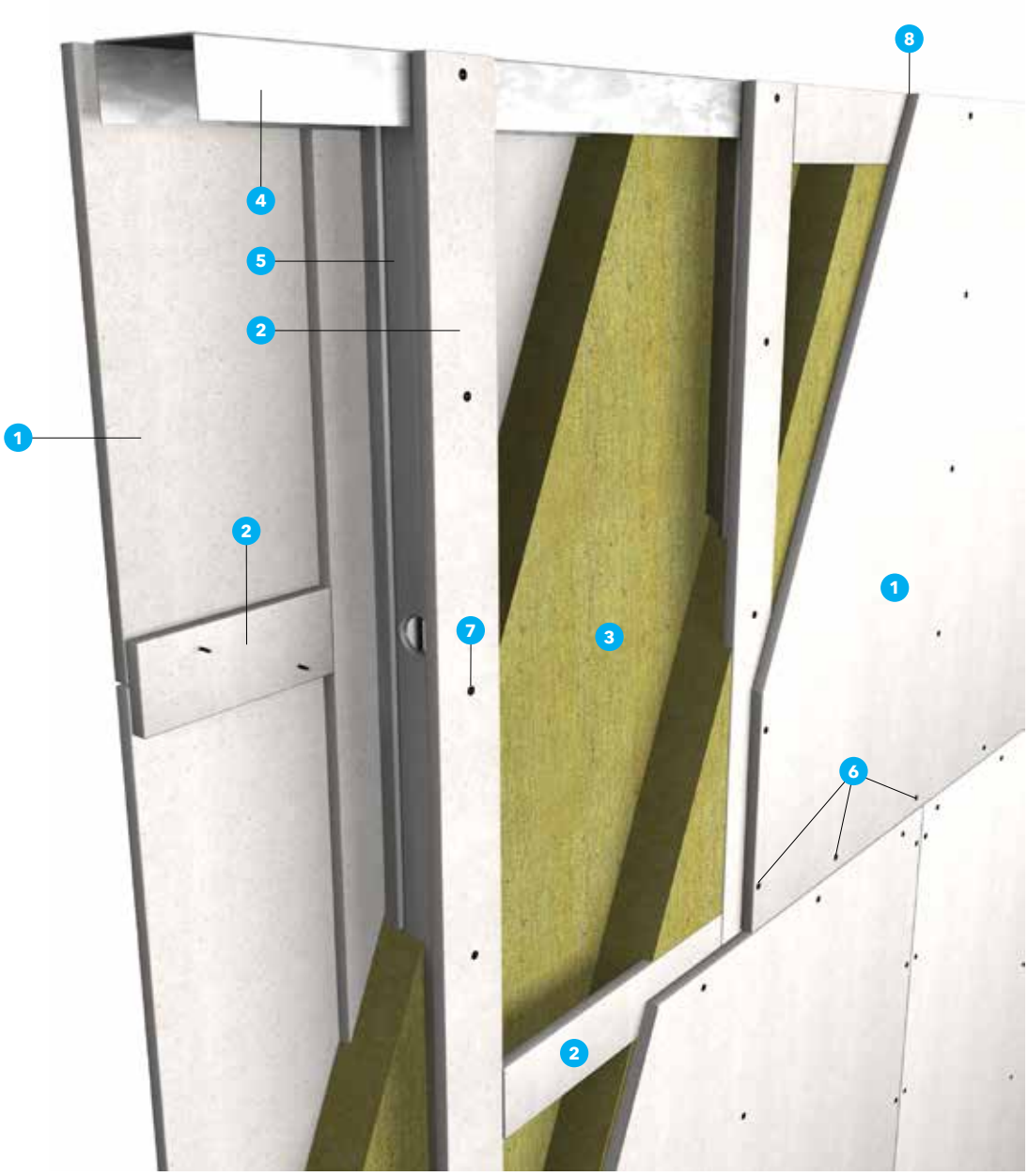
Please consult Promat for more details and for construction details of loadbearing steel stud partitions.

*Based on 4000mm height (please consult Promat for heights above 4000mm).

Promat

SUPALUX® – 2-hour fire rated steel stud partition

FRL	Model number	Standard	Thickness	STC reading
-/120/120	SU.22.12.EN	EN 1364: Part 1	Nominal 148mm	42



1. 12mm thick SUPALUX® board.
2. SUPALUX® cover strips 75mm wide x 12mm thick.
3. Mineral wool 2 x 50mm x 100kg/m³.
4. Partition tracks, top and bottom 100mm x 40mm x 0.6mm thick*.
5. Vertical steel studs 98mm x 40mm x 0.6mm thick* at nominal 610mm centres.
6. 32mm long x M4 self tapping screws at nominal 300mm centres.
7. 25mm long x M4 self tapping screws at 600mm centres.
8. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

Fixing of perimeter channels to substrate: M6 steel anchors bolts at nominal 500mm centres.

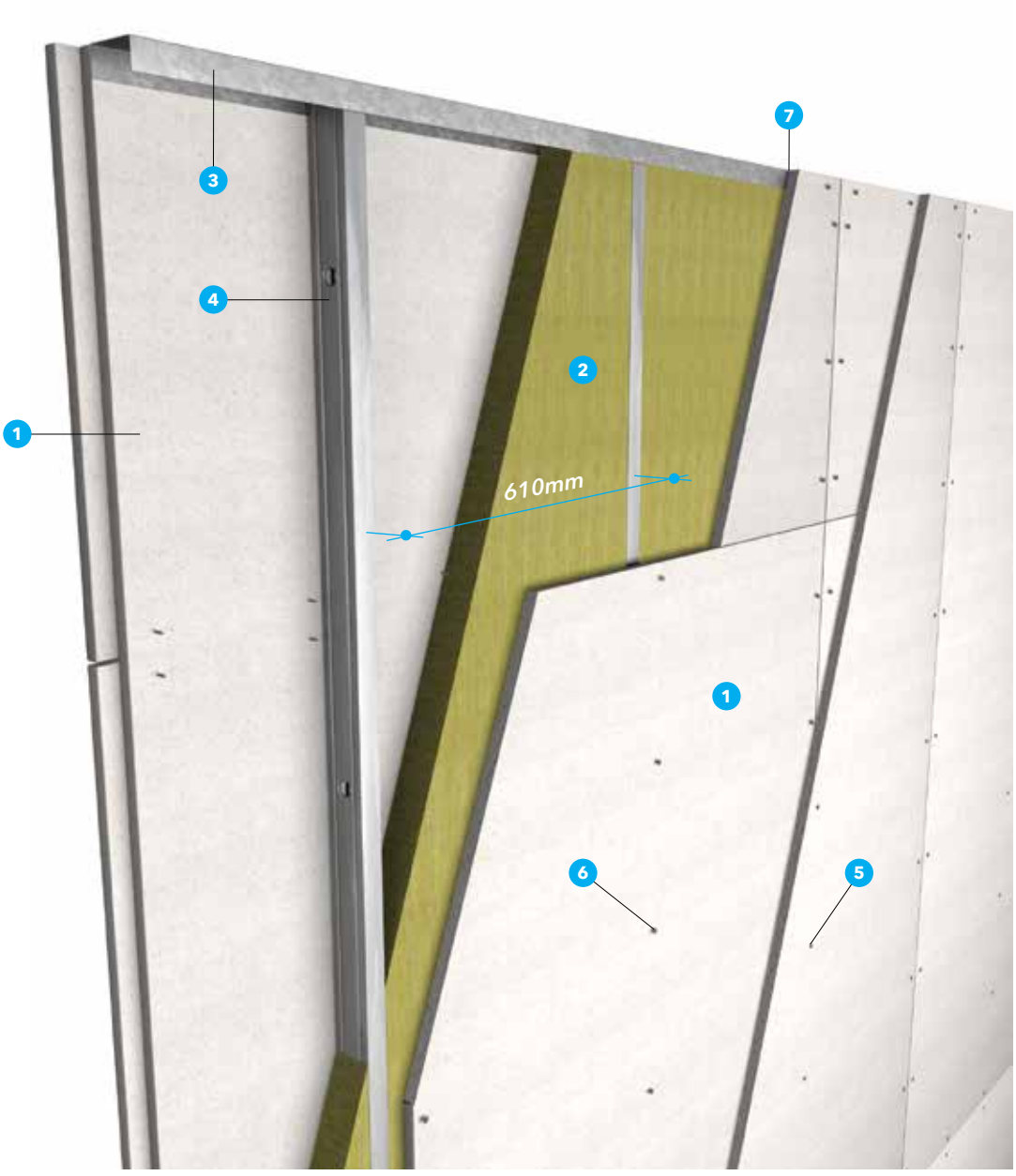
Please consult Promat for more details and for construction details of loadbearing steel stud partitions.

*Based on 4000mm height (please consult Promat for heights above 4000mm).

Promat

SUPALUX® – 3-hour fire rated steel stud partition

FRL	Model number	Standard	Thickness	STC reading
-/180/180	SU.22.18.EN	EN 1364: Part 1	Nominal 152mm	56



1. Two layers of 12mm thick SUPALUX® board with all vertical and horizontal joints staggered minimum 305mm.
2. Two layers of 50mm x 128kg/m³ mineral wool all vertical and horizontal joints staggered by 150mm, between layers.
3. Partition track, top and bottom. 104mm x 62mm x 1.5mm thick*.
4. Vertical steel studs 100mm x 54mm x 1.5mm thick* at nominal 610mm centres.
5. 32mm long x M4 self tapping screws at nominal 200mm centres.
6. 25mm long x M4 self tapping screws at 300mm centres.
7. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

Fixing of perimeter channels to substrate: M6 steel anchors bolts at nominal 500mm centres.

Please consult Promat for more details and for construction details of loadbearing steel stud partitions.

