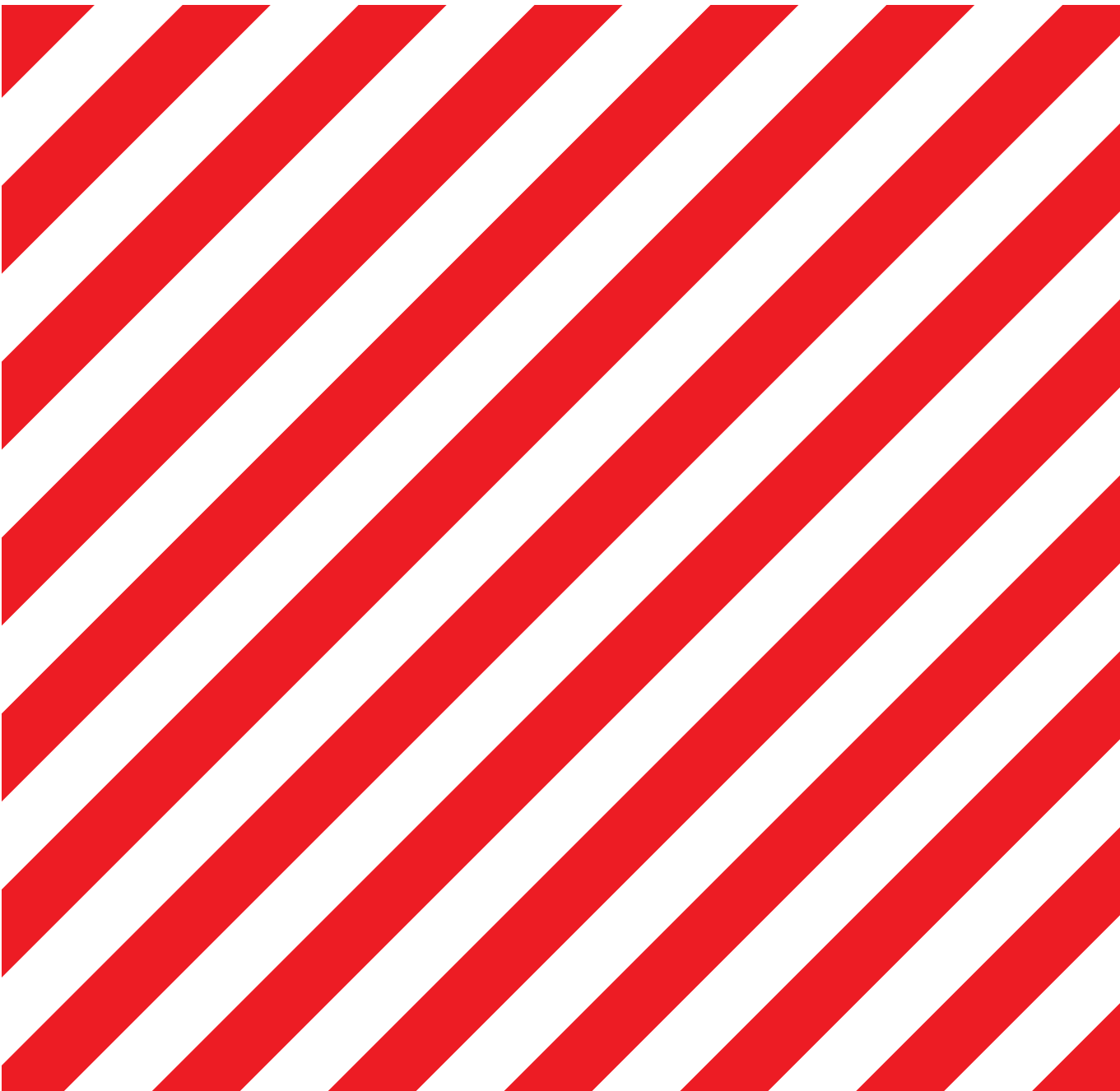


PASSIVE FIRE PROTECTION SYSTEMS
Application & Technical Manual



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The long term effects of global warming and climate change are without doubt the most important issues confronting the world today. The way ahead, however, is clouded with uncertainty. There are those who believe Planet Earth has gone past its “tipping point”, where man’s constant demands for resources and space mean we have lost the natural ability to self-correct, replace and renew.

Others think that the weather extremes we now see before our very eyes on an almost daily basis is part of a natural cycle of events simply repeating itself and will in time lead naturally to a more balanced and sustainable ecological order. Still others believe that the continued application of science and technology will sooner rather than later provide all the appropriate solutions for balanced sustainability. In the meantime, the lack of integrated geopolitical consensus undermines most but not all good intentions and initiatives.

While it is clear that strategies like using less plastic shopping bags at the supermarket and more recycled paper in the workplace are increasingly important, it is also obvious that the 3Rs — Reduce, Recycle and Re-use — are simply no longer enough.

What is required is a coordinated global plan between and acceptable to all stakeholders — government, the private sector, communities and individuals — that capitalises abundant global goodwill and all available resources. While the politicians continue to debate, it is up to a collective of enlightened businesses, non governmental organisations and concerned individuals to lead the way.

Redefining Sustainability

The heart of every responsible business today is sustainability and this basically means being profitable in a way that guarantees a future for employees, customers, society and the business itself. We not only have to make responsible products and systems but ensure that they are installed and used in a responsible way.

This requires enlightened policies that look not only at the way business is done but why, when and how, and the impact the business has both upstream and downstream. Doing whatever is necessary to meet bottomline targets is no longer adequate justification. Businesses now have to take a close look at, adopt and respond to wide range of corporate social responsibility factors that customers, communities and regulatory agencies demand.

In the ongoing rush to modernise and prosper, we tend to forget that Mother Nature has always and will continue to hold the key to how man lives, works and survives. For most societies now, lifestyles and expectations have to be adjusted to the realities of true sustainability. We will probably have to make do with less. We will certainly need to be much more efficient in the utilisation of increasingly rare resources.

The Process Of Change And The Built Environment

Just as weather patterns continue to change, so too do the structures we build and use. As the late British statesman Sir Winston Churchill once astutely observed, “first we shape buildings, thereafter they shape us”.

Indeed, most structures today continue to be designed and built with essentially Victorian technologies, systems and ideas, and mostly inert materials. Ultimately, this is not sustainable. The only way to build genuinely sustainable cities and homes is to connect them to rather than insulate them from nature, as we do now. The best way forward, according to New Wave architects and engineers, is to utilise metabolic or living systems. Research into these new age materials is in the explorative phase at this point in time and so the built environment will remain at least for the foreseeable future mostly a matter of traditional brick and mortar, glass and steel solutions all too susceptible to the unwanted forces and impact of fire.

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Nevertheless, the buildings designed and used today are noticeably different from just two, or even one decade ago. And this is not just a matter of architectural and engineering style but also function, and what the building is expected to do for its users and its surrounding communities. Materials are also changing. It is very likely that the built environment of the future will be unrecognisable from what it is today.

One factor is however certain, the bigger and more complex the built environment becomes, the more difficult it is to protect against all forms of threat, particularly fire.

Modern Risk Management And Fire Prevention Strategies

The level of risk the modern built environment is exposed to nowadays is unimaginable compared to even a decade ago. Terrorism, for example, is a very real threat and one that has quickly become an integral component of virtually every risk management strategy.

At the end of the day however, the danger of unexpected and uncontrolled fire is still the number one threat to buildings and one that continues regrettably to cause thousands of mostly avoidable fatalities each and every year. It is difficult at best to accurately assess total monetary losses of expensive property.

While a bucket of sand in the right hands at the right time and place is still a valid concept, the scale and complexity of the modern built environment demands an expanded approach that integrates numerous scientific methodologies to effectively meet a multiplicity of threats.

This means integrating an arsenal of active and passive, cutting edge technologies aimed not just at minimising the occurrence of fire but inhibiting and containing it as effectively as possible, if and when it does occur.

Fortunately, building owners, developers, planners and designers have easy access to a large resource bank of scientific data and empirical evidence to help them make better informed decisions that meet legislative, regulatory and societal expectations in fire safety design.

Huge advances in fire science technology have been made in recent years and the evolution of brilliant, innovative materials for eventual fire safety application are steadily decreasing in cost and becoming increasingly available to more building developers and designers. Companies like Promat — a global leader in the fire sciences industry — are a very good example of this trend. The company's continuing Research & Development programme, and its evolution of new products and systems, keep Promat business profitably at the top of recognised international success.

Cement Bound Matrix Technology Extends Promat International Leadership

Promat has a long and sustained commitment to ongoing Research & Development. The focus of this highly successful programme is constantly on the scientific evolution of modern fire science technologies. A by-product of this process is the consistent systemic upgrading of successful older products and systems.

At the leading edge of modern fire sciences, however, is one of Promat's most recent developments, Cement Bound Matrix technology. This binds organic materials and inorganic minerals within a calculated mineral matrix to form a monolithic core; it is manufactured by a low energy, ecologically friendly process that produces excellent products and systems offering superior fire resistance, exemplary physical strength, robustness, and exceptional technical and aesthetic performance.

Cement Bound Matrix together with PromaX[®] technology in Promat fire science products and systems provides a palette of superior performance indicators. Some of these unique benefits include:

- Superior fire safety performance
- Industry standard acoustics
- Excellent thermal insulation
- Quick, easy installation
- Strong, durable but lightweight
- Adaptable to different functions
- Accepts different aesthetic finishes
- Low maintenance
- Tolerates damp and moist conditions
- Standardised specifications

Promat Cement Bound Matrix and PromaX[®] technology fire resistant products and systems are used extensively throughout today's construction industry. Applications include the protection of structural steel, fire protected partitions and external walls, ceilings and floors, ductwork, M&E services enclosures, cavity and smoke barriers, access panels and hatches, tunnel and other underground, enclosed space fire protection, concrete upgrading and a full range of penetration seals.

Fire Resistant Glazing Products Increase Functionality Of Fire Resistant Systems

Promat fire resistant glazing systems offer pragmatic, technical, economic and aesthetic solutions to a built environment design world increasingly and understandably enamored by the beauty and functional appeal of steel and glass.

For Promat, the aesthetics of glazing systems work hand in glove with the vital aspect of fire safety offered by an integrated range of passive fire protection products and systems.

Promat glazing systems offer 120 minute fire resistance, including single and double leaf doors, which provide both integrity and insulation when exposed to fire. Typical examples include glazed screens without vertical or horizontal framing and all-glass doors.

Promat's corporate commitment to the philosophy of providing optimum system performance is accurately reflected in the development of glazing systems that also fulfill the highest safety classifications for impact resistance.

Promat glazing systems meet the approval criteria of all relevant standards applicable to fire resistant glazed constructions.

Green Principles Are Good For The Built Environment AND Good For Business

General awareness for the principles of the green environment movement is steadily increasing and today helps to expand understanding of the widespread issues of sustainability, especially in the impact of the workplace and the built environment.

Companies like Promat and its Etex Group parent have clear and well articulated environmental strategies firmly in place. These are the illuminated signposts of ongoing development, guiding and controlling what business does in terms of *Best Green Business Practice*.

Promat and Etex Group policies — including environmental strategies — are based on a tried, tested and proven value system of corporate social responsibility.

The Group's own Environment, Health and Safety department, for example, is dedicated solely to environmental, health and safety issues of its factories and offices, its people and the communities in which it works and functions as a dependable, profit driven commercial operation.

In the Asia Pacific region, environmental awareness varies, reflecting different historical, cultural and linguistic traditions as much as their different levels of political and economic maturity.

The language of green is slowly but surely becoming a region-wide lingua franca, spoken with increasing fluency and fervour throughout the business dynamics of one of the world's most populated and economically stable regions. Environmental issues are squarely on the agenda and destined to generate considerably more significance in the very near future.

Typical of this trend is Promat support and involvement with programmes like the Singapore Building Code Authority's well publicised initiatives for new structures to be built along more environmentally aware principles.

The business principles are exceptionally good for long term business success as more countries recognise the long term influence of environmental issues.

Environment management systems such as international standard ISO 14001 are tools for managing the impact of an organisation's activities on the environment. Certified compliant with ISO 14001, Promat aims to achieve environmental gains through the implementation of effective environmental management. Adherence to this standard ensures environmental factors are considered within management's decision making processes and the company's acceptable best business practices.



Promat Environmental, Health & Safety (EHS) Policy

Only the mindful and the prepared will benefit when the future demands more, as it surely will, in terms of environmental matters. There are however inevitable and daunting challenges ahead.



Societies and their built environments will continue to evolve and adapt, as they have done in the past. Indeed, Promat production lines in factories across the world are very reassuring. There's little wastage and very high levels of recycling, especially in terms of emissions.

The focus is also on conserving energy resources and minimising carbon footprint wherever possible.

Indeed, being environmentally responsible is actually good for business, particularly as Promat uses the accumulated experience and considerable resources accrued within the company. These are considered a precious natural resource for Promat and are employed as a matter of routine environmental policy.

Making the world a better place in which to live and work — for Promat and its people and by extension for society as a whole — is priority for Promat and the Etex Group, now and in the future.

As a global leader in the business of passive fire protection, Promat takes a conscious, deliberate proactive approach to environmental, health and safety issues, across the board.

This is clearly demonstrated by Promat's own Environment, Health & Safety policy, entitled "Promat – Towards Sustainable Growth", launched in 2005 and highlighting its ongoing commitment to:

- the creation of a safe working environment for all its employees and the societies in which the company works;
- control and minimise possible negative impact on the environment;
- include EHS concerns in the development of its products and systems;
- continuous evaluation, enhancement and improvement of its EHS performance;
- transparency and open dialogue based on factual information with all its stakeholders;
- the principle that EHS Due Diligence shall be used as standard practice for Mergers and Acquisitions, Investments and Divestments.

The policy applies to all Promat entities and naturally, all necessary resources are allocated in order to enable correct implementation of its EHS policy.

Before making critical investment or acquisition decisions, the environmental, health and safety aspect is systematically evaluated. In so doing, Promat has developed a checklist which enables the company to form an accurate overview of the relevant EHS aspects in a relatively short space of time.

Promat Is A Worldwide Group Dedicated To Protecting The Built Environment

The Promat organisation has offices, factories and workshops all over the world, forming a global network of specific knowledge centres providing state-of-the-art fire protection, high temperature insulation products and professional systems.

Promat Asia Pacific is one of the main subsidiaries of Belgium's Etex Group of companies. Headquartered in Brussels, the Group has a considerable presence in 44 countries, operates 121 production sites and employs more than 17,000 dedicated people worldwide.