*Based on 4000mm height (please consult Promat for heights above 4000mm).

Promat

SUPALUX® – 4-hour fire rated steel stud partition

FRL	Model number	Standard	Thickness	STC reading
-/240/240	SU.22.24.EN	EN 1364: Part 1	Nominal 198mm	56

1. Two layers of 12mm thick SUPALUX® board with all vertical and horizontal joints staggered minimum 305mm.
2. Three layers of 50mm x 100kg/m³ mineral wool all vertical and horizontal joints staggered by 300mm, between layers.
3. Partition track, top and bottom. 150mm x 40mm x 0.6mm thick*.
4. Vertical steel studs 148mm x 49mm x 0.6mm thick* at nominal 610mm centres.
5. 32mm long x M4 self tapping screws at nominal 200mm centres.
6. 25mm long x M4 self tapping screws at 300mm centres.
7. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

Fixing of perimeter channels to substrate: M6 steel anchors bolts at nominal 500mm centres.

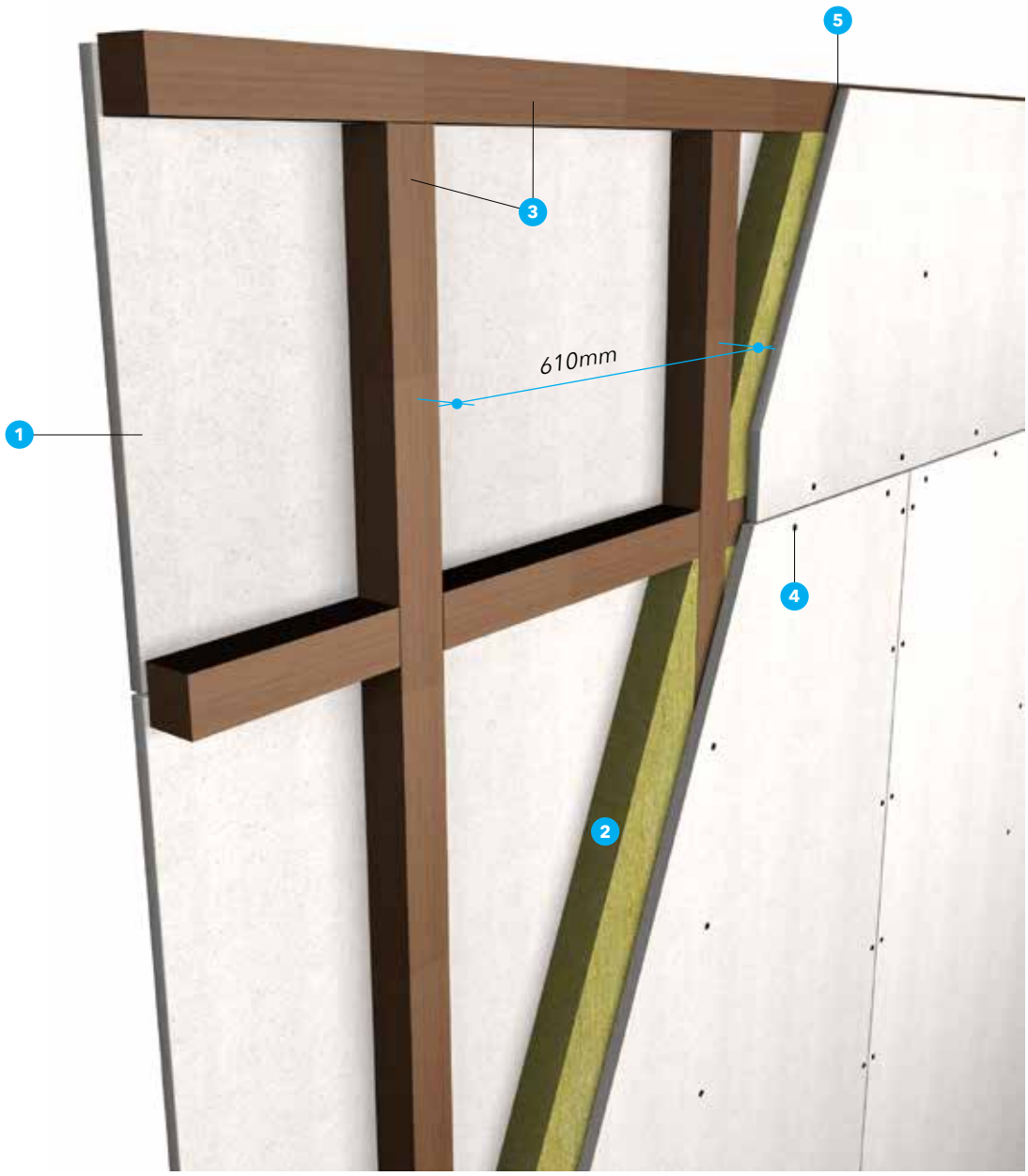
Please consult Promat for more details and for construction details of loadbearing steel stud partitions.

*Based on 4000mm height (please consult Promat for heights above 4000mm).

Promat

SUPALUX® – 1-hour fire rated timber stud partition

FRL	Model number	Standard	Thickness	STC reading
-/60/60	SU.21.60.EN	EN 1364: Part 1	Nominal 81mm	42



1. 9mm thick SUPALUX® board.
2. Mineral wool 60mm x 45kg/m³.
3. Timber studs 63mm x 50mm thicks*.
4. 50mm long x M4 self tapping screws at 600mm centres.
5. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

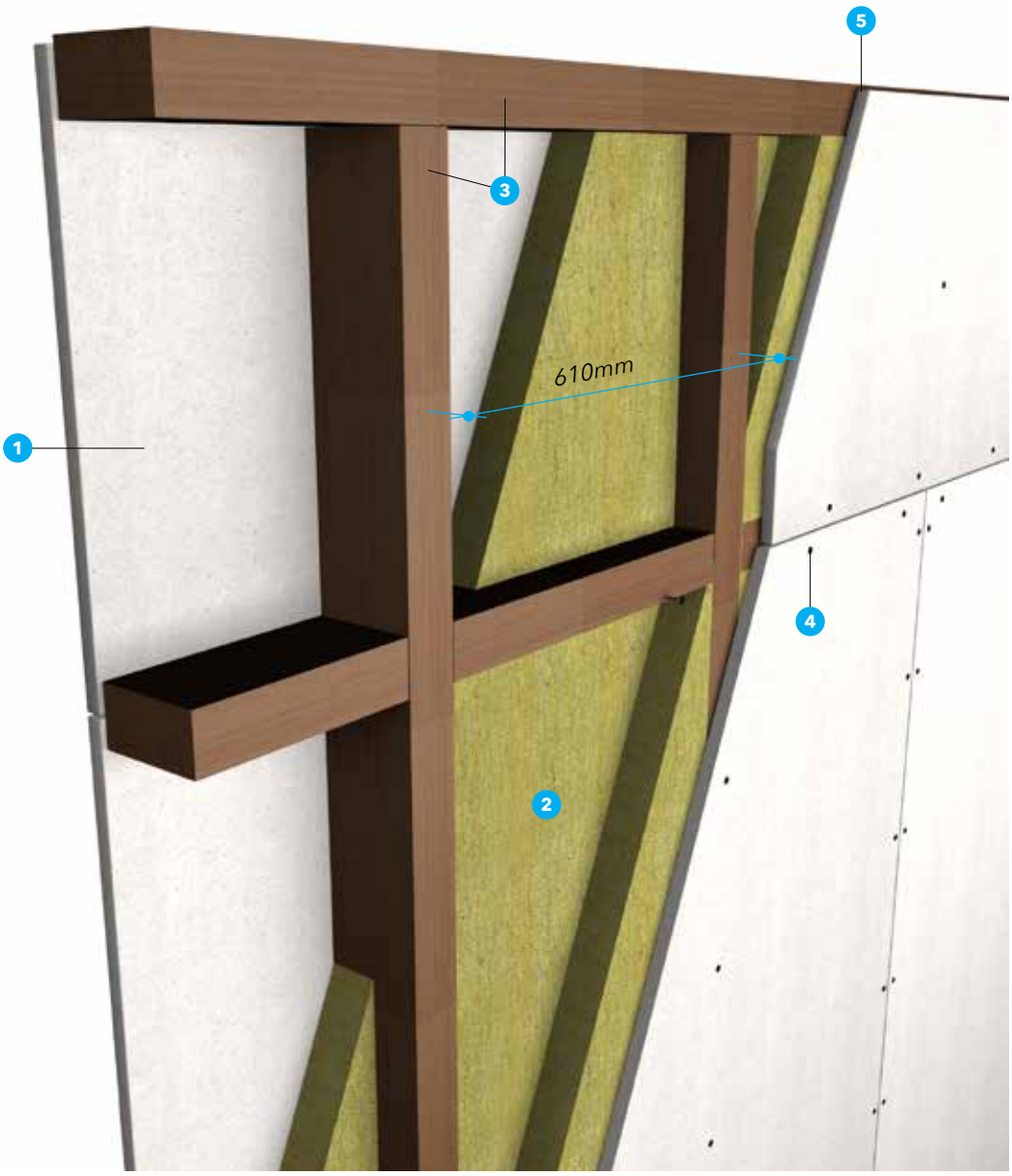
Please consult Promat for more details and for construction details of loadbearing timber stud partitions.

*Based on 4000mm height (please consult Promat for heights above 4000mm).

Promat

SUPALUX® – 1 ½ and 2-hour fire rated timber stud partition

FRL	Model number	Standard	Thickness	STC reading
-/90/90	SU.21.90.EN	EN 1364: Part 1	Nominal 113mm	42
-/120/120	SU.21.12.EN	EN 1364: Part 1	Nominal 119mm	



1. 90 minutes: 12mm thick SUPALUX® board.
   120 minutes: 15mm thick SUPALUX® board.
2. 90 minutes: Mineral wool 2 x 40mm x 80kg/m³.
   120 minutes: Mineral wool 2 x 40mm x 100kg/m³.
3. Timber studs 89mm x 50mm thicks*.
4. 63mm long x M4 self tapping screws at 600mm centres.
5. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

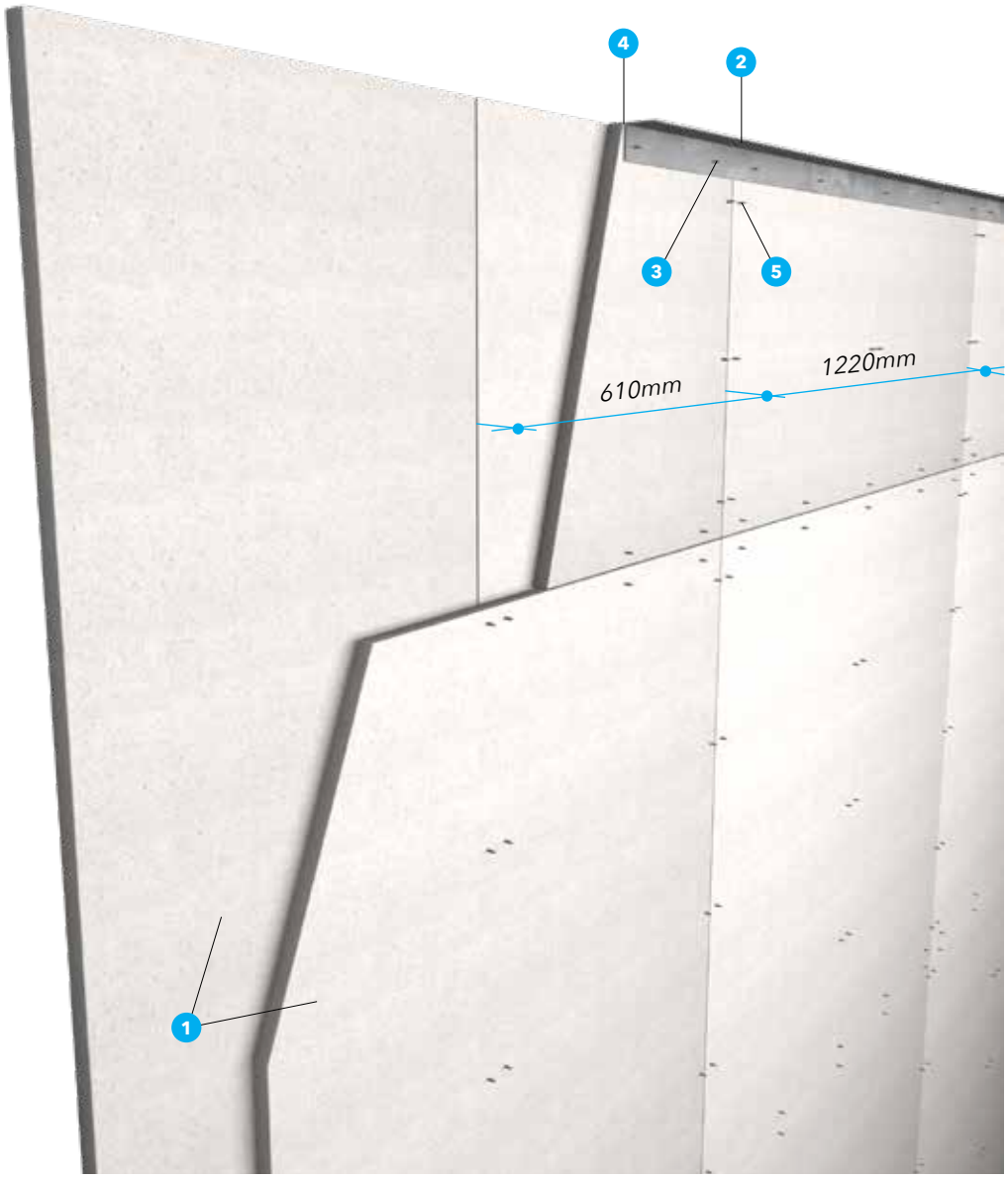
Please consult Promat for more details and for construction details of loadbearing timber stud partitions.

*Based on 4000mm height (please consult Promat for heights above 4000mm).

Promat

SUPALUX® – 1-hour fire rated solid partition

FRL	Model number	Standard	Thickness	STC reading
-/60/60	SU.23.60	BS 476: Part 22: 1987	Nominal 35mm	35



1. One layer of 15 mm SUPALUX® board fixed to a second layer of 20mm SUPALUX® board, all joints staggered at minimum 610mm horizontally and vertically.
2. 50mm x 50mm x 1mm thick perimeter steel angle*.
3. 38mm long x M4 self tapping screws at 300mm centres for first layer, 56mm long x M4 self tapping screws at 300mm centres for second layer, all fixings must be through the board into the perimeter angle.
4. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.
5. Stitching screws at all board joints vertical and horizontal in both layers fixing first and second layer together minimum 45mm long.

Screw fixings to perimeter steel angles should be 20mm from the board edge. Fixings to the boards should be 50mm and 100mm from the board edge at the corners.

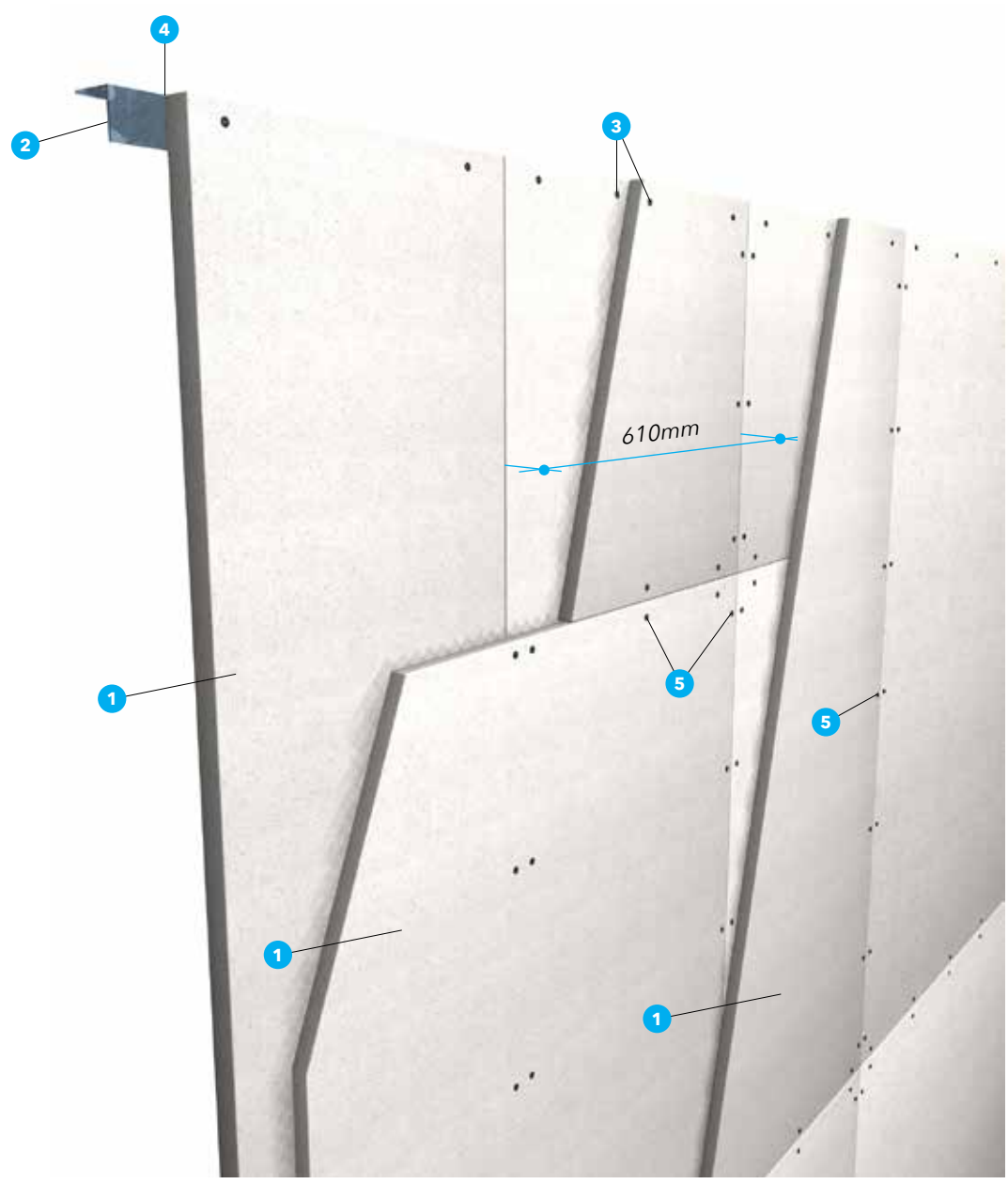
Fixing of perimeter channels to substrate: M6 steel anchors bolts at nominal 500mm centres.

*Based on 4000mm height (please consult Promat for heights above 4000mm).

Promat

SUPALUX® – 2-hour fire rated solid partition

FRL	Model number	Standard	Thickness	STC reading
-/120/120	SU.23.12	BS 476: Part 22: 1987	Nominal 50mm	36



1. One layer of 20mm SUPALUX® board fixed to a second layer of 15mm SUPALUX® board and fixed to a third layer of 15mm SUPALUX® board, staggered at minimum 610mm horizontally and vertically.
2. 50mm x 50mm x 1mm thick perimeter steel angle* at perimeter.
3. No. 8 x 38mm long drywall screws at 400mm centres for first layer, No. 8 x 50mm long drywall screws at 300mm centres for second layer, No. 8 x 65mm long drywall screws at 200mm centres for third layer, all fixings must be through the board into the perimeter angle.
4. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.
5. 5.5mm x 40mm long stitching screws at 200mm centres for all board joints vertical and horizontal at all layers fixing first, second and third layer together.