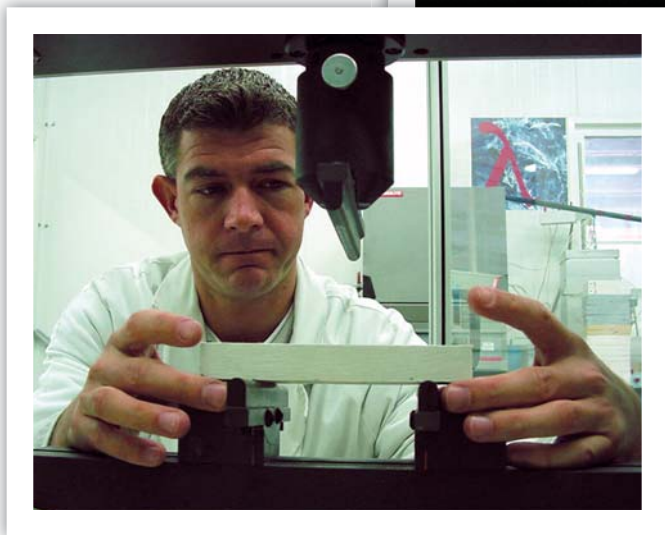
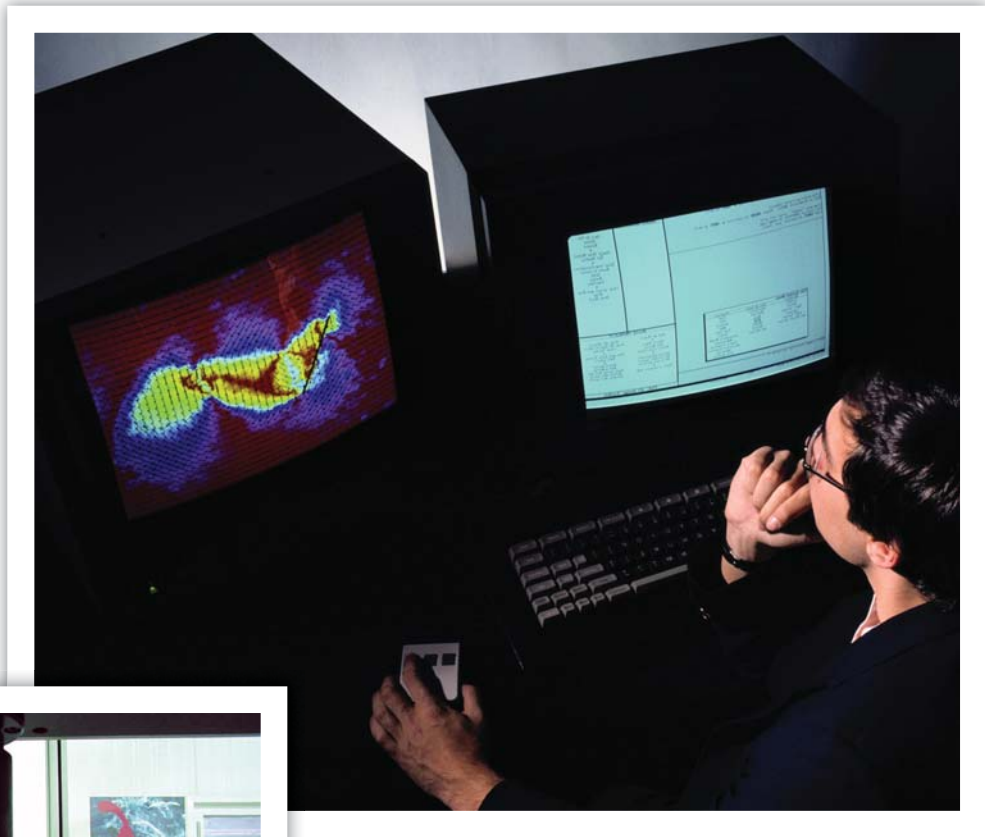
As ecologically sustainable issues become increasingly important, and the cause of mounting concern in a rapidly globalising world, Promat and Etex consistently articulate and practice well-defined environmental, health and safety policies as routine management policies throughout their networks.

The Business Of International Standards

Over the years, scientific fire standards have evolved systematically in Europe, the United States of America and Australia, and are today the most widely recognised and used in the world of modern fire protection.

The standards currently being harmonised throughout the twenty seven nations of the European Community — regulations that have a direct impact on the lives of more than 500 million citizens in western Europe and beyond — are also increasingly used worldwide as effective benchmarks.

All of these, in turn, look to commonly accepted fire curves on which to base many aspects of their regulatory legislation.



In conjunction with this manual and various other documents, full technical and sales support teams are available to provide information and assistance to help in the design and installation of all Promat fire protection solutions. As this document can only provide the basic construction details for most applications likely to be required on a project, it is inevitable there will be situations that require more detailed information. In this event, please contact Promat and one of the company's technical team will be pleased to assist.

Services

As a leading manufacturer of fire protection products and systems, Promat can supply solutions to most passive fire protection requirements. Promat know-how is available free of charge at any time, worldwide:

1. Advice from qualified specialists;
2. Project-related fire protection solutions;
3. Detailed drawings for planning;
4. Comprehensive user back-up when applying for approval;
5. Innovative fire protection technology, research and development;
6. Technical presentations to architects, building control officers, fire officers etc.
7. Hands-on training courses;
8. Safety based on nearly 50 years experience in the field of fire protection.



Research & Development

Fire resistant constructions are seldom put to the test because not every building burns down. The purpose of fire resistant constructions is to allow people to escape from hazardous threat and reach safety. Promat constantly tests its products in order to establish the performance criteria of its professional systems.

Promat run continual investigation programmes at their testing facilities at various locations worldwide. All of the Promat testing laboratories are accredited to EN 45001. The furnaces are state-of-the-art and offer multiple possibilities for the testing of construction systems under development.

All Promat materials are manufactured in accordance with accredited EN ISO 9001: 2008 and ISO 14001: 2004 quality management systems. Comprehensive testing of all Promat products and systems has been carried out by independent and nationally approved laboratories around the world in order to meet the relevant sections of BS 476, AS 1530, EN and ISO etc, as well as many other international test standards.

Promat first began operations in 1958. Quality and excellence, refined from more than 50 years of experience give customers the confidence to specify Promat products and systems to suit any fire protection application.



Fire Curves For Fire Resistance Tests

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.

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 The 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 1530.4, ASTM E119, BS 476-20, BS EN 1363-1, DIN 4102-2 and ISO 834-1. It is a model of a ventilated controlled natural fire of general building materials and contents.

2 The 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 The Modified Hydrocarbon (HCM) Curve

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

4 The RABT Curve

Developed in Germany as an outcome of a series of large scale test programmes such as the Eureka project. In the RABT (Richtlinien für die Ausstattung und den Betrieb von Straßentunneln or “Guideline for Equipment and Operation of Road Tunnels”) curve, temperature rise is very rapid up to 1200°C, typically within five minutes. The 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 The 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.

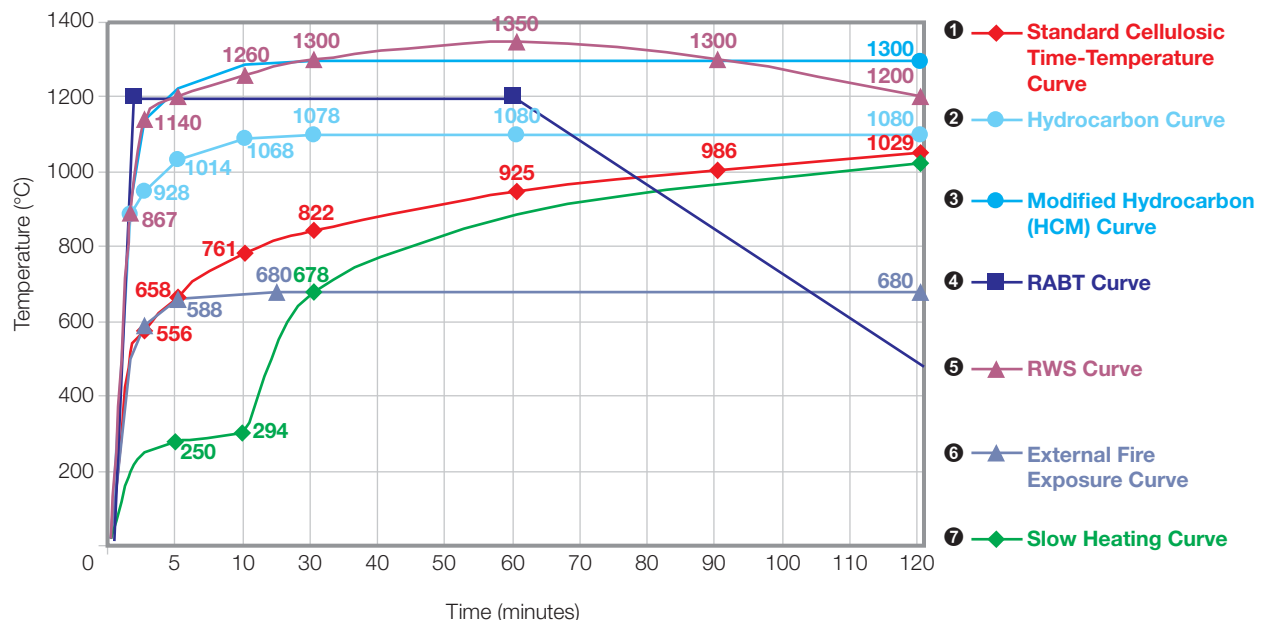
6 The External Fire Exposure Curve

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 The 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.

Fire Curves



Fire Resistance Test Standards – Fire Reaction In Testing Of Materials & 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 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, I (fire propagation index) 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.

European Standards

BS EN 13823: 2002

Single Burning Item (SBI) test

The principal reaction to fire test method adopted within the European suite of tests incorporates a totally new method that exposes the products to direct flame impingement.

The single burning test item is designed to simulate the flaming exposure that would be experienced by material lining the wall of a room when a "waste paper basket" ignites adjacent to the wall within the corner of a room.

The test method primarily measures the heat energy contribution to the fire from the specimens and calculates a Fire Growth Rate (FIGRA). Secondary measurements conducted within the test apparatus calculate the volume of smoke produced by the fire categorise according to Smoke Growth Rate (SMOGR) indices.

The test apparatus also measures oxygen consumption, carbon dioxide and carbon monoxide production. These gas concentrations help identify the heat release and the burning characteristics of the tested specimens.

BS EN ISO 11925-2: 2002

Single Flame Ignitability (SFI) test

All products must pass this Single Flame Ignitability (SFI) test before undergoing the EN 13623 (SBI test). The SFI test involves a small, cigarette lighter size flame applied to either the edge or surface of the test specimen for a short duration. The time to ignition and flame spread across the specimen is recorded.

BS EN ISO 1182: 2010

Reaction to fire for building products – non combustibility test

This standard specifies a method of test for determining the non combustibility performance, under specified conditions, of homogeneous products and substantial components of non homogeneous products.

BS EN ISO 1716: 2010

Reaction to fire tests for products – determination of the gross heat of combustion (calorific value)

This standard specifies a method for the determination of the gross heat of combustion of products at constant volume in a bomb calorimeter.

BS EN 13501-1: 2007

• Fire classification of construction products and building elements (Part 1: Classification using data from reaction to fire tests)

This standard provides the reaction to fire classification procedure for all construction products, including products incorporated within a building element.

• Comparison of European and UK standards / classifications

European		UK	
Standard	Classification	Standard	Classification
ISO 1182 or ISO 1716	Class A1	BS 476: Part 4	Non combustible
ISO 1182, ISO 1716 or EN 13823	Class A2	BS 476: Part 11	Limited combustibility
EN 13823 or EN ISO 11925-2	Class B	BS 476: Parts 6 and 7	Class 0
EN 13823 or EN ISO 11925-2	Class C	BS 476: Part 7	Class 1 & 2
EN 13823 or EN ISO 11925-2	Class D	BS 476: Part 7	Class 3
EN ISO 11925-2	Class E	BS 476: Part 7	Class 4



Fire Resistance Test Standards – Fire Resistance 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 and the current equivalents are given below.

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: 2005

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.

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.

Fire Resistance Test Standards – Fire Resistance In Testing Of Construction Systems

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.

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.

International Standards

ISO 834: Part 1: 1999

General requirements

This part specifies general principles regarding equipment, instrumentation and procedures on the method of determining fire resistance of various elements of constructions when subjected to standard fire exposure conditions.

ISO 834: Part 4: 2000

Specific requirements for loadbearing vertical separating elements

This part is applicable to vertical loadbearing separating elements of building construction when exposed to fire on one side. Fire resistance performance of the tested specimen is assessed against insulation, integrity and loadbearing capacity.



ISO 834: Part 5: 2000

Specific requirements for loadbearing horizontal separating elements

This part is applicable to horizontal separating loadbearing elements of building construction such as floors and roofs, including loadbearing elements containing beams, when exposed to fire from the underside. Fire resistance performance of the tested specimen is assessed against insulation, integrity and loadbearing capacity.

ISO 834: Part 6: 2000

Specific requirements for beams

This part specifies the procedures for determining the fire resistance of beams when tested on their own with their underside and two vertical sides exposed to heating, otherwise appropriate exposure conditions have to be reproduced. The beam is assessed against loadbearing capacity criteria.

ISO 834: Part 7: 2000

Specific requirements for columns

This part specifies the procedures for determining the fire resistance of columns when tested on their own. The column is tested fully exposed to fire on all sides, unless other appropriate exposure conditions have to be reproduced. The column is assessed against loadbearing capacity criteria.

ISO 834: Part 8: 2002

Specific requirements for non loadbearing vertical separating elements

This part is applicable to vertical separating elements of building construction when exposed to fire on one side. Fire resistance performance of the tested specimen is assessed against insulation and integrity criteria.

ISO 834: Part 9: 2003

Specific requirements for non loadbearing ceiling elements

This part determines the fire resistance performance of a ceiling assessed against insulation and integrity criteria, when exposed to heating below the ceiling. The test method is applicable to self-supporting ceilings and suspended ceilings construction.

Assessments / 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.

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".

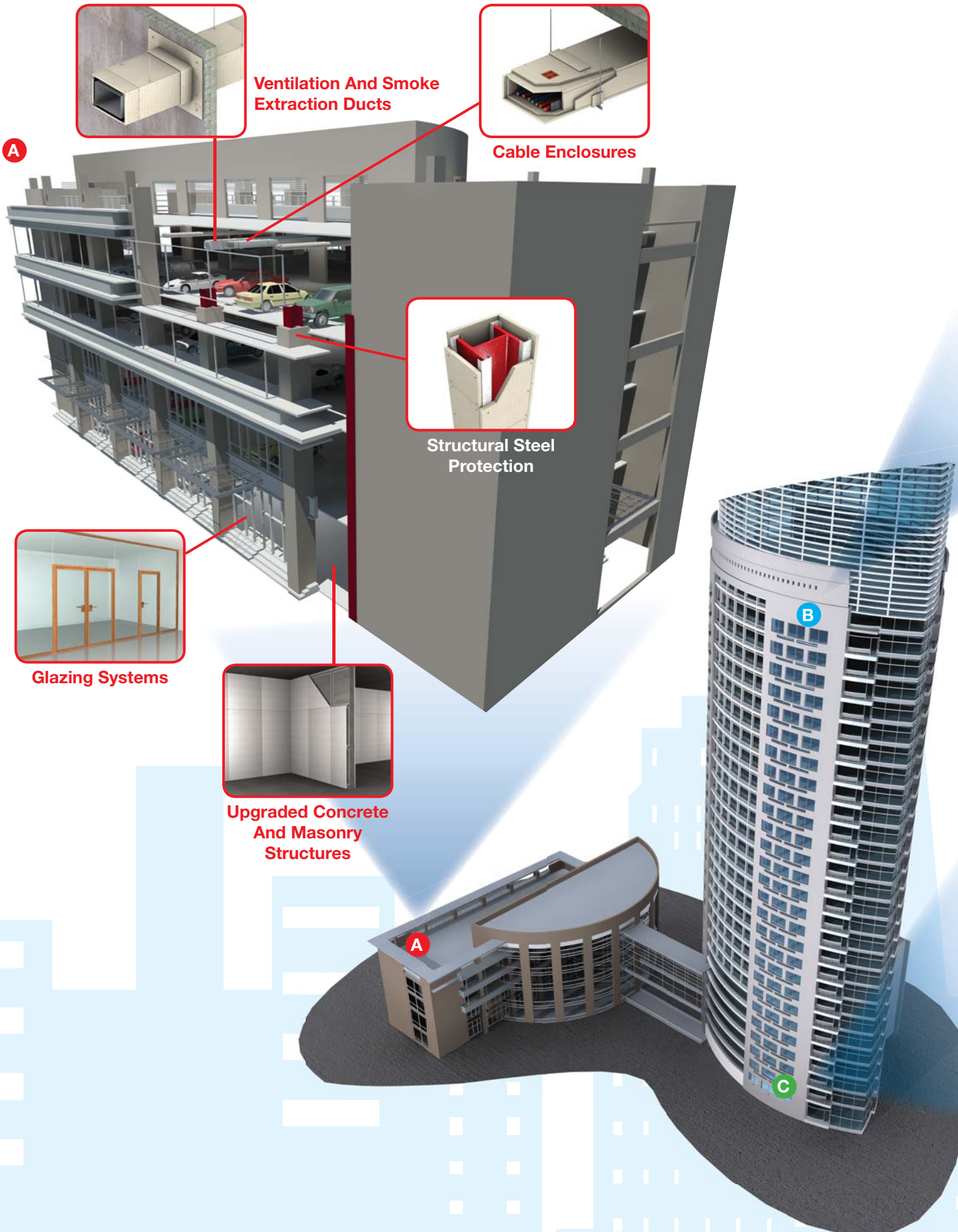
Stability

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 European Standards 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.