Screw fixings to perimeter steel angles should be 20mm from the board edge. Fixings to the boards should be 50mm and 100mm from the board edge at the corners.

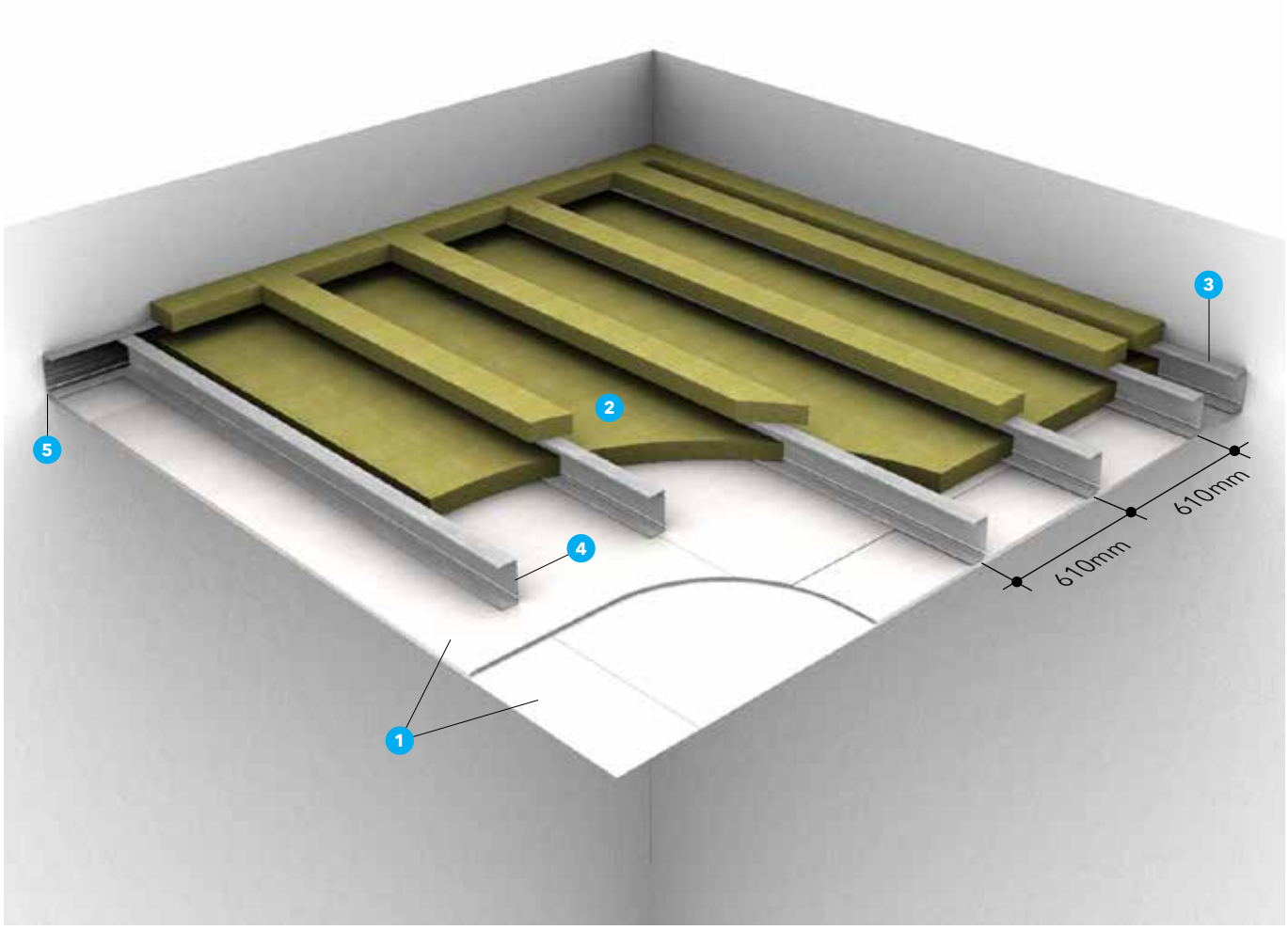
Fixing of perimeter channels to substrate: M8 steel anchors bolts at nominal 500mm centres.

*Based on 3100mm height (please consult Promat for heights above 3100mm).

Promat

SUPALUX® – 1-hour fire rated ceiling membrane

FRL	Model number	Standard	Thickness	STC reading
-/60/60	SU.14.60-A	BS 476: Part 22: 1987	Nominal 193mm	47



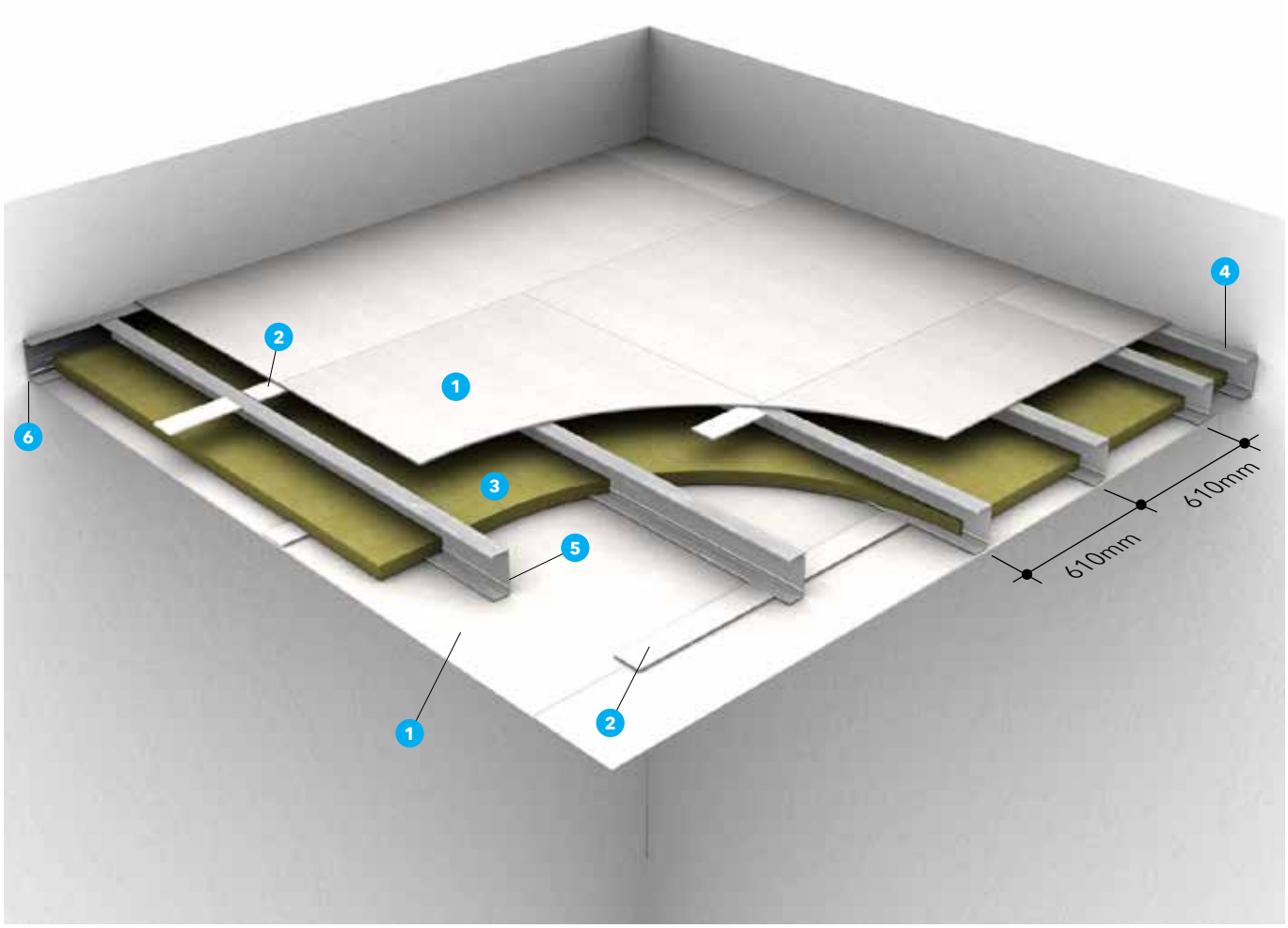
1. Two layers of 9mm thick SUPALUX® board with staggered joints.
2. One layer of 75mm x 60kg/m³ or 50mm x 80kg/m³ mineral wool with a strip of 25 mm x 75 kg/m³ mineral wool must be fixed over the top of each support frame member.
   Alternative method: Installing the mineral wool above the steel frame members, but must be fitted in 2 layers.
3. 125mm x 64mm x 1.5mm thick perimeter steel channels* fixed to concrete with M6 anchor bolts at nominal 500mm centres.
4. 125mm x 64mm x 1.5mm thick steel channels* at nominal 610mm centres, SUPALUX® boards fixed to channels with 45mm long x M4 self tapping screws at nominal 200mm centres.
5. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

*Based on 3600mm span (please consult Promat for spans greater than 3600mm).