A

Ventilation And Smoke
Extraction Ducts

Cable Enclosures

Structural Steel
Protection

Glazing Systems

Upgraded Concrete
And Masonry
Structures

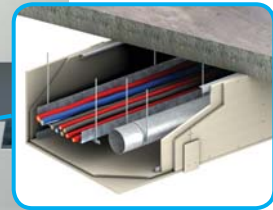
B

A

C

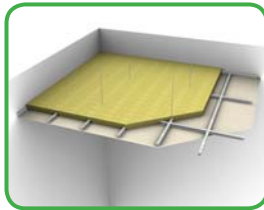


B

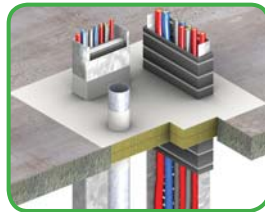


Building Service Enclosures

C



Fire Resistant Suspended Ceilings



Penetration Seal Around Building Services



Smoke Barriers



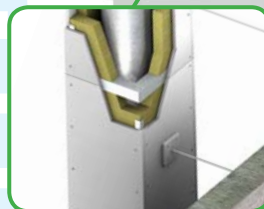
Intumescent Paint To Structural Steel



Self-supporting Ventilation And Smoke Extraction Ducts



Steel And Timber Stud Partitions



Riser Pipes Enclosures



Fire Doors

General Description

PROMATECT®-H is a non combustible matrix engineered mineral board reinforced with selected fibres and fillers. It does not contain formaldehyde.

PROMATECT®-H is off-white in colour and has a smooth finish on one face with a sanded reverse face. The board can be left undecorated or easily finished with paints, wallpapers or tiles.

PROMATECT®-H is resistant to the effects of moisture and will not physically deteriorate when used in damp or humid conditions. Performance characteristics are not degraded by age or moisture.

PROMATECT®-H can be produced with bevelled edges for use in partitions and suspended ceilings using a concealed grid system.

A health and safety data sheet is available from Promat and, as with any other material, should be read before working with the board. The board is not classified as a dangerous substance so no special provisions are required regarding the transportation and the disposal of the product to landfill. They can be placed in on-site rubbish skips with other general building waste which should then be disposed by a registered contractor in the appropriate and approved manner.



Typical Mechanical Properties

Modulus of elasticity, E (BS EN 310: 1993)	Longitudinal N/mm ²	4995
	Transverse N/mm ²	4389
Flexural strength, F _{rupture} (BS EN 310: 1993)	Longitudinal N/mm ²	10
	Transverse N/mm ²	6
Tensile strength, T _{rupture} (BS 5669: Part 1: 1989)	Longitudinal N/mm ²	7.16
	Transverse N/mm ²	4.94
Compressive strength (average, perpendicular on board face) (BS 5669: Part 1: 1989)	N/mm ²	11.36

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For general information of cutting, fixing, fabrication, flush jointing and finishing of these systems, please refer to pages 37 to 43.

General Technical Properties

Product generic description	Matrix engineered mineral board	
Material class (DIN 4102: Part 1: 1998, BS 476: Part 4: 1970 and AS 1530: Part 1: 1994)	Non combustible	
Surface spread of flame (BS 476: Part 7: 1997) (AS 1530: Part 3: 1989)	Class 1 Class 0,0,0,0	
Building regulations classification	Class 0	
Nominal density at EMC* (average)	kg/m ³	975
Alkalinity (approximate)	pH	12
Thermal conductivity (approximate) at 40°C (ASTM C518: 1991)	W/m ² K	0.242
Coefficient of expansion	m/mk	-6.4 x 10 ⁻⁶
Nominal moisture content at EMC*	6%	
Thickness tolerance of standard boards	mm	± 0.5
Length x Width tolerance of standard boards	mm	± 5
Surface condition	Front face: smooth Back face: sanded	

Thickness (mm)	Standard dimensions (mm x mm)	Number of boards per pallet	Surface per pallet (m ² /pallet)	Weight per m ² of sheet (approximate kg/m ²)	Weight per pallet (approximate kg)
9	2440 x 1220	61	181.5	8.77	1688
12	2440 x 1220	46	136.9	11.7	1698
15	2440 x 1220	36	107.2	14.6	1662
20	2440 x 1220	27	80.4	19.5	1664
25	2440 x 1220	22	65.4	24.3	1681

*EMC: Equilibrium moisture content. The properties in above tables are mean values given for information and guidance only. If certain properties are critical for a particular application, it is advisable to consult Promat.

PROMATECT®-H is manufactured under a quality management system certified in accordance with ISO 9001: 2008. The product has passed the site audit in accordance with the environmental standards of ISO 14001: 2004 and occupational health and safety requirements of OHSAS 18001: 2007.

AS FOR ALL NATURAL MATERIALS SUCH AS CONCRETE AND CLAY, QUARTZ CAN BE PRESENT AND THIS PRODUCT MAY ALSO RELEASE DUST CONTAINING QUARTZ PARTICLES WHEN IT IS MECHANICALLY MACHINED (CUTTING, SANDING, DRILLING). INHALATION OF HIGH CONCENTRATIONS OF DUST CAN IRRITATE THE RESPIRATORY SYSTEM. DUST CAN ALSO IRRITATE THE EYES AND/OR THE SKIN. THE INHALATION OF QUARTZ CONTAINING DUST, IN PARTICULAR HIGH CONCENTRATIONS OF FINE (RESPIRABLE) DUST OR OVER A PROLONGED PERIOD OF TIME CAN LEAD TO LUNG DISEASE (SILICOSIS) AND AN INCREASED RISK OF LUNG CANCER. AVOID INHALATION OF DUST BY USING MACHINERY WITH DUST EXTRACTION. GUARANTEE ADEQUATE VENTILATION ON THE WORK FLOOR. AVOID CONTACT WITH THE EYES AND SKIN AND AVOID INHALATION OF THE DUST BY WEARING APPROPRIATE PERSONAL PROTECTION GEAR (SAFETY GOGGLES, PROTECTIVE CLOTHING AND DUST MASK). FOR MORE INFORMATION PLEASE CHECK THE APPROPRIATE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

PROMATECT®-L is a lightweight mineral matrix engineered board which is white in colour and has a smooth sanded surface on one face with a lightly honeycombed texture on the reverse face.

PROMATECT®-L is resistant to the effects of moisture and will not physically deteriorate when used in damp or humid conditions. Performance characteristics are not degraded by age or moisture. Untreated surfaces will absorb water which can cause some loss of strength but strength is regained after drying. PROMATECT®-L does not encourage mould growth and is resistant to attack by vermin.

PROMATECT®-L is chemically inert and is resistant to diluted acids and alkalis. Boards should be protected where high chemical concentrations are likely to occur.

A health and safety data sheet is available from Promat and, as with any other material, should be read before working with the board. The board is not classified as a dangerous substance so no special provisions are required regarding the transportation and the disposal of the product to landfill. They can be placed in on-site rubbish skips with other general building waste which should then be disposed by a registered contractor in the appropriate and approved manner.



Typical Mechanical Properties

Modulus of elasticity, E (BS EN 310: 1993)	Longitudinal N/mm ² Transverse N/mm ²	898 802
Flexural strength, F _{rupture} (BS EN 310: 1993)	Longitudinal N/mm ² Transverse N/mm ²	1.93 1.63
Tensile strength, T _{rupture} (BS 5669: Part 1: 1989)	Longitudinal N/mm ² Transverse N/mm ²	0.69 0.94
Compressive strength (average, perpendicular on board face) (BS 5669: Part 1: 1989)	N/mm ²	3.9

Applications

- Structural steel protection
- Cladding to steel ducts, self-supporting ducts
- M&E services enclosure
- Access panels and hatches

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For general information of cutting, fixing, fabrication, flush jointing and finishing of these systems, please refer to pages 37 to 43.

General Technical Properties

Product generic description	Matrix engineered mineral board
Material class (DIN 4102: Part 1: 1998, BS 476: Part 4: 1970 and AS 1530: Part 1: 1994)	Non combustible
Surface spread of flame (BS 476: Part 7: 1997) (AS 1530: Part 3: 1989)	Class 1 Class 0,0,0,0
Building regulations classification	Class 0
Nominal density at EMC* (average)	kg/m ³ 450
Alkalinity (approximate)	pH 9
Thermal conductivity (approximate) at 40°C (ASTM C518: 1991)	W/m ² K 0.083
Coefficient of expansion	m/mk -2.5 x 10 ⁻⁶
Nominal moisture content at EMC*	3.3%
Thickness tolerance of standard boards	mm ± 0.5
Length x Width tolerance of standard boards	mm ± 5
Surface condition	Front face: smooth sanded Back face: lightly honeycombed texture

Thickness (mm)	Standard dimensions (mm x mm)	Number of boards per pallet	Surface per pallet (m ² /pallet)	Weight per m ² of sheet (approximate kg/m ²)	Weight per pallet (approximate kg)
20	2500 x 1200	40	120	9.21	1108
25	2500 x 1200	35	105	11.17	1212
30	2500 x 1200	30	90	13.4	1247
40	2500 x 1200	20	60	17.87	1108
50	2500 x 1200	16	48	22.34	1108

*EMC: Equilibrium moisture content. The properties in above tables are mean values given for information and guidance only. If certain properties are critical for a particular application, it is advisable to consult Promat.

PROMATECT®-L is manufactured under a quality management system certified in accordance with ISO 9001: 2008. The product has passed the site audit in accordance with the environmental standards of ISO 14001: 2004 and occupational health and safety requirements of OHSAS 18001: 2007.

AS WITH MOST BUILDING PRODUCTS, THIS PRODUCT CONTAINS QUARTZ. MECHANICAL MACHINING (CUTTING, SANDING, DRILLING) OF BUILDING PRODUCTS WILL RELEASE DUST WHICH MAY CONTAIN QUARTZ PARTICLES. HOWEVER, FOR THIS PRODUCT, WITH EXPOSURE ASSESSMENTS PERFORMED BY ACCREDITED EUROPEAN LABORATORIES USING REFERENCE WORKPLACE MONITORING METHODS, ANY QUARTZ LEVELS IN THE RESPIRABLE DUST WERE BELOW THE DETECTION LIMITS. INHALATION OF HIGH CONCENTRATIONS OF DUST MAY IRRITATE THE RESPIRATORY SYSTEM. DUST MAY ALSO CAUSE IRRITATION OF THE EYES AND/OR SKIN. INHALATION OF RESPIRABLE DUST CONTAINING QUARTZ, IN HIGH CONCENTRATIONS OR OVER PROLONGED PERIODS OF TIME CAN LEAD TO LUNG DISEASE (SILICOSIS) AND AN INCREASED RISK OF LUNG CANCER. AVOID INHALATION OF DUST BY USING MACHINERY WITH DUST EXTRACTION. GUARANTEE ADEQUATE VENTILATION ON THE WORK FLOOR. AVOID CONTACT WITH THE EYES AND SKIN AND AVOID INHALATION OF DUST BY WEARING APPROPRIATE PERSONAL PROTECTION GEAR (SAFETY GOGGLES, PROTECTIVE CLOTHING AND DUST MASK). FOR MORE INFORMATION PLEASE CHECK THE APPROPRIATE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

PROMATECT®-L500 is a lightweight mineral matrix engineered board which is off-white/beige in colour and has a smooth sanded surface on one face with a lightly honeycombed texture on the reverse face.

PROMATECT®-L500 is resistant to the effects of moisture and will not physically deteriorate when used in damp or humid conditions. Performance characteristics are not degraded by age or moisture. Untreated surfaces will absorb water which can cause some loss of strength but strength is regained after drying. PROMATECT®-L500 does not encourage mould growth and is resistant to attack by vermin.

PROMATECT®-L500 is chemically inert and is resistant to diluted acids and alkalis. Boards should be protected where high chemical concentrations are likely to occur.

A health and safety data sheet is available from Promat and, as with any other material, should be read before working with the board. The board is not classified as a dangerous substance so no special provisions are required regarding the transportation and the disposal of the product to landfill. They can be placed in on-site rubbish skips with other general building waste which should then be disposed by a registered contractor in the appropriate and approved manner.



Typical Mechanical Properties

Modulus of elasticity, E (BS EN 310: 1993)	Longitudinal N/mm ²	1209
	Transverse N/mm ²	1667
Flexural strength, F _{rupture} (BS EN 310: 1993)	Longitudinal N/mm ²	1.46
	Transverse N/mm ²	2.42
Tensile strength, T _{rupture} (BS 5669: Part 1: 1989)	Longitudinal N/mm ²	1.00
	Transverse N/mm ²	1.26
Compressive strength (average, perpendicular on board face) (BS 5669: Part 1: 1989)	N/mm ²	4.04

Applications

- Cladding to steel ducts, self-supporting ducts
- M&E services enclosure, cable protection systems
- Access panels and hatches

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For general information of cutting, fixing, fabrication, flush jointing and finishing of these systems, please refer to pages 37 to 43.

General Technical Properties

Product generic description	Matrix engineered mineral board
Material class (DIN 4102: Part 1: 1998, BS 476: Part 4: 1970 and AS 1530: Part 1: 1994)	Non combustible
Surface spread of flame (BS 476: Part 7: 1997) (AS 1530: Part 3: 1989)	Class 1 Class 0,0,0,0
Building regulations classification	Class 0
Nominal density at EMC* (average)	kg/m ³ 500
Alkalinity (approximate)	pH 9
Thermal conductivity (approximate) at 40°C (ASTM C518: 1991)	W/m ² K 0.095
Coefficient of expansion	m/mk -2.5 x 10 ⁻⁶
Nominal moisture content at EMC*	3.9%
Thickness tolerance of standard boards	mm ± 0.5
Length x Width tolerance of standard boards	mm ± 5
Surface condition	Front face: smooth sanded Back face: lightly honeycombed texture

Thickness (mm)	Standard dimensions (mm x mm)	Number of boards per pallet	Surface per pallet (m ² /pallet)	Weight per m ² of sheet (approximate kg/m ²)	Weight per pallet (approximate kg)
20	2500 x 1200	43	129	10	1367
25	2500 x 1200	35	105	12.5	1386
35	2500 x 1200	25	75	17.5	1387
40	2500 x 1200	21	63	20	1335
50	2500 x 1200	17	51	25	1351
52	2500 x 1200	17	51	26	1402

*EMC: Equilibrium moisture content. The properties in above tables are mean values given for information and guidance only. If certain properties are critical for a particular application, it is advisable to consult Promat.

PROMATECT®-L500 is manufactured under a quality management system certified in accordance with ISO 9001: 2008. The product has passed the site audit in accordance with the environmental standards of ISO 14001: 2004 and occupational health and safety requirements of OHSAS 18001: 2007.

AS WITH MOST BUILDING PRODUCTS, THIS PRODUCT CONTAINS QUARTZ. MECHANICAL MACHINING (CUTTING, SANDING, DRILLING) OF BUILDING PRODUCTS WILL RELEASE DUST WHICH MAY CONTAIN QUARTZ PARTICLES. HOWEVER, FOR THIS PRODUCT, WITH EXPOSURE ASSESSMENTS PERFORMED BY ACCREDITED EUROPEAN LABORATORIES USING REFERENCE WORKPLACE MONITORING METHODS, ANY QUARTZ LEVELS IN THE RESPIRABLE DUST WERE BELOW THE DETECTION LIMITS. INHALATION OF HIGH CONCENTRATIONS OF DUST MAY IRRITATE THE RESPIRATORY SYSTEM. DUST MAY ALSO CAUSE IRRITATION OF THE EYES AND/OR SKIN. INHALATION OF RESPIRABLE DUST CONTAINING QUARTZ, IN HIGH CONCENTRATIONS OR OVER PROLONGED PERIODS OF TIME CAN LEAD TO LUNG DISEASE (SILICOSIS) AND AN INCREASED RISK OF LUNG CANCER. AVOID INHALATION OF DUST BY USING MACHINERY WITH DUST EXTRACTION. GUARANTEE ADEQUATE VENTILATION ON THE WORK FLOOR. AVOID CONTACT WITH THE EYES AND SKIN AND AVOID INHALATION OF DUST BY WEARING APPROPRIATE PERSONAL PROTECTION GEAR (SAFETY GOGGLES, PROTECTIVE CLOTHING AND DUST MASK). FOR MORE INFORMATION PLEASE CHECK THE APPROPRIATE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

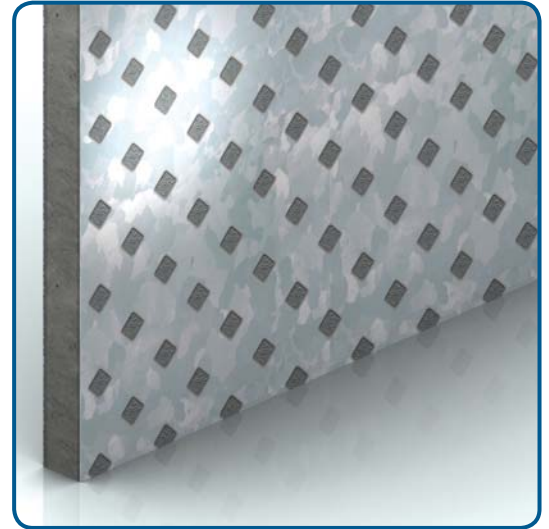
General Description

PROMATECT®-S is a composite board manufactured with a fibre reinforced cement core, with outer facings of 0.5mm perforated galvanised steel mechanically bonded to each surface of the core. Other steel finishes such as stainless steel are also available for use where greater resistance to corrosion is required.

PROMATECT®-S systems combine lightness, strength, impact resistance and durability with exceptional fire resistance. These systems remain resistant to firefighter hoses leaving the board capable of performing their function should fire services be required to withdraw before a fire is extinguished.

PROMATECT®-S systems have been used successfully for many years, including rail and metro projects, military facilities and in commercial, pharmaceutical and petrochemical plants.

A health and safety data sheet is available from Promat and, as with any other material, should be read before working with the board. The board is not classified as a dangerous substance so no special provisions are required regarding the transportation and the disposal of the product to landfill. They can be placed in on-site rubbish skips with other general building waste which should then be disposed by a registered contractor in the appropriate and approved manner.



Typical Mechanical Properties

Thickness	mm	6	9.5
Modulus of elasticity, E	UDL G/Pa	414	199
Flexural strength, F _{rupture}	UDL G/Pa (N/mm ²)	333	351
Impact strength (BS 5669: Part 1: 1989)	N/m	> 980	> 580

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For information of cutting, fixing, fabrication, finishing etc, please consult Promat.

General Technical Properties

Thickness	mm	6	9.5
Product generic description		Cement and steel composite board	Cement and steel composite board
Material class (ISO 1182: 2002, BS 476: Part 4: 1970 and AS 1530: Part 1: 1994)		Non combustible	Non combustible
Surface spread of flame (BS 476: Part 7: 1997)		Class 1	Class 1
Building regulations classification		Class 0	Class 0
Nominal density at EMC* (average)	kg/m ³	2470	2280
Thermal conductivity (approximate) at 40°C (ASTM C518: 1991)	W/m ² K	0.179	0.179
Nominal moisture content at EMC*		7%	8%
Water absorption capacity (average)	g/cm ³	5.73	4.77
Thickness tolerance of standard boards	mm	- 1, + 2	- 1 + 1.5
Length x Width tolerance of standard boards	mm	± 5	± 5
Surface condition		Galvanised steel with fibre cement core	Galvanised steel with fibre cement core

Thickness (mm)	Standard dimensions (mm x mm)	Number of boards per pallet	Surface per pallet (m ² /pallet)	Weight per m ² of sheet (approximate kg/m ²)	Weight per pallet (approximate kg)
6	2500 x 1200	30	90	14	1350
9.5	2500 x 1200	25	75	20	1575

*EMC: Equilibrium moisture content. The properties in above tables are mean values given for information and guidance only. If certain properties are critical for a particular application, it is advisable to consult Promat.

PROMATECT®-S is manufactured under a quality management system certified in accordance with ISO 9001: 2008. The product has passed the site audit in accordance with the environmental standards of ISO 14001: 2004 and occupational health and safety requirements of OHSAS 18001: 2007.

AS WITH MOST BUILDING PRODUCTS, THIS PRODUCT CONTAINS QUARTZ. MECHANICAL MACHINING (CUTTING, SANDING, DRILLING) OF BUILDING PRODUCTS WILL RELEASE DUST WHICH MAY CONTAIN QUARTZ PARTICLES. HOWEVER, FOR THIS PRODUCT, WITH EXPOSURE ASSESSMENTS PERFORMED BY ACCREDITED EUROPEAN LABORATORIES USING REFERENCE WORKPLACE MONITORING METHODS, ANY QUARTZ LEVELS IN THE RESPIRABLE DUST WERE BELOW THE DETECTION LIMITS. INHALATION OF HIGH CONCENTRATIONS OF DUST MAY IRRITATE THE RESPIRATORY SYSTEM. DUST MAY ALSO CAUSE IRRITATION OF THE EYES AND/OR SKIN. INHALATION OF RESPIRABLE DUST CONTAINING QUARTZ, IN HIGH CONCENTRATIONS OR OVER PROLONGED PERIODS OF TIME CAN LEAD TO LUNG DISEASE (SILICOSIS) AND AN INCREASED RISK OF LUNG CANCER. AVOID INHALATION OF DUST BY USING MACHINERY WITH DUST EXTRACTION. GUARANTEE ADEQUATE VENTILATION ON THE WORK FLOOR. AVOID CONTACT WITH THE EYES AND SKIN AND AVOID INHALATION OF DUST BY WEARING APPROPRIATE PERSONAL PROTECTION GEAR (SAFETY GOGGLES, PROTECTIVE CLOTHING AND DUST MASK). FOR MORE INFORMATION PLEASE CHECK THE APPROPRIATE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

Applications

- Structural steel protection
- Steel stud partitions
- Self-supporting ceilings, suspended ceilings
- Cladding to steel ducts, self-supporting ducts
- M&E services enclosure
- Smoke and fire barrier, parapet/spandrel wall
- Access panels and hatches, fire doors

General Description

PROMATECT® 50 is Promat's matrix technology of binding organic materials and inorganic minerals within a calculated mineral matrix to form a monolithic core. Known as a Cement Bound Matrix board, this low energy environmentally friendly manufacturing process makes excellent boards that offer not only superior fire resistance but also exemplary physical strength, robustness and performance.

PROMATECT® 50 is off-white in colour and has one smooth surface. Because of the nature of CBM board Level 4 finish may not be achievable consistently without additional care. This must be taken in to account when costing out work. The Painting specification must always be followed closely and must be asked for and studied before any painting occurs. If a Level 5 finish is required or boards will be affected by glancing light, then specifiers must be aware that a high level of expertise will be required when skim coating the whole surface of board (similar to that required by all other board products for this level of finish).

PROMATECT® 50 is resistant to the effects of moisture and will not physically deteriorate when used in damp or humid conditions. Performance characteristics are not degraded by moisture.

A health and safety data sheet is available from Promat and, as with any other material, should be read before working with the board. The board is not classified as a dangerous substance so no special provisions are required regarding the transportation and the disposal of the product to landfill. They can be placed in on-site rubbish skips with other general building waste which should then be disposed by a registered contractor in the appropriate and approved manner.



Typical Mechanical Properties

Flexural strength, $F_{rupture}$ (EN 12467: 2000)	Longitudinal N/mm ² Transverse N/mm ²	13.76 10.80
Tensile strength, $T_{rupture}$ (EN 12467: 2000)	N/mm ²	4.2
Compressive strength (average, perpendicular on board face) (BS 5669: Part 1: 1989)	N/mm ²	13.10

Applications

- Steel and timber stud partitions, solid/frameless partitions
- Self-supporting ceilings, suspended ceilings
- Membrane ceilings, timber floor protection
- Cladding to steel ducts
- M&E services enclosure, riser pipes enclosure

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For general information of cutting, fixing, fabrication, flush jointing and finishing of these systems, please refer to pages 37 to 43.

General Technical Properties

Product generic description	PromaX® technology Cement Bound Matrix board
Material class (BS 476: Part 4: 1970 and EN ISO 1182: 2002)	Non combustible
Surface spread of flame (BS 476: Part 7: 1997)	Class 1
Surface spread of flame for bare floors (AS ISO 9239: Part 1: 2003)	No ignition
Building regulations classification	Class 0
Heat and smoke release rates (AS/NZS 3837)	Group 1
Fire propagation of product (BS 476: Part 6: 1989)	$l = 0; i_1 = 0; i_2 = 0; i_3 = 0$
Simultaneous determination of ignitability, flame propagation, heat and smoke release (AS 1530: Part 3: 1999)	Indices 0/0/0/0-1
Density	kg/m ³ Nominal 1100
Thermal conductivity (approximate) at 20°C (ASTM C518: 1991)	W/m ² K 0.193
Typical moisture content, ambient to dry condition (BS 5669: Part 1: 1989, Clause 9)	2.4%
Emission test (ASTM D5116-90 for Green Label Singapore)	Within limits set out by the Singapore Environment Council
Thickness tolerance of standard boards	mm ± 0.5
Length x Width tolerance of standard boards	mm ± 5
Surface condition	Front face: smooth, fair Back face: smooth with fibre mesh reinforcement

Thickness (mm)	Standard dimensions* (mm x mm)	Number of boards per pallet	Surface per pallet (m ² /pallet)	Weight per m ² of sheet (approximate kg/m ²)	Weight per pallet (approximate kg)
7	2440 x 1220	78	232	7.7	1787
9	2440 x 1220	60	178	9.9	1763
12	2440 x 1220	45	134	13.2	1769
15	2440 x 1220	36	107	16.5	1766
18	2440 x 1220	30	89	19.8	1768
20	2440 x 1220	27	80	22	1762
22	2700 x 1200	25	81	25	1960
25	2440 x 1220	22	63	27.5	1733

*Standard dimension for Australia is 2700mm x 1200mm. Other dimensions are available upon request. The properties in above tables are mean values given for information and guidance only. If certain properties are critical for a particular application, it is advisable to consult Promat.

PROMATECT® 50 is manufactured under a quality management system certified in accordance with ISO 9001: 2008.

WHEN MACHINING THIS PRODUCT, AIRBORNE DUST MAY BE RELEASED, WHICH MAY BE HAZARDOUS TO HEALTH. DO NOT INHALE THE DUST. AVOID CONTACT WITH SKIN AND EYES. USE DUST EXTRACTION EQUIPMENT. RESPECT REGULATORY OCCUPATIONAL EXPOSURE LIMITS FOR TOTAL INHALABLE AND RESPIRABLE DUST. FOR MORE INFORMATION PLEASE CHECK THE APPROPRIATE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

PROMATECT® 100 comprises autoclaved calcium silicate spheres (PROMAXON® is a synthetic hydrated calcium silicate in spherical form) bound in a mineral matrix. PromaX® technology provides excellent fire performance in most applications.

PROMATECT® 100 is off-white in colour. One face is smooth and ready to form a finished surface, able to receive almost any form of architectural/finish treatment. The reverse face is sanded.

PROMATECT® 100 is resistant to the effects of moisture and will not physically deteriorate when used in damp or humid conditions. Performance characteristics are not degraded by age or moisture. However, PROMATECT® 100 is not designed for use in areas subject to continual damp or high temperatures. PROMATECT® 100 is for internal applications only.

A health and safety data sheet is available from Promat and, as with any other material, should be read before working with the board. The board is not classified as a dangerous substance so no special provisions are required regarding the transportation and the disposal of the product to landfill. They can be placed in on-site rubbish skips with other general building waste which should then be disposed by a registered contractor in the appropriate and approved manner.



Typical Mechanical Properties

Flexural strength, $F_{rupture}$ (BS EN 310: 1993)	Longitudinal N/mm ²	4.5
Tensile strength, $T_{rupture}$ (BS 5669: Part 1: 1989)	Longitudinal N/mm ²	1.02
	Transverse N/mm ²	0.98
Compressive strength (average, perpendicular on board face) (BS 5669: Part 1: 1989)	N/mm ²	5.99

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For general information of cutting, fixing, fabrication, flush jointing and finishing of these systems, please refer to pages 37 to 43.

Applications

- Structural steel protection
- Steel/timber stud partitions, solid/frameless partitions
- Self-supporting ceilings
- Timber floor protection, mezzanine floor
- Access hatches, fire doors

General Technical Properties

Product generic description	PROMAXON® mineral board
Material class (DIN 4102: Part 1: 1998, BS 476: Part 4: 1970 and AS 1530: Part 1: 1994)	Non combustible
Surface spread of flame (BS 476: Part 7: 1997 and AS/NZ 53837: 1998 cone calorimeter test group 1)	Class 1
Building regulations classification	Class 0
Nominal density at EMC* (average)	kg/m ³ 850 nominal (dry)
Alkalinity (approximate)	pH 9
Thermal conductivity (approximate) at 20°C (ASTM C518: 1991)	W/m ² K 0.164
Coefficient of expansion	m/mk -16×10^{-6}
Typical moisture content (dry at 40°C)	2%
Thickness tolerance of standard boards	mm ± 0.5
Length x Width tolerance of standard boards	mm $\pm 0-3$
Surface condition	Front face: smooth Back face: sanded

Thickness (mm)	Standard dimensions (mm x mm)	Number of boards per pallet	Surface per pallet (m ² /pallet)	Weight per m ² of sheet (approximate kg/m ²)	Weight per pallet (approximate kg)
8	2500 x 1200	50	150	7.1	1140
10	2500 x 1200	40	120	8.8	1110
12	2500 x 1200	30	90	10.6	1020
15	2500 x 1200	25	75	12.8	1010
18	2500 x 1200	20	60	15.3	965
20	2500 x 1200	20	60	17	1070
25	2500 x 1200	15	45	21.3	1010

*EMC: Equilibrium moisture content. The properties in above tables are mean values given for information and guidance only. If certain properties are critical for a particular application, it is advisable to consult Promat.

PROMATECT® 100 is manufactured under a quality management system certified in accordance with ISO 9001: 2008. The product has passed the site audit in accordance with the environmental standards of ISO 14001: 2004 and occupational health and safety requirements of OHSAS 18001: 2007.

WHEN MACHINING THIS PRODUCT, AIRBORNE DUST MAY BE RELEASED, WHICH MAY BE HAZARDOUS TO HEALTH. DO NOT INHALE THE DUST. AVOID CONTACT WITH SKIN AND EYES. USE DUST EXTRACTION EQUIPMENT. RESPECT REGULATORY OCCUPATIONAL EXPOSURE LIMITS FOR TOTAL INHALABLE AND RESPIRABLE DUST. FOR MORE INFORMATION PLEASE CHECK THE APPROPRIATE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

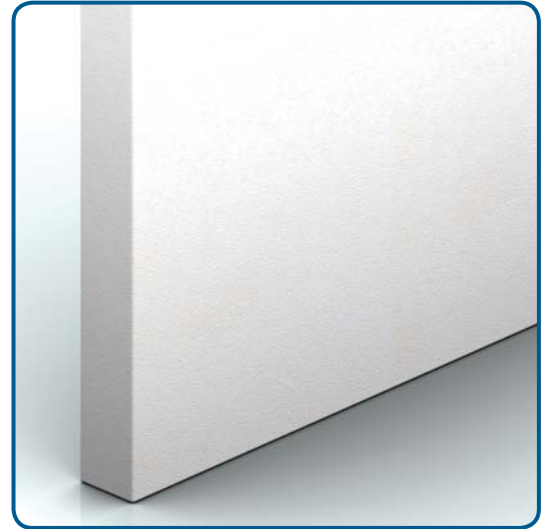
General Description

PROMATECT® 250 comprises autoclaved calcium silicate spheres (PROMAXON® is a synthetic hydrated calcium silicate in spherical form) bound in a mineral matrix. PromaX® technology provides excellent fire performance in most applications.

PROMATECT® 250 is off-white in colour. One face is smooth and ready to form a finished surface, able to receive almost any form of architectural/finish treatment. The reverse face is sanded.