Promat

SUPALUX® – 1-hour fire rated ceiling membrane

FRL	Model number	Standard	Thickness	STC reading
-/60/60	SU.14.60	BS 476: Part 22: 1987	Nominal 143mm	47



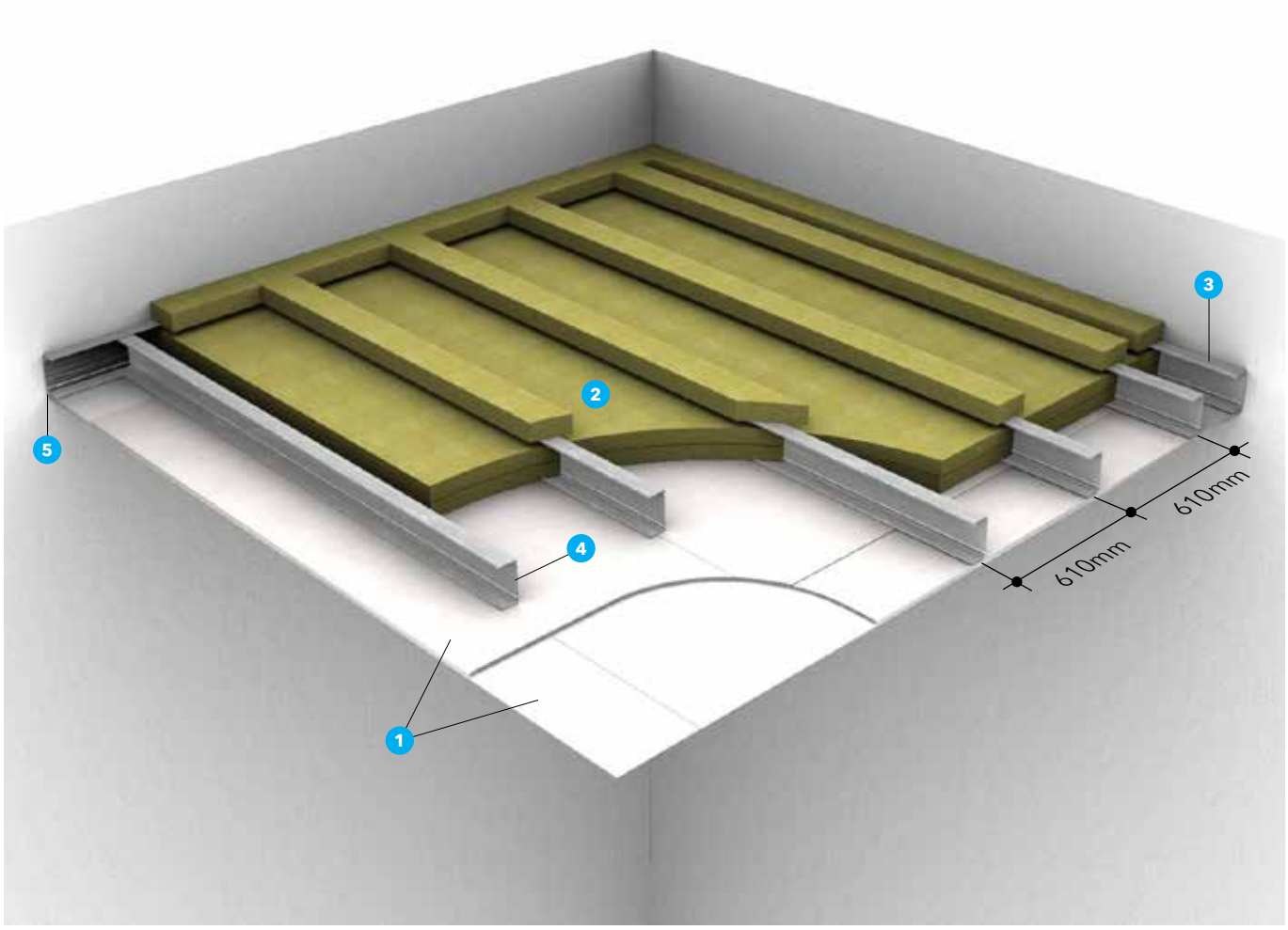
1. One layer of 9mm thick SUPALUX® board.
2. SUPALUX® cover strips 100mm wide x 9mm thick.
3. One layer of 50mm x 80kg/m³ or 75mm x 60kg/m³ mineral wool.
4. 125mm x 64mm x 1.5mm thick perimeter steel channels* fixed to concrete with M6 anchor bolts at nominal 500mm centres.
5. 125mm x 64mm x 1.5mm thick steel channels* at 610mm centres SUPALUX® boards fixed with 45mm long x M4 self tapping screws at nominal 200mm centres.
6. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

*Based on 3600mm span (please consult Promat for spans greater than 3600mm).

Promat

SUPALUX® – 2-hour fire rated ceiling membrane

FRL	Model number	Standard	Thickness	STC reading
-/120/120	SU.14.12-A	BS 476: Part 22: 1987	Nominal 193mm	47



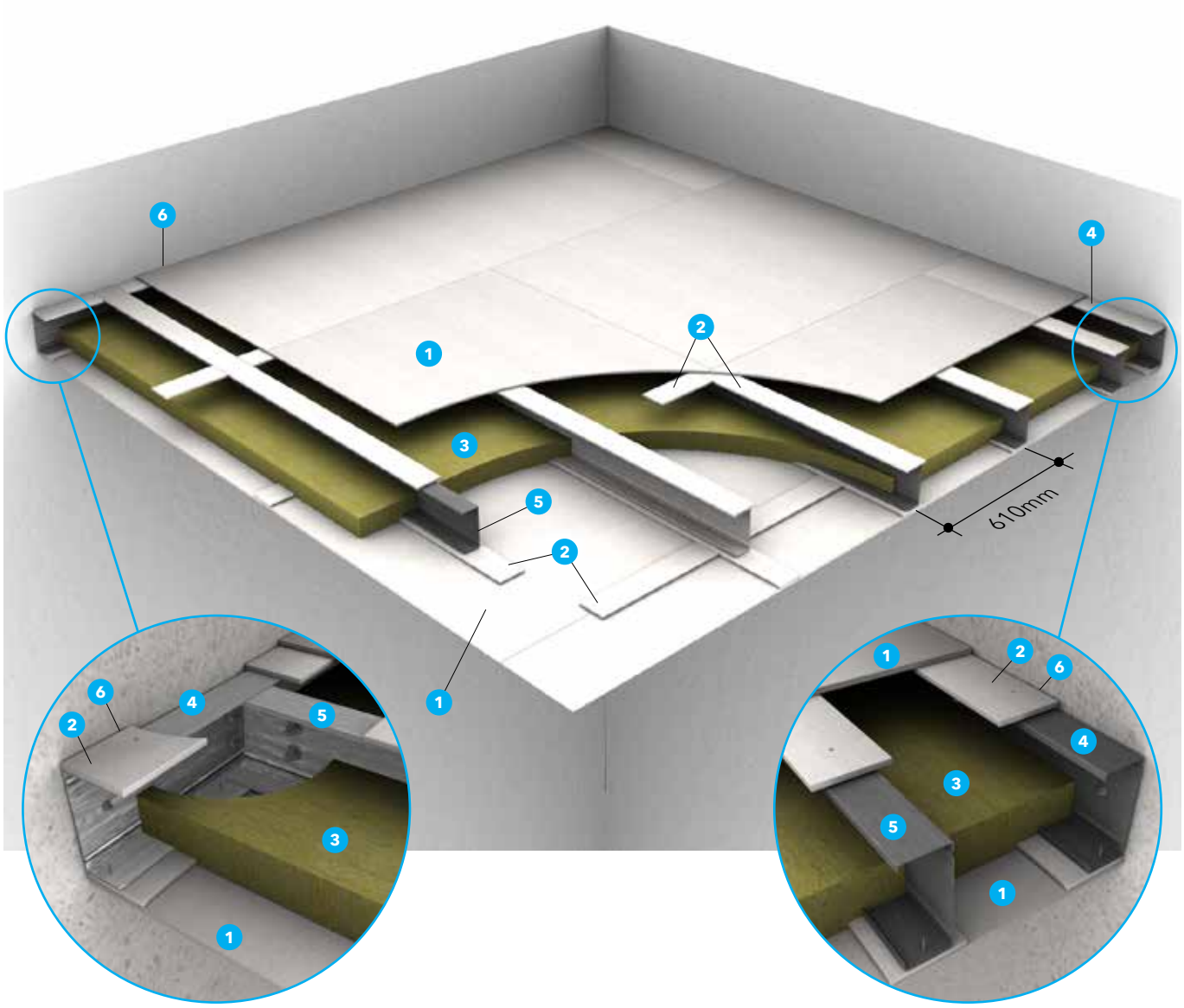
1. Two layers of 9mm thick SUPALUX® board with staggered joints.
2. Two layers of 50mm x 75kg/m³ or two layers of 40mm x 100kg/m³ or 75mm x 100kg/m³ mineral wool with a strip of 25 mm x 75 kg/m³ mineral wool must be fixed over the top of each support frame member. Alternative method: Installing the mineral wool above the steel frame members, but must be fitted in 2 layers.
3. 125mm x 64mm x 1.5mm thick perimeter steel channels* fixed to concrete with M6 anchor bolts at nominal 500mm centres.
4. 125mm x 64mm x 1.5mm thick steel channels* at nominal 610mm centres, SUPALUX® boards fixed to channels with 45mm long x M4 self tapping screws at nominal 200mm centres.
5. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

*Based on 3600mm span (please consult Promat for spans greater than 3600mm).