PROMATECT® 250 is resistant to the effects of moisture and will not physically deteriorate when used in damp or humid conditions. Performance characteristics are not degraded by age or moisture. However, PROMATECT® 250 is not designed for use in areas subject to continual damp or high temperatures. PROMATECT® 250 is for internal applications only.

A health and safety data sheet is available from Promat and, as with any other material, should be read before working with the board. The board is not classified as a dangerous substance so no special provisions are required regarding the transportation and the disposal of the product to landfill. They can be placed in on-site rubbish skips with other general building waste which should then be disposed by a registered contractor in the appropriate and approved manner.



Typical Mechanical Properties

Flexural strength, $F_{rupture}$ (BS EN 310: 1993)	Longitudinal N/mm ²	3
Tensile strength, $T_{rupture}$ (BS 5669: Part 1: 1989)	Longitudinal N/mm ²	0.97
	Transverse N/mm ²	1.18
Compressive strength (average, perpendicular on board face) (BS 5669: Part 1: 1989)	N/mm ²	5.39

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For general information of cutting, fixing, fabrication, flush jointing and finishing of these systems, please refer to pages 37 to 43.

Applications

- Structural steel protection
- Self-supporting ceilings, suspended ceilings
- Mezzanine floor

General Technical Properties

Product generic description	PROMAXON® mineral board	
Material class (DIN 4102: Part 1: 1998, BS 476: Part 4: 1970 and AS 1530: Part 1: 1994)	Non combustible	
Surface spread of flame (BS 476: Part 7: 1997 and AS/NZ 53837: 1998 cone calorimeter test group 1)	Class 1	
Building regulations classification	Class 0	
Nominal density at EMC* (average)	kg/m ³	750 nominal (dry)
Alkalinity (approximate)	pH	9
Thermal conductivity (approximate) at 20°C (ASTM C518: 1991)	W/m ² K	0.183
Coefficient of expansion	m/mk	-14 x 10 ⁻⁶
Typical moisture content (dry at 40°C)	2%	
Thickness tolerance of standard boards	mm	± 0.5
Length x Width tolerance of standard boards	mm	± 0-3
Surface condition	Front face: smooth Back face: sanded	

Thickness (mm)	Standard dimensions (mm x mm)	Number of boards per pallet	Surface per pallet (m ² /pallet)	Weight per m ² of sheet (approximate kg/m ²)	Weight per pallet (approximate kg)
15	2500 x 1200	30	90	10.5	1000
18	2500 x 1200	25	75	12.6	1030
20	2500 x 1200	25	75	14	1100
25	2500 x 1200	20	60	17.5	1100
30	2500 x 1200	15	45	21	995

*EMC: Equilibrium moisture content. The properties in above tables are mean values given for information and guidance only. If certain properties are critical for a particular application, it is advisable to consult Promat.

PROMATECT® 250 is manufactured under a quality management system certified in accordance with ISO 9001: 2008. The product has passed the site audit in accordance with the environmental standards of ISO 14001: 2004 and occupational health and safety requirements of OHSAS 18001: 2007.

WHEN MACHINING THIS PRODUCT, AIRBORNE DUST MAY BE RELEASED, WHICH MAY BE HAZARDOUS TO HEALTH. DO NOT INHALE THE DUST. AVOID CONTACT WITH SKIN AND EYES. USE DUST EXTRACTION EQUIPMENT. RESPECT REGULATORY OCCUPATIONAL EXPOSURE LIMITS FOR TOTAL INHALABLE AND RESPIRABLE DUST. FOR MORE INFORMATION PLEASE CHECK THE APPROPRIATE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

PROMINA® 60 is a non combustible matrix engineered mineral board reinforced with selected fibres and fillers. It does not contain formaldehyde.

PROMINA® 60 is beige in colour and has a smooth finish on one face with a sanded reverse face. The board can be left undecorated or easily finished with paints, wallpapers or tiles.

PROMINA® 60 is resistant to the effects of moisture and will not physically deteriorate when used in damp or humid conditions. Performance characteristics are not degraded by age or moisture.

PROMINA® 60 can be produced with bevelled edges for butt jointing purposes.

A health and safety data sheet is available from Promat and, as with any other material, should be read before working with the board. The board is not classified as a dangerous substance so no special provisions are required regarding the transportation and the disposal of the product to landfill. They can be placed in on-site rubbish skips with other general building waste which should then be disposed by a registered contractor in the appropriate and approved manner.



Typical Mechanical Properties

Modulus of elasticity, E (BS EN 310: 1993)	Longitudinal N/mm ² Transverse N/mm ²	4599 3817
Flexural strength, F _{rupture} (BS EN 310: 1993)	Longitudinal N/mm ² Transverse N/mm ²	7.52 5.15
Tensile strength, T _{rupture} (BS 5669: Part 1: 1989)	Longitudinal N/mm ² Transverse N/mm ²	5.99 5.17
Compressive strength (average, perpendicular on board face) (BS 5669: Part 1: 1989)	N/mm ²	7.76

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For general information of cutting, fixing, fabrication, flush jointing and finishing of these systems, please refer to pages 37 to 43.

Applications

- Steel/timber stud partitions
- Self-supporting ceilings, suspended ceilings
- M&E services enclosure, riser pipes enclosure
- Smoke barrier, parapet/spandrel wall
- Fire doors

General Technical Properties

Product generic description	Matrix engineered mineral board	
Material class (DIN 1402: Part 1: 1998, BS 476: Part 4: 1970 and AS 1530: Part 1: 1994)	Non combustible	
Surface spread of flame	(BS 476: Part 7: 1997) (AS 1530: Part 3: 1989)	Class 1 Class 0,0,0,0
Building regulations classification	Class 0	
Nominal density at EMC* (average)	kg/m ³	1000
Alkalinity (approximate)	pH	9
Thermal conductivity (approximate) at 40°C (ASTM C518: 1991)	W/m ² K	0.136
Coefficient of expansion	m/mk	-7.5 x 10 ⁻⁶
Nominal moisture content at EMC*	8%	
Thickness tolerance of standard boards	mm	- 0.5, +1
Length x Width tolerance of standard boards	mm	± 5
Surface condition	Front face: smooth Back face: sanded	

Thickness (mm)	Standard dimensions (mm x mm)	Number of boards per pallet	Surface per pallet (m ² /pallet)	Weight per m ² of sheet (approximate kg/m ²)	Weight per pallet (approximate kg)
6	2440 x 1220	90	267	6	1730
9	2440 x 1220	61	181	9	1760
12	2440 x 1220	46	137	12	1775
15	2440 x 1220	36	107	15	1733

*EMC: Equilibrium moisture content. The properties in above tables are mean values given for information and guidance only. If certain properties are critical for a particular application, it is advisable to consult Promat.

PROMINA® 60 is manufactured under a quality management system certified in accordance with ISO 9001: 2008. The product has passed the site audit in accordance with the environmental standards of ISO 14001: 2004 and occupational health and safety requirements of OHSAS 18001: 2007.

AS WITH MOST BUILDING PRODUCTS, THIS PRODUCT CONTAINS QUARTZ. MECHANICAL MACHINING (CUTTING, SANDING, DRILLING) OF BUILDING PRODUCTS WILL RELEASE DUST WHICH MAY CONTAIN QUARTZ PARTICLES. HOWEVER, FOR THIS PRODUCT, WITH EXPOSURE ASSESSMENTS PERFORMED BY ACCREDITED EUROPEAN LABORATORIES USING REFERENCE WORKPLACE MONITORING METHODS, ANY QUARTZ LEVELS IN THE RESPIRABLE DUST WERE BELOW THE DETECTION LIMITS. INHALATION OF HIGH CONCENTRATIONS OF DUST MAY IRRITATE THE RESPIRATORY SYSTEM. DUST MAY ALSO CAUSE IRRITATION OF THE EYES AND/OR SKIN. INHALATION OF RESPIRABLE DUST CONTAINING QUARTZ, IN HIGH CONCENTRATIONS OR OVER PROLONGED PERIODS OF TIME CAN LEAD TO LUNG DISEASE (SILICOSIS) AND AN INCREASED RISK OF LUNG CANCER. AVOID INHALATION OF DUST BY USING MACHINERY WITH DUST EXTRACTION. GUARANTEE ADEQUATE VENTILATION ON THE WORK FLOOR. AVOID CONTACT WITH THE EYES AND SKIN AND AVOID INHALATION OF DUST BY WEARING APPROPRIATE PERSONAL PROTECTION GEAR (SAFETY GOGGLES, PROTECTIVE CLOTHING AND DUST MASK). FOR MORE INFORMATION PLEASE CHECK THE APPROPRIATE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

PROMINA®-HD is a non combustible fibre silicate board manufactured from a homogeneous mixture of Portland cement with selected fibres and fillers. It does not contain formaldehyde.

PROMINA®-HD is off-white in colour and has a smooth finish on one face with a dimple pattern on the reverse face. The architectural appeal of the board surface is ready for most forms of decoration.

PROMINA®-HD is resistant to the effects of moisture and will not physically deteriorate when used in damp or humid conditions. Performance characteristics are not degraded by age or moisture.

PROMINA®-HD is suitable for both internal and external applications. It is also designed to withstand the most demanding exposure conditions experienced in external applications as well as being hard wearing, impact and abrasion resistant.

A health and safety data sheet is available from Promat and, as with any other material, should be read before working with the board. The board is not classified as a dangerous substance so no special provisions are required regarding the transportation and the disposal of the product to landfill. They can be placed in on-site rubbish skips with other general building waste which should then be disposed by a registered contractor in the appropriate and approved manner.



Typical Mechanical Properties

Modulus of elasticity, E (BS EN 310: 1993)	Longitudinal N/mm ²	11.04
	Transverse N/mm ²	10.80
Flexural strength, F _{rupture} (BS EN 310: 1993)	Longitudinal N/mm ²	13
	Transverse N/mm ²	10
Tensile strength, T _{rupture} (ASTM D1037: 1978)	Longitudinal N/mm ²	7.7
	Transverse N/mm ²	5
Compressive strength (average, perpendicular on board face) (BS 5669: Part 1: 1989)	N/mm ²	21.14

Applications

- External wall cladding/lining, external wall infill panel
- Acoustic wall lining
- Eaves, fascia and soffit linings
- Eave, fascia and soffit linings
- Internal partition and ceiling linings
- Backing panel for wet and tiled areas
- Thermal insulation infill panel
- Fire doors

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For general information of cutting, fixing, fabrication, flush jointing and finishing of these systems, please refer to pages 37 to 43.

General Technical Properties

Product generic description	Fibre silicate board
Material class (BS 476: Part 4: 1970 and AS 1530: Part 1: 1994)	Non combustible
Surface spread of flame (BS 476: Part 7: 1997 and AS 1530: Part 3: 1989)	Class 1
Building regulations classification	Class 0
Nominal density at EMC* (average)	kg/m ³ 1300
Alkalinity (approximate)	pH 10
Thermal conductivity (approximate) at 40°C (ASTM C518: 1991)	W/m ² K 0.187
Water absorption capacity (average)	g/cm ³ 19
Nominal moisture content at EMC*	6%
Thickness tolerance of standard boards	mm - 0.5, + 0.75
Length x Width tolerance of standard boards	mm ± 2
Surface condition	Front face: smooth Back face: dimple pattern

Thickness (mm)	Standard dimensions (mm x mm)	Number of boards per pallet	Surface per pallet (m ² /pallet)	Weight per m ² of sheet (approximate kg/m ²)	Weight per pallet (approximate kg)
4.5	2440 x 1220	120	357	5.85	2213
6	2440 x 1220	90	268	7.80	2214
7.5	2440 x 1220	72	214	9.75	2213
9	2440 x 1220	61	181.5	11.7	2252
12	2440 x 1220	46	136.9	15.6	2264
15	2440 x 1220	36	107.2	19.5	2216
20	2440 x 1220	27	80.4	26.0	2215

*EMC: Equilibrium moisture content. The properties in above tables are mean values given for information and guidance only. If certain properties are critical for a particular application, it is advisable to consult Promat.

PROMINA®-HD is manufactured under a quality management system certified in accordance with ISO 9001: 2008. The product has passed the site audit in accordance with the environmental standards of ISO 14001: 2004 and occupational health and safety requirements of OHSAS 18001: 2007.

AS FOR ALL NATURAL MATERIALS SUCH AS CONCRETE AND CLAY, QUARTZ CAN BE PRESENT AND THIS PRODUCT MAY ALSO RELEASE DUST CONTAINING QUARTZ PARTICLES WHEN IT IS MECHANICALLY MACHINED (CUTTING, SANDING, DRILLING). INHALATION OF HIGH CONCENTRATIONS OF DUST CAN IRRITATE THE RESPIRATORY SYSTEM. DUST CAN ALSO IRRITATE THE EYES AND/OR THE SKIN. THE INHALATION OF QUARTZ CONTAINING DUST, IN PARTICULAR HIGH CONCENTRATIONS OF FINE (RESPIRABLE) DUST OR OVER A PROLONGED PERIOD OF TIME CAN LEAD TO LUNG DISEASE (SILICOSIS) AND AN INCREASED RISK OF LUNG CANCER. AVOID INHALATION OF DUST BY USING MACHINERY WITH DUST EXTRACTION. GUARANTEE ADEQUATE VENTILATION ON THE WORK FLOOR. AVOID CONTACT WITH THE EYES AND SKIN AND AVOID INHALATION OF THE DUST BY WEARING APPROPRIATE PERSONAL PROTECTION GEAR (SAFETY GOGGLES, PROTECTIVE CLOTHING AND DUST MASK). FOR MORE INFORMATION PLEASE CHECK THE APPROPRIATE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

CAFCO® 300 is a spray or trowel applied, single package factory controlled premix, based on vermiculite and gypsum.

CAFCO® 300 is a lightweight coating that provides very efficient fire resistance with minimal thickness to steel and concrete structures, metal floor and roof decks, return air plenums and air handling ductwork.

Building types that benefit from the use of CAFCO® 300 include a wide range of educational, leisure and entertainment centres, and commercial projects.

Applications

- Structural steel protection
- Steel ventilation and smoke extraction ducts

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For the complete information of substrate preparation prior to applying CAFCO® 300 product, installation methods, fire protection thicknesses, application limitations etc, please contact Promat for the CAFCO® 300 data sheet and application guide.



General Technical Properties

Fire resistance	Steel structures protected with CAFCO® 300 have undergone fire resistance tests up to 240 minutes in approved independent laboratories to recognised standards throughout the world, including:		
	<ul style="list-style-type: none"> • Australia (AS 1530: Part 4: 2005) • Belgium (NBN S 21-202: 1980) • France (August 1999 Ministry Decree) • Germany (DIN 4102: 1977-2009 and DIN EN 1363-1: 1999-2010) • Harmonised European Standard ENV 13381: Part 4: 2002 • UK (BS 476: Part 6: 1989, Part 7: 1997 and Part 21: 1987) • USA (ASTM E119: 1998) 		
	Fire resistance test results relate solely to the constructions tested and test conditions imposed.		
Spread of flame (as defined by building regulations)	Class 0		
Alkalinity	pH	8.0~8.5	
Thermal conductivity	W/m²K	0.078	
Theoretical coverage at 15mm thickness	m²/tonne	217	
Number of coats	One or more as required		
Cure	By hydraulic set		
Initial set at 20°C and 50% RH	10~15 hours without accelerator		
Density (ASTM E605: 1993)	kg/m³	310 ± 15% without accelerator 310 - 10% (approximate) with accelerator	
Bond impact (ASTM E760: 1992-2005)	No cracks or delaminations		
Air erosion resistance (ASTM E859: 1993-2006)	No erosion		
Compressive strength (ASTM E761: 1992-2005)	kg/cm²	1.22	
Deflection effect (ASTM E759: 1992-2005)	No spalling, delamination or cracking		
Corrosion resistance	Does not promote corrosion of steel and does not require application over primed steel. Please seek advice of qualified structural engineer concerning long term corrosion protection.		
Colour and texture condition	Off-white with a monolithic spray texture		
Packaging	Storage	Shelf life	Environmental
20kg bags	Protect from frost, excessive heat (above 45°C) and strong radiant sunlight.	Maximum 6 months	Do not discharge into drains, watercourses or soil.

CAFCO® 300 is manufactured under a quality management system certified in accordance with ISO 9001: 2008. For complete UL listing to application of this product, please visit UL website at <http://www.ul.com>.

GUARANTEE ADEQUATE VENTILATION DURING WORK. AVOID CONTACT WITH THE EYES AND SKIN AND AVOID INHALATION OF THE DUST BY WEARING APPROPRIATE PERSONAL PROTECTION GEAR (SAFETY GOGGLES, PROTECTIVE CLOTHING AND DUST MASK). FOR MORE INFORMATION PLEASE CHECK THE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

Cafco FENDOLITE® MII is a spray applied, single package factory controlled premix, based on vermiculite and Portland cement. It may be floated or roller finished.

Cafco FENDOLITE® MII produces a monolithic coating able to withstand thermal shocks experienced typically in a high intensity hydrocarbon fire. Concrete structures in particular, will be protected from explosive spalling when protected using Cafco FENDOLITE® MII.

Although low in density, thus significantly reducing dead load, Cafco FENDOLITE® MII is highly durable and will not crack or spall under mechanical impact.

Cafco FENDOLITE® MII is used for application to construction elements such as concrete or individual steel sections, particularly where off-site application is required. It is suitable for exterior use on structures and vessels in the oil, gas, petrochemical and power industries, and for refurbishment or upgrading of existing tunnel structures.



Applications

- Structural steel and concrete protection
- Protection of tunnel structures

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For the complete information of substrate preparation prior to applying Cafco FENDOLITE® MII product, installation methods, fire protection thicknesses, application limitations etc, please contact Promat for the Cafco FENDOLITE® MII data sheet and application guide.

General Technical Properties

Fire resistance	Steel and concrete structures protected with Cafco FENDOLITE® MII have undergone fire resistance tests up to 240 minutes in approved independent laboratories to recognised standards throughout the world, including:		
	<ul style="list-style-type: none"> ● Australia (AS 1530: Part 4: 2005) ● France, Hydrocarbon Modified Curve ● Germany (DIN 4102: 1977-2009) ● International Standard ISO 834: 2002 ● Italy (UNI 11076) ● Netherlands, RWS (fire test procedures for tunnels GT-98036-1a) ● UK (BS 476: Parts 20 and 21: 1987 Appendix D and Euroclass A1 according to EN 1350-1) ● USA (ASTM E119: 1998, UL 263 and UL 1709 - Design No. XR719) 		
	Fire resistance test results relate solely to the constructions tested and test conditions imposed.		
Material class (Euroclass A1 according to EN 1350-1)	Non combustible		
Smoke generation	Does not contribute to smoke generation		
Alkalinity	pH	12.0~12.5	
Thermal conductivity at 20°C	W/m°K	0.19	
Theoretical coverage at 25mm thickness	m²/tonne	65	
Cure	By hydraulic set		
Initial set at 20°C and 50% RH	2~6 hours		
Density	kg/m³	Minimum 775 ± 15% when dry and in place	
Sound absorption	NRC	0.35	
Corrosion resistance	Does not promote corrosion of steel. Please seek advice of structural engineer concerning long term corrosion protection, particularly when the structure is to be fully exposed to prevailing weather conditions.		
Colour and texture condition	Off-white with a monolithic spray texture		
Packaging	Storage	Shelf life	Environmental
20kg bags	Kept dry and off the ground until ready for use	Maximum 12 months	<ul style="list-style-type: none"> ● Do not discharge into drains, watercourses or soil. ● Not readily biodegradable. ● Not expected to bioaccumulate or to be toxic to aquatic life except at high concentrations.

Cafco FENDOLITE® MII is manufactured under a quality management system certified in accordance with ISO 9001: 2008. For complete UL listing to application of this product, please visit UL website at <http://www.ul.com>.

GUARANTEE ADEQUATE VENTILATION DURING WORK. AVOID CONTACT WITH THE EYES AND SKIN AND AVOID INHALATION OF THE DUST BY WEARING APPROPRIATE PERSONAL PROTECTION GEAR (SAFETY GOGGLES, PROTECTIVE CLOTHING AND DUST MASK). FOR MORE INFORMATION PLEASE CHECK THE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

Cafco MANDOLITE® CP2 is a spray applied, single package factory controlled premix, based on vermiculite and Portland cement.

Cafco MANDOLITE® CP2 produces a monolithic coating able to withstand thermal shocks experienced in a cellulosic fire. Concrete structures in particular, can be protected from explosive spalling when coated with Cafco MANDOLITE® CP2.

Although low in density, thus significantly reducing dead load, Cafco MANDOLITE® CP2 is highly durable and will not crack or spall under mechanical impact.

Cafco MANDOLITE® CP2 is used for application to steel frames, metal floor or roof decks, and return air plenums. It may be easily removed and reinstated locally when additional fixings are required. Building types that benefit from the use of Cafco MANDOLITE® CP2 include a wide range of educational, leisure and entertainment centres, commercial or industrial projects.

Cafco MANDOLITE® CP2 may be applied within environments where limited exposure to the elements is likely throughout the building phase of the project, e.g. perimeter beams.



Applications

- Structural steel protection

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For the complete information of substrate preparation prior to applying Cafco MANDOLITE® CP2 product, mesh reinforcement, installation methods, fire protection thicknesses, application limitations etc, please contact Promat for the Cafco MANDOLITE® CP2 data sheet and application guide.

General Technical Properties

Fire resistance	Steel structures protected with Cafco MANDOLITE® CP2 have undergone fire resistance tests up to 240 minutes in approved independent laboratories to recognised standards throughout the world, including:		
	<ul style="list-style-type: none"> • Australia (AS 1530: Part 4: 2005) • Germany (DIN 4102: 1977-2009) • International Standard ISO 834: 2002 • UK (BS 476: Parts 20 and 21: 1987) • USA (ASTM E119: 1998 and UL 263) 		
	Cafco MANDOLITE® CP2 protected structures have been successfully tested under BS 476: Part 21: 1987 to failure temperatures of up to 800°C. This allows the specifier the freedom to adopt a fire engineering approach to fire resistance in accordance with BS 5950: Part 3 and 8: 1990, as well as the relevant Eurocodes.		
	Fire resistance test results relate solely to the constructions tested and test conditions imposed.		
Material class (BS 476: Part 4: 1970)	Non combustible		
Spread of flame (as defined by building regulations)	Class 0		
Smoke generation	Does not contribute to smoke generation		
Alkalinity	pH	12.0~12.5	
Thermal conductivity at 20°C	W/m²K	0.095	
Theoretical coverage at 15mm thickness	m²/tonne	172	
Number of coats	One or more as required		
Cure	By hydraulic set		
Initial set at 20°C and 50% RH	2~6 hours		
Density	kg/m³	390 ± 15% when dry and in place	
Bond impact (ASTM E760: 1992-2005)	No cracks or delaminations		
Air erosion resistance (ASTM E859: 1993-2006)	No erosion		
Compressive strength (ASTM E761: 1992-2005)	kPa	563	
Deflection effect (ASTM E759: 1992-2005)	No delamination or cracking within normal code limits		
Corrosion resistance	Does not promote corrosion of steel. Please seek advice of structural engineer concerning long term corrosion protection, particularly when the structure is to be fully exposed to prevailing weather conditions.		
Colour and texture condition	Off-white with a monolithic spray texture		
Packaging	Storage	Shelf life	Environmental
12.5kg bags except 15kg for Taiwan and 20kg for Australia	Kept dry and off the ground until ready for use	Maximum 12 months	<ul style="list-style-type: none"> • Do not discharge into drains, watercourses or soil. • Not readily biodegradable. • Not expected to bioaccumulate or to be toxic to aquatic life except at high concentrations.

Cafco MANDOLITE® CP2 is manufactured under a quality management system certified in accordance with ISO 9001: 2008. For complete UL listing to application of this product, please visit UL website at <http://www.ul.com>.

GUARANTEE ADEQUATE VENTILATION DURING WORK. AVOID CONTACT WITH THE EYES AND SKIN AND AVOID INHALATION OF THE DUST BY WEARING APPROPRIATE PERSONAL PROTECTION GEAR (SAFETY GOGGLES, PROTECTIVE CLOTHING AND DUST MASK). FOR MORE INFORMATION PLEASE CHECK THE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

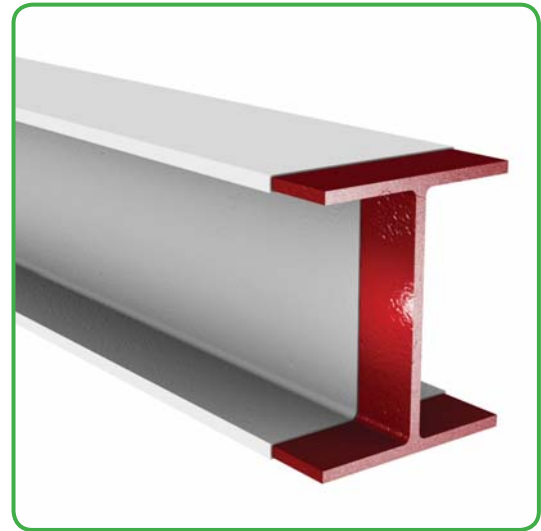
General Description

Cafco SPRAYFILM® WB3 is a water based intumescent coating consisting of polyvinyl acetate resins and fillers for the fire protection of structural steel. It is preferably spray applied with airless paint equipment for speed and quality of finish. Brush and roller application is also possible.

Cafco SPRAYFILM® WB3 can be sealed and protected with a decorative top coat.

Cafco SPRAYFILM® WB3 is applied directly to the contour of primed I and H section columns, angles, channels and beams and both square and circular hollow sections, to provide fire protection for up to 120 minutes.

In a fire, a chemical reaction takes place causing the Cafco SPRAYFILM® WB3 to expand and form an insulating layer which slows the temperature of the steel rising to a critical level.



Applications

- Structural steel protection

Annotation and/or video of the applications is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For the complete information of substrate preparation prior to applying Cafco SPRAYFILM® WB3 product, installation methods, fire protection thicknesses, application limitations etc, please contact Promat for the Cafco SPRAYFILM® WB3 data sheet and application guide.

General Technical Properties

Fire resistance		Steel structures protected with Cafco SPRAYFILM® WB3 have undergone fire resistance tests up to 120 minutes in approved independent laboratories to recognised standards throughout the world, including: <ul style="list-style-type: none"> • Australia (AS 1530: Part 4: 2005) • UK (BS 476: Part 21: 1987) • Canada and USA (ASTM E84 and E119: 1998) Fire resistance test results are assessed in accordance with ASFP "Fire protection for structural steel in buildings" procedures. If UL certification is required, please consult Promat.
Surface burning (ASTM E84: 1998)		Flame spread 5, smoke development 35
Alkalinity	pH	8.0 ± 0.2 at 25°C
Theoretical coverage		Approximately 18.79m ² per container at 0.7mm DFT
Practical coverage		Dependent on surface texture, substrate, application method and technique.
Number of coats		One or more as required
Maximum thickness (WFT) per coat	mm	1.6 using spray 0.76 using brush For airless spraying, several thin coats as opposed to one heavy coat will give greater control over finish and thickness.
Cure		By air drying
Initial set at 20°C, 50% RH and 0.4mm WFT		Approximately 6 hours
Density	kg/litre	1.33
Solids by weight		70% ± 2%
Impact resistance (ASTM D2794: 1993-2010)	kg/m	18
Durometer hardness (ASTM D2240: 2005-2010)		80 shore D
Abrasion resistance at 1000 cycles (ASTM D4060: 1995)	g	0.6505
Colour and texture condition		White with a flat matt finish

NOTE: 1mm = 1000µm (microns)

Packaging	Storage	Shelf life	Environmental
25kg plastic pails	<ul style="list-style-type: none"> • Indoors in dry conditions between 10°C and 38°C. • Protect from frost, excessive heat (above 45°C) and strong radiant sunlight. 	Maximum 10 months in original sealed containers	Do not discharge into drains, watercourses or soil.

Cafco SPRAYFILM® WB3 is manufactured under a quality management system certified in accordance with ISO 9001: 2008. For complete UL listing to application of this product, please visit UL website at <http://www.ul.com>.

GUARANTEE ADEQUATE VENTILATION DURING WORK. AVOID CONTACT WITH THE EYES AND SKIN AND AVOID INHALATION OF THE DUST BY WEARING APPROPRIATE PERSONAL PROTECTION GEAR (SAFETY GOGGLES, PROTECTIVE CLOTHING AND DUST MASK). FOR MORE INFORMATION PLEASE CHECK THE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

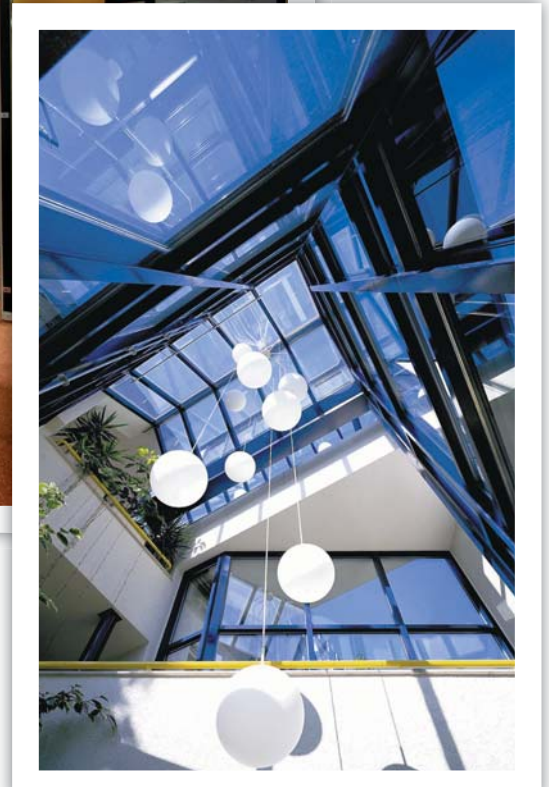
The unique design concept from Promat for a fire resistant glass wall is a revolutionary technical breakthrough in the passive fire protection industry. Exciting design concepts are now possible with Promat SYSTEMGLAS® and PROMAGLAS®.

Promat systems offer superior passive fire protection quality using innovative methods of construction. The Promat SYSTEMGLAS® construction provides insulation across the glass joints without the need for insulating cover fillets. The PROMAGLAS® construction provides insulation across the glass, with the use of various types of material as framing, i.e. steel, timber etc. These glazing systems, depending of the thickness used, are tested for fire resistance performance up to 120 minutes.

Both Promat SYSTEMGLAS® and PROMAGLAS® systems are available in many variations, which can be used in exterior or interior applications. Selection of appropriate glass system generally depends on various factors in existing site, i.e. location, height etc. Please consult Promat for further assistance in appropriate recommendations.

Applications

- Fire resistant insulated glazing screens and doors



Promat SYSTEMGLAS® is manufactured under a quality management system certified in accordance with ISO 9001: 2000 and/or 2008. The production unit has passed the site audit of ISO 14001 and all manufacturing processes are in accordance with the environmental standards of ISO 14001: 2004.

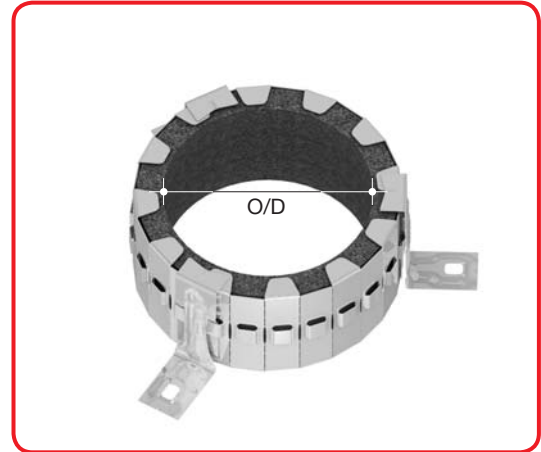
SUPPLEMENTARY CONDITIONS AND INSTRUCTIONS FOR TRANSPORT, ASSEMBLY AND STORAGE SHOULD BE REQUESTED AND OBSERVED.