Promat

SUPALUX® – 2-hour fire rated ceiling membrane

FRL	Model number	Standard	Thickness	STC reading
-/120/120	SU.14.12	BS 476: Part 22: 1987	Nominal 161mm	48



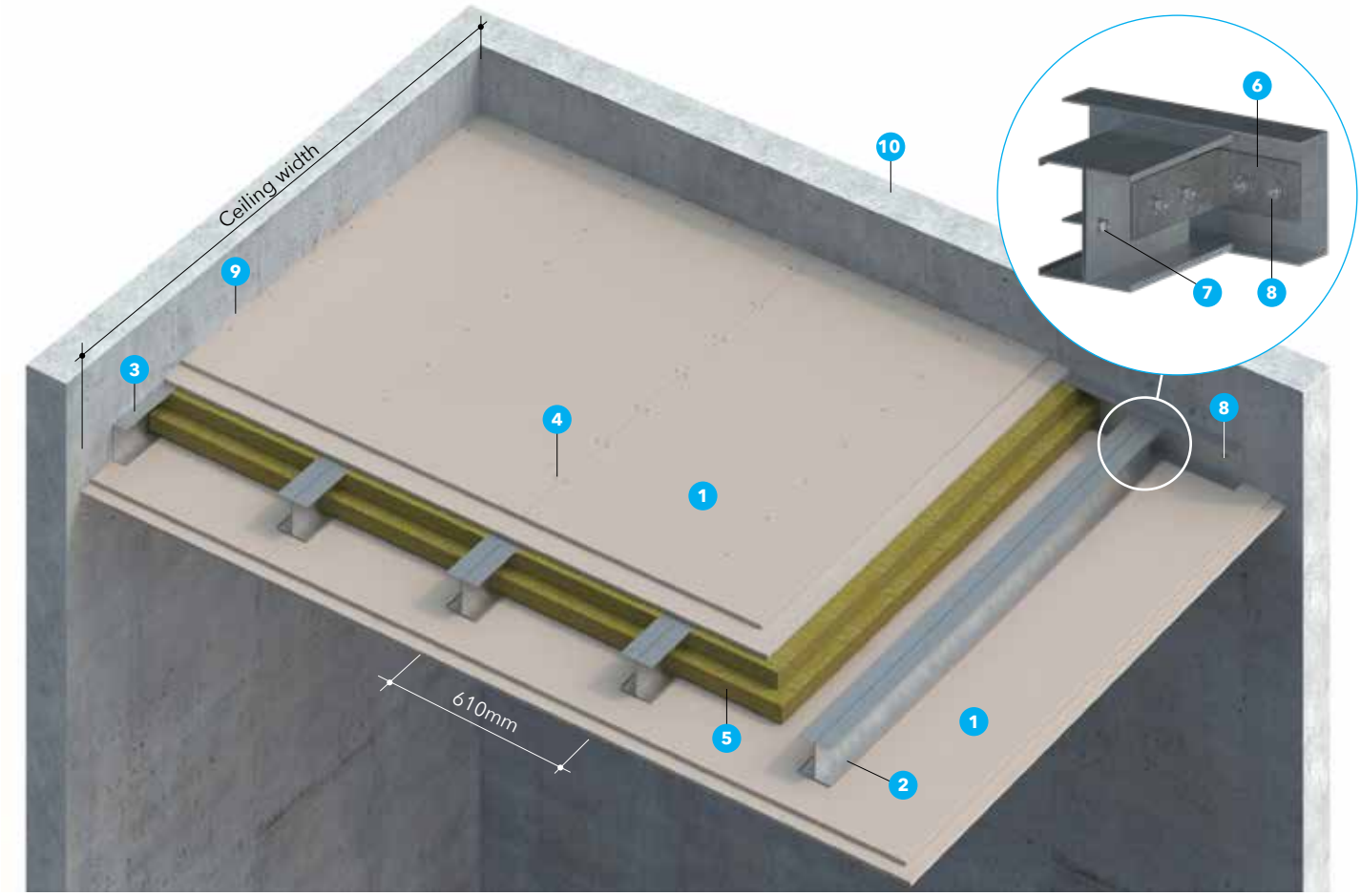
1. One layer of 9mm thick SUPALUX® board.
2. 75mm wide x 9mm thick SUPALUX® cover strips.
3. One layer of 75mm x 100kg/m³ or 80mm x 100kg/m³ mineral wool or 100mm x 75kg/m³.
4. 125mm x 64mm x 1.5mm thick perimeter steel channels* fixed to concrete with M6 anchor bolts at nominal 500mm centres.
5. 125mm x 64mm x 1.5mm thick steel channels* at nominal 610mm centres, SUPALUX® boards fixed to channels with 45mm long x M4 self tapping screws at nominal 200mm centres.
6. PROMASEAL®-A Acrylic Sealant at the perimeter between the boards and the substrate.

*Based on 3600mm span (please consult Promat for spans greater than 3600mm).

Promat

SUPALUX® – 4-hour fire rated ceiling membrane

FRL	Model number	Standard	Thickness	STC reading
-/240/240	SU.14.24	BS 476: Part 22: 1987	Nominal 149mm	56



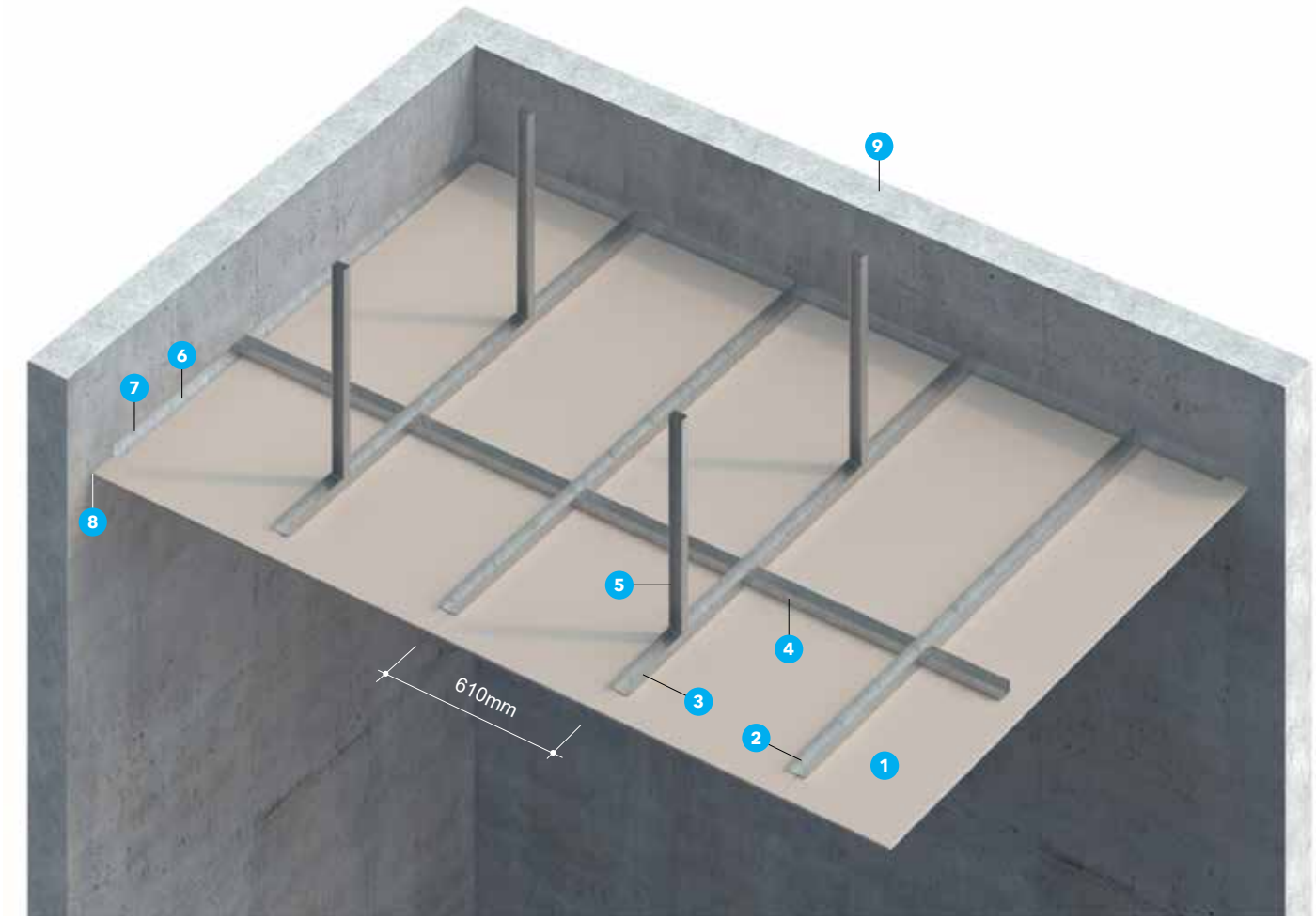
1. Two layers of SUPALUX® 12mm thick staggered joints min. 300mm between boards.
2. Back to back C-channels C-101 x 51 x 1.6mm at 610mm centres*.
3. Perimeter galvanised steel channel 101 x 51 x 1.6mm thick*.
4. M4 self-tapping screws at 200mm centres.
5. Mineral wool 2 x 50mm x 100kg/m^3
6. L-Angle bracket 100 x 60 x 110 x 5mm thick (on both sides)
7. M10 bolt and nut at 500mm centres for back to back channel supports.
8. M10 all steel anchor bolts at 600mm centres.
9. PROMASEAL®-A Acrylic Sealant to seal gaps on irregularities surface.
10. Masonry wall.

*Based on 3600mm span (please consult Promat for spans greater than 3600mm).

Promat

SUPALUX® – 4-hour fire rated suspended ceiling (Integrity only)

FRL	Model number	Standard	Thickness	STC reading
-/240/-	SU.14.24.E-S	BS 476: Part 22: 1987	Nominal 40mm	35

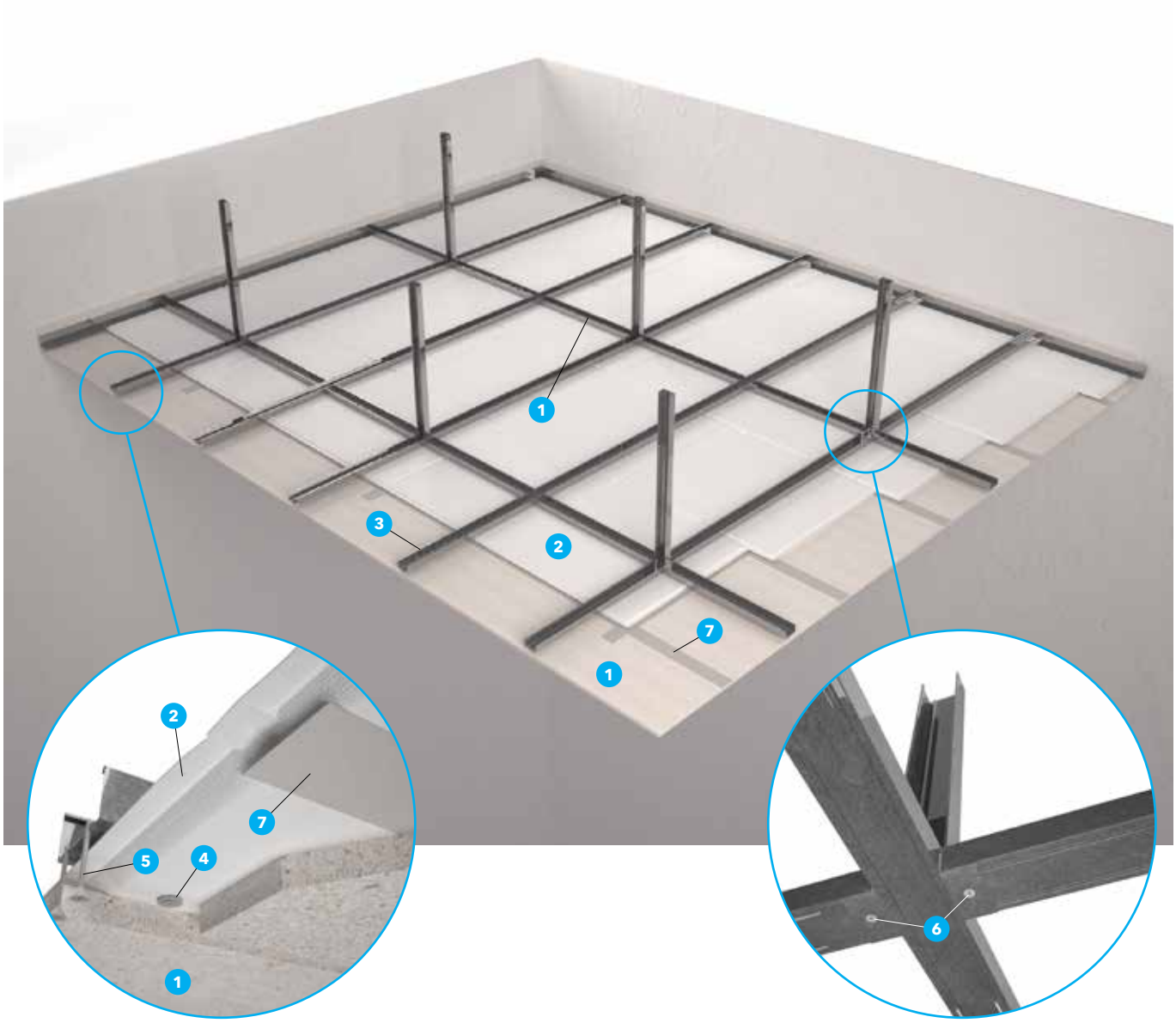


1. One layer of SUPALUX® 9mm thick.
2. M4 self-tapping screws at 200mm centres.
3. Main support C-channel 50 x 31 x 0.6mm at 610mm intervals & at all board joints (Other size permitted if Zx ≥ 305mm³).
4. Cross support C-channel 50x31x0.6mm at 1220mm intervals & at all board joints (Other size permitted if Zx ≥ 305mm³).
5. Steel suspended members at 1220mm intervals. Stress shall not exceed 3.3N/mm².
6. Perimeter angle L50 x 40 x 0.6mm.
7. M6 steel anchor bolts at 500mm centres.
8. PROMASEAL®-A Acrylic Sealant to seal gaps on irregularities surface.
9. Masonry wall.

Promat

SUPALUX® + PROMAT® Slim & Light – 3 & 4-hour fire rated suspended ceiling

FRL	Model number	Standard	Thickness	Weight
-/180/180	SU+P-SL.14.18-S.EN	EN 1364: Part 2	Nominal 30mm	Nominal 19.4kg/m²
-/240/240	SU+P-SL.14.24-S.EN		Nominal 33mm	Nominal 20.18kg/m²

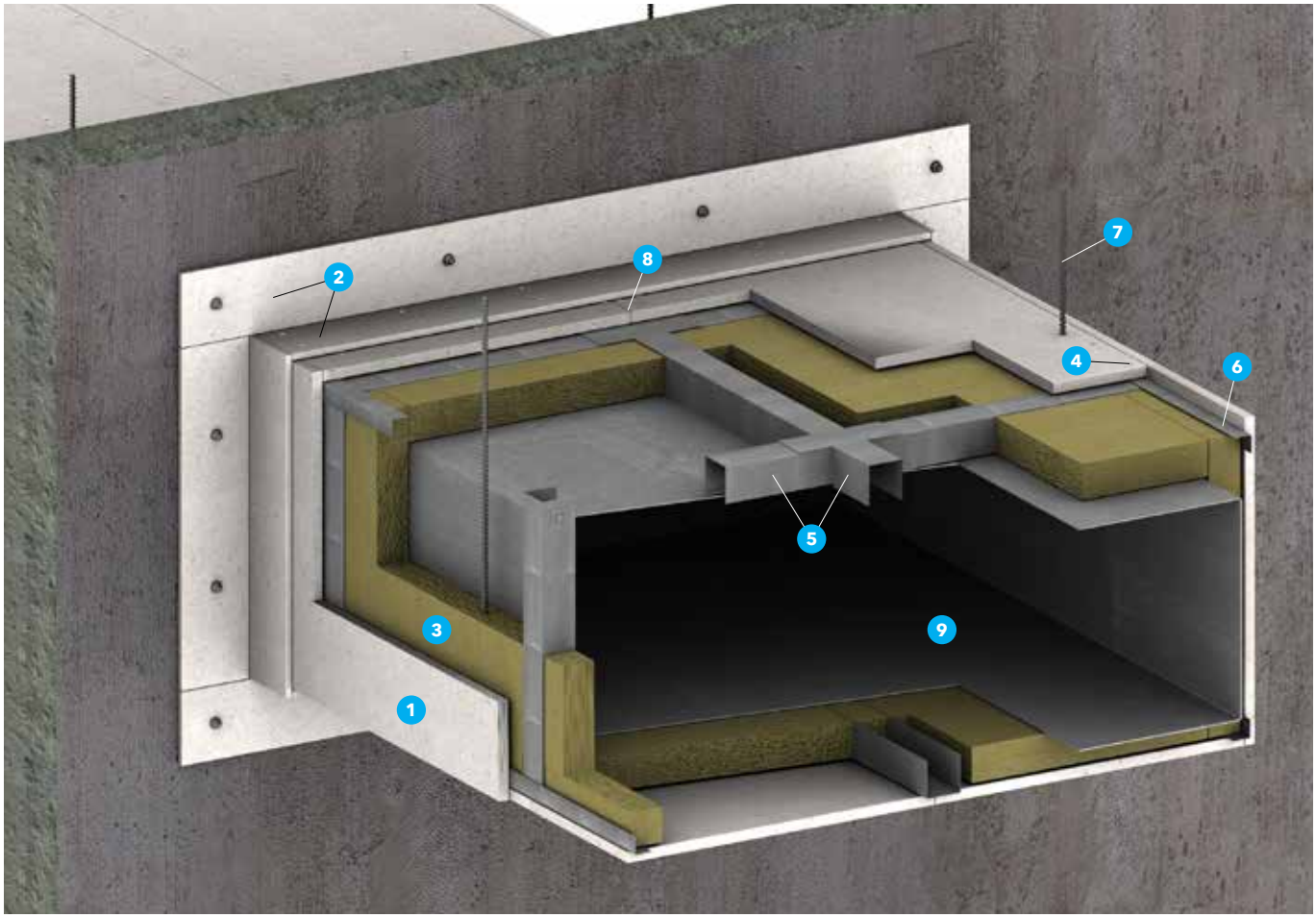


1. One layer of 15mm thick SUPALUX® board.
2. 180 minutes: 15mm thick PROMAT® Slim & Light Panels.
   240 minutes: 18mm thick PROMAT® Slim & Light Panels.
3. 51mm x 36mm x 0.55mm g.s steel C-channel at 1220mm x 610mm grid 51mm x 36mm x 0.55 g.s C-channel at hangers at 1200mm centres.
4. M6 x 25mm long self tapping screws with washer.
5. M8 x 50mm long self tapping screws.
6. M10 x 16mm long self-drilling screws.
7. Glass cloth strip at butt joints of PROMAT® Slim & Light panels.