General Description

PROMASTOP® UniCollar® is an intumescent device designed to maintain the integrity of the fire resistant elements through which various plastic pipes pass. It is suitable for installation in various floors and walls similar to that in which it has been tested. In the event of a fire, the intumescent material in the PROMASTOP® UniCollar® rapidly expands, closing off the plastic pipe or combustible insulation and forming an insulating barrier.

PROMASTOP® UniCollar® is currently tested with many new and existing types of plastic using uPVC as a benchmark.

PROMASTOP® UniCollar® is packed in individual boxes each containing 2280mm length of collar (or 152 segments) and fixing accessories are included. The collar is designed so that it can be cut and snapped in modules of 15mm. For a guide to the approximate number of collar sizes per strip, please refer to the below table.



Applications

- Plastic pipe penetration seals through floors and walls

Usage Guide

Outer diameter (O/D)	mm inches	43	50	55	63	69	75	83	90	110	114	125	140	160	200
		1.25	1.5	—	2	—	2.5	—	3	—	4	—	5	6	—
Segments per collar (UL listing if featured)		15	17	18	20 (19)	21	22	24	25	29	30	33	36	40 (42)	49
Approximate number of collars per box		10	8.5	8	7.5	7	6.5	6	6	5	5	4.5	4	3.5 (3.75)	3
Number of brackets per collar for floor application		2	2	2	2	2	3	3	3	3	3	4	5	5	5
Number of brackets per collar for wall application		2*	2*	2*	2*	2*	3	3	3	3	3	3	5	5	5

*Three brackets are recommended for framed walls if framing is not available to be fixed on.

General Description

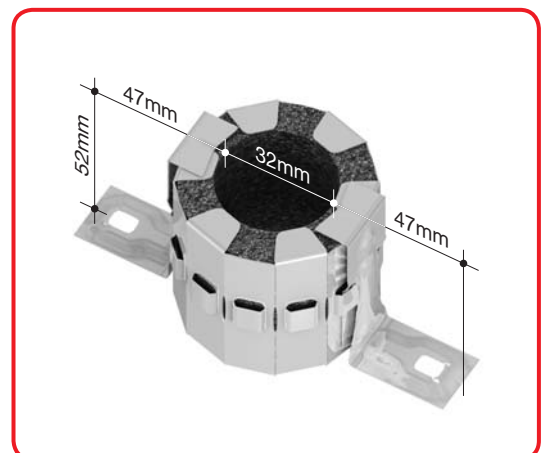
PROMASEAL® Conduit Collar is designed for retrofitting around small (<32mm) plastic conduit pipes that pass through fire floor or wall slabs. It comes in one size (32mm) and can be used on smaller diameter conduits without modification.

Applications

- Plastic conduit pipe penetration seals through floor slabs and walls

Installation

Suitable for conduits up to 32mm, the collars are either attached to both sides of the wall or to the underside of a floor slab. Any gaps between the pipe and the wall or floor should be sealed with PROMASEAL®-A Acrylic Sealant.



Annotation and/or video of PROMASTOP® UniCollar® and PROMASEAL® Conduit Collar penetration seals is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For further installation details, please consult Promat.

PROMASTOP® UniCollar® and PROMASEAL® Conduit Collar are manufactured under a quality management system certified in accordance with ISO 9001: 2008. The production unit has passed the site audit of ISO 14001 and all manufacturing processes are in accordance with the environmental standards of ISO 14001: 2004 and the safety standards of AS 4801: 2001.

THE SUCCESSFUL USE OF THESE PRODUCTS IS DEPENDENT ON A NUMBER OF FACTORS. AS THE INFORMATION CONTAINED ABOVE CAN ONLY BE OF A GENERAL NATURE, PLEASE CONSULT PROMAT IF THERE IS ANY DOUBT ABOUT THE CORRECT USE OF THESE PRODUCTS IN A PARTICULAR APPLICATION. FOR MORE INFORMATION PLEASE CHECK THE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

Square based PROMASEAL® Retrofit Collar (FC type) is multi purpose collar designed for use with concrete slabs, masonry and lightweight walls and lined ceilings.

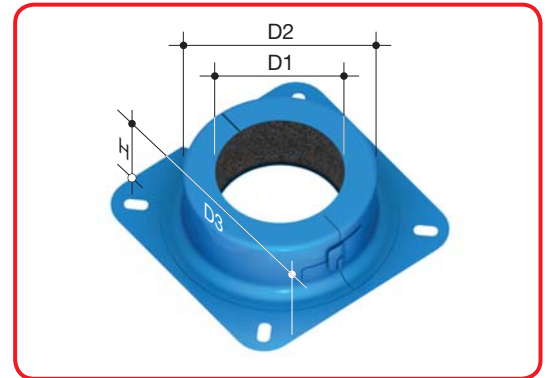
The split type collar can be retrofitted where necessary. It is available in a range of sizes to suit plastic pipes up to 318mm outside diameter.

Note that PROMASEAL® Retrofit Collars above 200mm have a circular base.

Applications

- Plastic pipe penetration seals through ceilings, floors and walls

Dimension



Code no.		FC 40	FC 50	FC 65	FC 80	FC 100	FC 125	FC 150	FC 250	FC 300
Pipe nominal diameter	mm	40	50	65	80	100	125	150	250	300
Body	H	mm	43	43	43	53	63	73	120	160
	D1	mm	45	58	71	85	112	127	254	318
	D2	mm	77	90	103	123	150	165	316	402
Flange	D3	mm	112	125	138	158	185	197	380 Ø	466 Ø

General Description

Circular based PROMASEAL® Retrofit Collar (FCS type) is designed to be fitted around installed pipes that pass through floor slabs and have been tested with uPVC, HDPE and ABS pipes up to 150mm diameter. The larger opening within the collars will accommodate pipes (and uPVC pipe fittings) that have differing outside diameters.

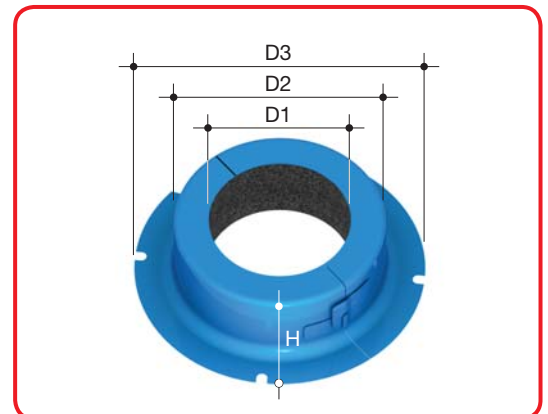
PROMASEAL® Retrofit Collar should be unclipped, placed around the pipe, re-clipped and pushed tight to the substrate.

Both square and circular based PROMASEAL® Retrofit Collars can be split in order to be retrofitted or relocated when necessary.

Applications

- Plastic pipe penetration seals through floor slabs

Dimension



Code no.		FCS 40	FCS 50	FCS 65	FCS 100
uPVC pipe nominal diameter	mm	40	50	65	100
HDPE pipe nominal diameter	mm	50	56	75	100
ABS pipe nominal diameter	mm	40	50	—	100
Body	H	mm	43	43	53
	D1	mm	56	70	127
	D2	mm	84	98	167
Flange	D3	mm	131	145	214

Annotation and/or video of square and circular based PROMASEAL® Retrofit Collar penetration seals is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For further installation details, please consult Promat.

Square and circular based PROMASEAL® Retrofit Collars are manufactured under a quality management system certified in accordance with ISO 9001: 2008. The production unit has passed the site audit of ISO 14001 and all manufacturing processes are in accordance with the environmental standards of ISO 14001: 2004 and the safety standards of AS 4801: 2001.

THE SUCCESSFUL USE OF THESE PRODUCTS IS DEPENDENT ON A NUMBER OF FACTORS. AS THE INFORMATION CONTAINED ABOVE CAN ONLY BE OF A GENERAL NATURE, PLEASE CONSULT PROMAT IF THERE IS ANY DOUBT ABOUT THE CORRECT USE OF THESE PRODUCTS IN A PARTICULAR APPLICATION. FOR MORE INFORMATION PLEASE CHECK THE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

PROMASEAL® Hi-Blu Collar is designed to be fixed to formwork prior to the pouring of concrete floor slabs. It has been tested with various uPVC and HDPE pipes.

PROMASEAL® Hi-Blu Collar is available in THREE (3) sizes:

- 1) Small, for pipes up to a nominal 65mm;
- 2) Medium, for pipes between the sizes of 65mm and 100mm; and
- 3) Large, for pipes of a nominal 150mm.

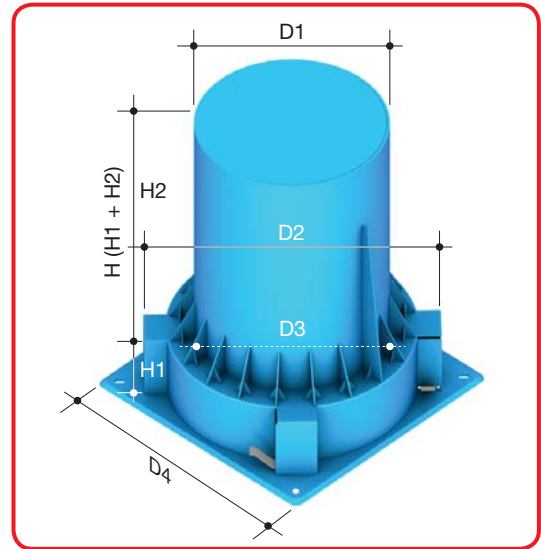
Please check with Promat before installing the collar to ensure the size and type of pipe being installed can be used with the particular size and type of collar.

Applications

- Plastic pipe penetration seals through floor slabs

Dimension

Code no.			Hi-Blu 65	Hi-Blu 100	Hi-Blu 150
Body	H	mm	250	250	250
	H1	mm	45	57	57
	H2	mm	205	193	193
	D1	mm	95	140	194
	D2	mm	132	178	232
	D3	mm	97	142	197
Flange	D4	mm	154	198	253



General Description

PROMASEAL® Green Cast-in Collar is designed to be fixed to formwork prior to the pouring of concrete floor slabs. The collar accommodates the uPVC pipe fitting within the thickness of the slab enabling space saving.

For slabs that use lost formwork or are less than 120mm thick, please consult Promat.

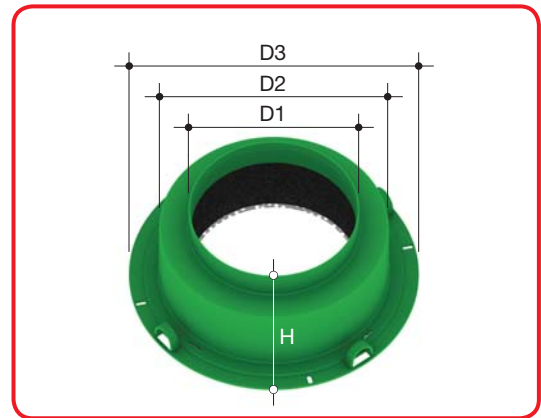
Applications

- Plastic pipe penetration seals through floor slabs

Dimension

Code no.			Green 40	Green 50	Green 65	Green 80	Green 100
uPVC pipe nominal diameter	mm		40	50	65	80	100
Body	H	mm	49 + 30*	49 + 30*	49 + 20*	60 + 20*	60 + 20*
	D1	mm	43	56	69	83	110
	D2	mm	115	115	115	163	163
Flange	D3	mm	160	160	160	210	210

*Additional height of upright pipe grip



Annotation and/or video of PROMASEAL® Hi-Blu Collar and PROMASEAL® Green Cast-in Collar penetration seals is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For further installation details, please consult Promat.

PROMASEAL® Hi-Blu Collar and PROMASEAL® Green Cast-in Collar are manufactured under a quality management system certified in accordance with ISO 9001: 2008. The production unit has passed the site audit of ISO 14001 and all manufacturing processes are in accordance with the environmental standards of ISO 14001: 2004 and the safety standards of AS 4801: 2001.

THE SUCCESSFUL USE OF THESE PRODUCTS IS DEPENDENT ON A NUMBER OF FACTORS. AS THE INFORMATION CONTAINED ABOVE CAN ONLY BE OF A GENERAL NATURE, PLEASE CONSULT PROMAT IF THERE IS ANY DOUBT ABOUT THE CORRECT USE OF THESE PRODUCTS IN A PARTICULAR APPLICATION. FOR MORE INFORMATION PLEASE CHECK THE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

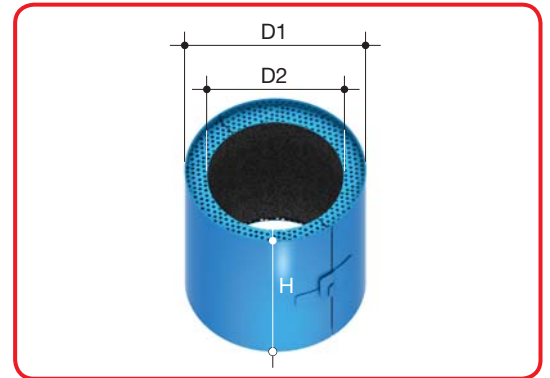
General Description

PROMASEAL® Wall Collar is designed for insertion into wall elements made of matrix engineered mineral, Cement Bound Matrix, PromaX® mineral, calcium silicate, fibre silicate, plasterboard, concrete or masonry, and has been tested on uPVC and HDPE pipes.

Similar to the PROMASEAL® Retrofit Collar, this is a split type collar enabling retrofit fitting where necessary.

Applications

- Plastic pipe penetration seals through walls



Dimension

Code no.		FCW 40	FCW 50	FCW 65	FCW 100	FCW 150
Pipe nominal diameter	mm	40	50	65	100	150
Body	H	mm	120	120	120	120
	D1	mm	80*	90*	107*	153*
	D2	mm	47	60	75	116

*Additional allowance of 3mm for clip

General Description

PROMASEAL® Fire Resistant Services Seal Collar is designed to be fixed to the formwork prior to pouring concrete floor slabs and to provide openings in floor slabs for various combustible service penetrations.

PROMASEAL® Fire Resistant Services Seal Collar is available in one size only, PSS 100, to accommodate multiple or single services.

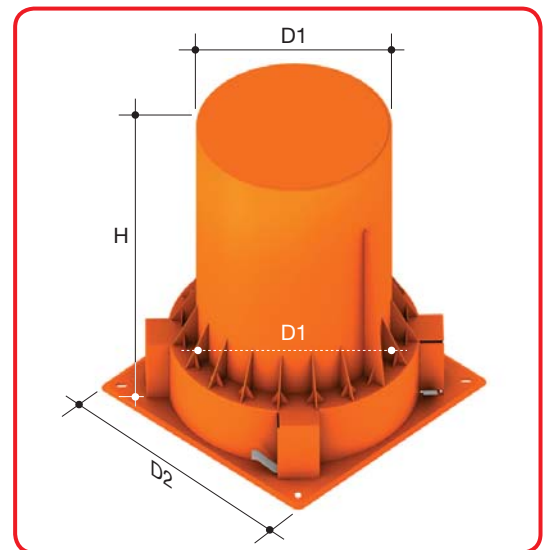
Applications

- Combustible service penetration seals through floor slabs

Dimension

Code no.		PSS 100	
Maximum diameter of services	mm	120*	
Body	H	mm	250
	D1	mm	140
Flange	D2	mm	198

*Allowance of 10mm for backfill around services



Annotation and/or video of PROMASEAL® Wall Collar and PROMASEAL® Fire Resistant Services Seal Collar penetration seals is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For further installation details, please consult Promat.

PROMASEAL® Wall Collar and PROMASEAL® Fire Resistant Services Seal Collar are manufactured under a quality management system certified in accordance with ISO 9001: 2008. The production unit has passed the site audit of ISO 14001 and all manufacturing processes are in accordance with the environmental standards of ISO 14001: 2004 and the safety standards of AS 4801: 2001.