Promat

SUPALUX® – 1, 2 & 4-hour fire rated cladding to steel duct

FRL	Model number	Standard
-/60/60	SU.41.60	BS 476: Part 24: 1987
-/120/120	SU.41.12	
-/240/240	SU.41.24	



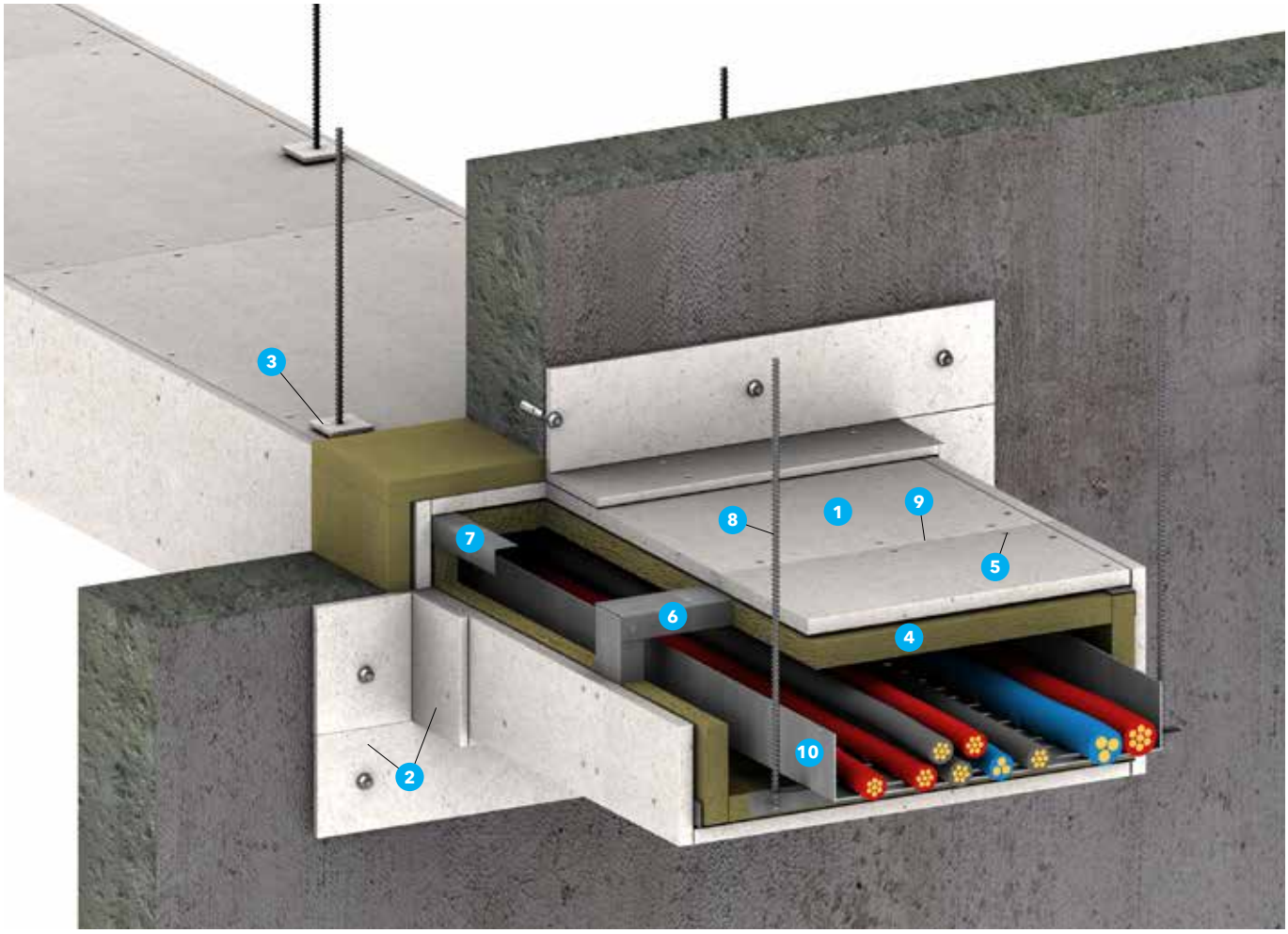
1. One layer of SUPALUX® board, thickness in accordance with the required fire resistance as follows:-
   60 minutes: 12mm thick
   120 minutes: 12mm thick
   240 minutes: 25mm thick
2. SUPALUX® collar, one layer 100mm wide x same board thickness as main cladding. Fastened to the wall with M6 anchor bolts at 500mm centres. The section of collar to the duct should be fixed to the SUPALUX® cladding using 32mm long x No.8 drywall screws at nominal 200mm centres.
3. Mineral wool, thickness and density in accordance with the required fire resistance as follows:-
   60 minutes: 50mm x 60kg/m³
   120 minutes: 50mm x 100kg/m³
   240 minutes: Two layers of 50mm x 100kg/m³
4. 35mm long x M4 self tapping screws at nominal 200mm centres.
5. Steel channel coincides with boards' butt-joint cavity fill with mineral wool:
   60 minutes: U-50 x 50 x 0.6mm
   120 minutes: U-50 x 50 x 0.6mm
   240 minutes: U-100 x 50 x 0.6mm
6. 50mm x 50mm x 0.6mm thick steel angles joining corners of collars (item 5).
7. Galvanised steel hanger support system, stress level in accordance with the required fire resistance as follows:
   60 minutes: < 15N/mm²
   120 minutes: < 10N/mm²
   240 minutes: < 6N/mm²
8. PROMASEAL®-A Acrylic Sealant at all board joints and hanger penetrations
9. Galvanised steel duct.

This cladding method is for a steel duct up to 6000mm x 1500mm. Minimum size of steel duct sheet, stiffeners and angle are as specified in DW/144. Please consult Promat for details of the hanger support system (item 7).

Promat

SUPALUX® – 2 & 4-hour fire rated building services enclosure

FRL	Model number	Standard
-/120/120	SU.50.12	BS 476: Part 20: 1987
-/240/240	SU.50.24	



1. One layer of SUPALUX® board, thickness in accordance with the required fire resistance as follows:-
   120 minutes: 12mm thick
   240 minutes: 25mm thick
2. SUPALUX® collar, one layer 100mm wide x same board thickness as main cladding. Fastened to the wall with M6 anchor bolts at 500mm centres. The section of collar to the duct should be fixed to the SUPALUX® cladding using 32mm long x M4 self tapping screws at nominal 200mm centres.
3. SUPALUX® cover strips minimum 100mm wide x main board thickness at all board to board joints
4. Mineral wool.
   120 minutes: 50mm x 100kg/m³
   240 minutes: two layers of 50mm x 100kg/m³
5. 45mm long x M4 self tapping screws at 200mm centres.
6. Steel channel support at 610mm centres:
   i) Enclosure width up to 1.2m: 50 x 50 x 0.9mm thick
   ii) Enclosure width above 1.2m: 50 x 50 x 1.2mm thick
7. Steel L-angle:
   i) Enclosure width up to 1.2m: 50 x 50 x 0.9mm thick
   ii) Enclosure width above 1.2m: 50 x 50 x 1.2mm thick
8. Galvanised steel hanger support system, stress level in accordance with the required fire resistance as follows:
   120 minutes: < 10N/mm²
   240 minutes: < 6N/mm²
9. PROMASEAL®-A Acrylic Sealant at all board joints and hanger penetrations.
10. General building services.

Applicable for services enclosure up to 3000mm x 1500mm. Please consult Promat for details of the hanger support system (item 8).

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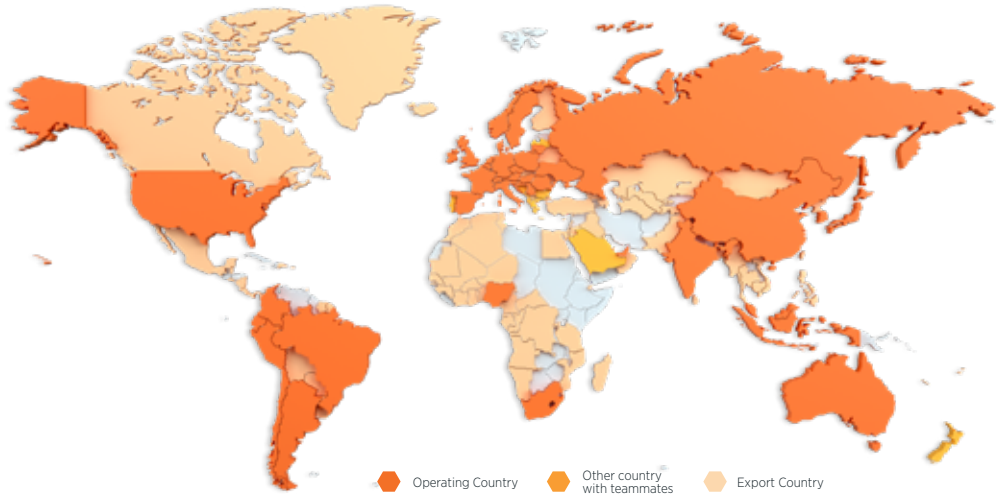

About Etex

Etex is a global building material manufacturer and pioneer in lightweight construction. Etex wants to inspire people around the world to build living spaces that are ever more safe, sustainable, smart and beautiful.

Founded in 1905, headquartered in Zaventem, Belgium, Etex is a family-owned company with more than 13,500 employees globally. It operates more than 160 sites in 45 countries and recorded a revenue of EUR 3.7 billion in 2022. Etex fosters a collaborative and caring culture, a pioneering spirit and a passion to always do better for its customers.

Etex has five R&D centres supporting five global divisions:

- Building Performance: dry construction solutions including plasterboards and fibre cement boards, plasters and formulated products, passive fire protection and associated products.
- Exteriors: a range of aesthetic fibre cement materials for use in agriculture, architectural and residential exteriors.
- Industry: fire protection and high-performance insulation products for the construction and OEM (Original Equipment Manufacturer) industries.
- Insulation: glass mineral wool and extruded polystyrene (XPS) for thermal and acoustic insulation.
- New Ways: high-tech offsite modular solutions based on wood and steel framing.

Etex's global portfolio includes leading commercial brands such as Promat, Kalsi, Siniat, Equitone, Eternit, Cedral, Durlock, Gyplac, Pladur, Superboard and URSA.

Etex is Inspiring Ways of Living, for more information, please visit our website: www.etexgroup.com

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