THE SUCCESSFUL USE OF THESE PRODUCTS IS DEPENDENT ON A NUMBER OF FACTORS. AS THE INFORMATION CONTAINED ABOVE CAN ONLY BE OF A GENERAL NATURE, PLEASE CONSULT PROMAT IF THERE IS ANY DOUBT ABOUT THE CORRECT USE OF THESE PRODUCTS IN A PARTICULAR APPLICATION. FOR MORE INFORMATION PLEASE CHECK THE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

Floor wastes in wet areas are notoriously difficult to seal in the event of a fire. The lack of a pipe stack above the floor level means that the floor grate offers little protection from fire and smoke once the pipe work has burnt through. The PromaSnap® Floor Waste System is designed to provide an effective but simple solution for water proofing and the leveling of the screed for tiling and water flow from the floor.

PromaSnap® Floor Waste System is comprised of:

- 1) An outer cap that will keep concrete, water and rubbish out of the pipe work during construction. This cap is positioned flush with the finished floor slab to eliminate any trip hazard and enable the slab to be floated off, obstacle free.
- 2) A central core (with a cap) that can be adjusted to the correct screed height for the finished (tiled) floor.
- 3) A puddle flange that can be set at the exact height of the finished slab.
- 4) A base that will hold the pipe in place during a concrete floor slab pour.

PromaSnap® Floor Waste System, with its built-in puddle flange, providing the installer optimum conditions to work with a waterproofing membrane.



Applications

- Plastic pipe penetration seals through floor slabs

General Description

PROMASEAL® Retrofit Floor Waste Collar is designed to provide fire resistance where floor wastes penetrate wet areas.

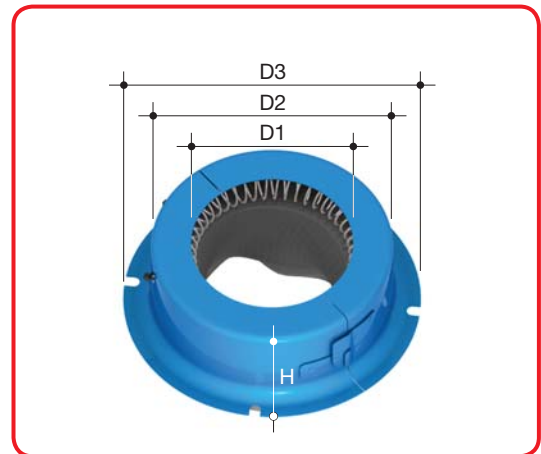
PROMASEAL® Retrofit Floor Waste Collar is surface mounted (retrofit) type that provides integrity and insulation criteria for uPVC floor waste traps of 50mm, 80mm and 100mm diameters. For installation of PROMASEAL® Retrofit Floor Waste Collar on permanent form work and in thin floor slabs, please consult Promat.

Applications

- Plastic pipe penetration seals through floor slabs

Dimension

Code no.		FWR 100	
uPVC pipe nominal diameter	mm	100	
Body	H	mm	70
	D1	mm	110
	D2	mm	167
Flange	D3	mm	209



Annotation and/or video of PromaSnap® Floor Waste System and PROMASEAL® Retrofit Floor Waste Collar penetration seals is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For further installation details, please consult Promat.

PromaSnap® Floor Waste System and PROMASEAL® Retrofit Floor Waste Collar are manufactured under a quality management system certified in accordance with ISO 9001: 2008. The production unit has passed the site audit of ISO 14001 and all manufacturing processes are in accordance with the environmental standards of ISO 14001: 2004 and the safety standards of AS 4801: 2001. PromaSnap® Floor Waste System is manufactured entirely from recycled and recyclable materials, and is certified under WaterMark™ Certification Scheme.

THE SUCCESSFUL USE OF THESE PRODUCTS IS DEPENDENT ON A NUMBER OF FACTORS. AS THE INFORMATION CONTAINED ABOVE CAN ONLY BE OF A GENERAL NATURE, PLEASE CONSULT PROMAT IF THERE IS ANY DOUBT ABOUT THE CORRECT USE OF THESE PRODUCTS IN A PARTICULAR APPLICATION. FOR MORE INFORMATION PLEASE CHECK THE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

PROMASEAL®-A Acrylic Sealant is a water based acrylic sealant. The advantage of this environmentally friendly water based sealant is in making post installation and site clean up easier.

If installed correctly, once cured PROMASEAL®-A Acrylic Sealant should not crack and it can be simply overpainted. It has a good resistance to water characteristics and some movement capabilities. Note that:

- 1) PROMASEAL®-A Acrylic Sealant is water resistant once fully cured. However, it is not recommended for external use.
- 2) The sealant should not be used where continuous water immersion is likely.
- 3) The sealant is not recommended for use in wet or damp areas where ambient humidity is consistently high, e.g. bathrooms.
- 4) The sealant is not recommended for use in around services where high movement may be expected. It is not recommended for use around services that require more than $\pm 15\%$ movement.

PROMASEAL®-A Acrylic Sealant is supplied in 300ml cartridges, 600ml foil packs and 10 litre pails.



Applications

- Typical deflection head and control joint seals in drywall partitions and wall slabs
- Electrical cable and cable tray penetration seals through drywall partitions
- Metal pipe penetration seals through drywall partitions and floor slabs

General Description

PROMASEAL® Bulkhead System is made using high density mineral wool that is coated with PROMASEAL® Bulkhead Sealer. The coated mineral wool remains in-situ during a fire situation and forms a barrier against the passage of flame, smoke and toxic gases.

PROMASEAL® Bulkhead Sealer is the simplest and probably the most economical of all fire stopping products to use. It can be installed in both wall and floor applications and has been tested for up to 120 minute fire resistance with various services penetrating the barrier.

In many buildings, power cables (such as computer and telecommunication cables), are continuously added, altered and removed. The PROMASEAL® Bulkhead Sealer System enables this process to be carried out with the minimum of mess and inconvenience.

PROMASEAL® Bulkhead Sealer Systems are non loadbearing. Please consult Promat for loadbearing PROMASEAL® Bulkhead Sealer Systems.

PROMASEAL® Bulkhead Sealer is supplied in 25kg pails or as pre-coated batts measuring 1200mm x 600mm.



Applications

- Metal pipe, electrical cable and cable tray penetration seals through floor slabs
- Metal pipe, electrical cable, cable tray and steel ventilation duct penetration seals through wall slabs

Annotation and/or video of PROMASEAL®-A Acrylic Sealant and PROMASEAL® Bulkhead Sealer System penetration seals is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For further installation details, please consult Promat.

PROMASEAL®-A Acrylic Sealant and PROMASEAL® Bulkhead Sealer are manufactured under a quality management system certified in accordance with ISO 9001: 2008. The production unit has passed the site audit of ISO 14001 and all manufacturing processes are in accordance with the environmental standards of ISO 14001: 2004 and the safety standards of AS 4801: 2001.

THE SUCCESSFUL USE OF THESE PRODUCTS IS DEPENDENT ON A NUMBER OF FACTORS. AS THE INFORMATION CONTAINED ABOVE CAN ONLY BE OF A GENERAL NATURE, PLEASE CONSULT PROMAT IF THERE IS ANY DOUBT ABOUT THE CORRECT USE OF THESE PRODUCTS IN A PARTICULAR APPLICATION. FOR MORE INFORMATION PLEASE CHECK THE MATERIAL SAFETY DATA SHEET, AVAILABLE UPON REQUEST.

General Description

PROMASTOP® Cement is a lightweight fire resistant cement supplied as a dry powder for on site preparation. It is mixed on site with clean water. This fine grade cement powder is white in colour for ease of identification and has a quick setting time. When the product is set, it presents a hard surface finish and does not shrink regardless of temperature change. It is readily drilled for post installation of services.

When used in a floor applications, PROMASTOP® Cement can also provide some degree of loadbearing capability depending on the thickness of cement layer and the dimension of the opening being filled. Please consult Promat to ascertain minimum thickness and maximum opening dimensions required to meet a loadbearing performance.

PROMASTOP® Cement has been tested up to 240 minute fire resistance in masonry or concrete block walls and concrete floors. Insulation on the penetrating services will vary depending upon the type of services that penetrate the barrier.

PROMASTOP® Cement is not suitable for use in lightweight steel stud partition walls.

PROMASTOP® Cement is white in colour and supplied in convenient 20kg bags.



Applications

- Metal pipe, electrical cable, cable tray and plastic pipe penetration seals through floor slabs
- Metal pipe, electrical cable and cable tray penetration seals through wall slabs

General Description

PROMASEAL® Mortar is a lightweight, fire resistant, cement based product. Normal concrete weighs 2400kg per m³. Lightweight concrete weighs 1600-1800kg per m³ whilst PROMASEAL® Mortar weighs approximately 700kg per m³. This means that the formwork required is equally lightweight and simple to install.

PROMASEAL® Mortar can be pre-mixed and kept for several hours in a plastic bucket with an air tight lid. This enables an installer to do a number of small openings in a building without having to make repeated and time consuming mixes at the site

Dependent on weather conditions, PROMASEAL® Mortar can set quickly in a few hours. It is easy to create new holes within PROMASEAL® Mortar for the installation of new services, and equally easy to repair with itself.

PROMASEAL® Mortar does not shrink on drying and can be installed at the last minute before inspection and after all services are installed.

PROMASEAL® Mortar can provide a fully insulated system. Services through the mortar will have various insulation levels determined by type of services and their dimensions. Please consult Promat for further details.

PROMASEAL® Mortar is grey in colour and supplied in convenient 20kg bags.



Applications

- Metal pipe, uPVC pipe (with fire collar), electrical cable and cable tray penetration seals through floor slabs and masonry walls

Annotation and/or video of PROMASTOP® Cement and PROMASEAL® Mortar penetration seals is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For further installation details, please consult Promat.

PROMASTOP® Cement and PROMASEAL® Mortar are manufactured under a quality management system certified in accordance with ISO 9001: 2008. The production unit has passed the site audit of ISO 14001 and all manufacturing processes are in accordance with the environmental standards of ISO 14001: 2004 and the safety standards of AS 4801: 2001.

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General Description

PROMASEAL® FlexiWrap is manufactured using Promat intumescent technology. It is designed to provide fire resistance where combustible insulation is used as thermal insulation around metal pipes. It is not suitable for use on plastic pipes.

PROMASEAL® FlexiWrap has been tested for 120 minute fire resistance and integrity in both wall and floor applications.

PROMASEAL® FlexiWrap is supplied in sheet form measuring 450mm x 880mm.

Applications

- Thermal insulated metal pipe penetration seals through lightweight partitions and floor slabs



General Description

PROMASEAL® Pillows are manufactured from treated cloth filled with a high density, granulated fire seal mineral wool. When exposed to fire, the pillows remain in place and char thus forming a fire barrier of a solid mass of insulating material.

PROMASEAL® Pillows are used in special occasions where other fire barrier solutions cannot be used. Between 100 and 130 numbers are usually required per m² of an open area; however, the pillows can be easily placed in many openings where it would be difficult to apply other products or wet systems.

In the case of smaller penetrations, it is often more economical to use the pillows, especially if labour costs are a concern, because the required fire performance can be achieved with the application of just a few pillows.

In many buildings, typical telecommunication and computer cables are continuously added and removed. PROMASEAL® Pillows enable this process to be carried out with the minimum of mess and inconvenience. It is simple to thread a new cable through a PROMASEAL® Pillow and seal up with PROMASEAL®-A Acrylic Sealant.

To prevent installed PROMASEAL® Pillows being removed, it is advisable to hold the pillows physically in place with steel mesh or apply a thin film coating of PROMASEAL®-A Acrylic Sealant over the surface of the pillows for warning purposes. The latter method is easier to monitor if the pillows are later removed and not replaced correctly.

Promat recommends a nominal 1-2mm thick coating of PROMASEAL®-A Acrylic Sealant brush applied over the surface of the installed PROMASEAL® Pillows.

PROMASEAL® Pillows have been tested up to 180 minute fire resistance with various services penetration seals in both floor and wall situations. The pillows are non loadbearing.

PROMASEAL® Pillows are supplied in FOUR (4) dimensions:

- 1) Small, nominal 250mm x 100mm x 30mm thick;
- 2) Medium, nominal 250mm x 200mm x 40mm thick;
- 3) Large, nominal 250mm x 300mm x 40mm thick; and
- 4) Extra large, nominal 250mm x 600mm x 40mm thick.

Applications

- Metal pipe, electrical cable and cable tray penetration seals through lightweight partitions, floors and walls
- Electrical cable and cable tray seals underneath raised access floors



Annotation and/or video of PROMASEAL® FlexiWrap and PROMASEAL® Pillows penetration seals is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For further installation details, please consult Promat.

PROMASEAL® FlexiWrap and PROMASEAL® Pillows are manufactured under a quality management system certified in accordance with ISO 9001: 2008. The production unit has passed the site audit of ISO 14001 and all manufacturing processes are in accordance with the environmental standards of ISO 14001: 2004 and the safety standards of AS 4801: 2001.

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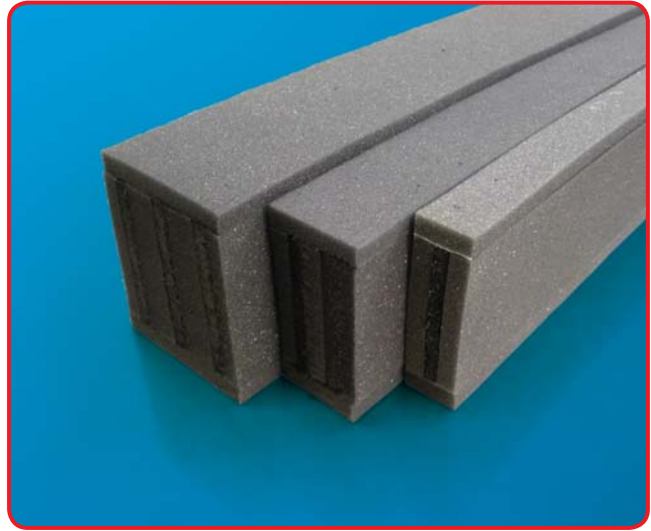
General Description

PROMASEAL® FyreStrip is a compressible, flexible, fire resistant seal which is used where movement joints are formed in the structure of a building. It consists of layers of Grafitex intumescent material bonded to a special foam and it has been successfully tested for up to 240 minute fire resistance for joints within walls and floors.

PROMASEAL® FyreStrip is ideal for sealing high movement joints at junctions between compartment walls and floors. Its flexibility makes them suitable for use in a variety of configurations. The fire performance of PROMASEAL® FyreStrip will vary according to the particular application. The width of the gap into which the strip will be inserted as well as the orientation of the strip affect the level of fire resistance provided.

The thickness of PROMASEAL® FyreStrip is determined by the minimum and maximum width of the gap expected during the lifetime of the building. For 240 minute fire resistance, insulation and integrity performance, PROMASEAL® FyreStrip is supplied in the following dimensions:

- 1000mm (L) x 28mm (W) x 90mm (D), FS20
- 1000mm (L) x 46mm (W) x 90mm (D), FS40
- 1000mm (L) x 56mm (W) x 90mm (D), FS50
- 1000mm (L) x 84mm (W) x 100mm (D), FS80
- 1000mm (L) x 124mm (W) x 120mm (D), FS100



Applications

- High movement joint seals between junctions of floor and wall slabs
- High movement joint seals between junctions of wall slabs

General Description

PROMASEAL® Electrical Junction Seal consists of Grafitex intumescent strips, sandwiched between a special compressible foam. It helps prevent the spread of fire up to 120 minutes when inserted within steel electrical cable trunking that pass through compartment walls and floors.

When exposed to the heat from a fully developed fire, the Grafitex intumescent strips will expand, compressing and eventually replacing the foam to form a solid char plug inside the cable trunking and around the electrical cables, thus preventing the spread of fire along cables and through the cable trunking.

PROMASEAL® Electrical Junction Seal is supplied in following dimensions to suit different steel cable trunking sizes:

- 100mm x 84mm x 35mm thick for cable trunking measuring 100mm x 100mm
- 150mm x 84mm x 50mm thick for cable trunking measuring 150mm x 150mm
- 200mm x 84mm x 50mm thick for cable trunking measuring 200mm x 200mm



Applications

- Steel electrical cable trunking penetration seals through floor and wall slabs

Annotation and/or video of PROMASEAL® FyreStrip and PROMASEAL® Electrical Junction Seal penetration seals is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For further installation details, please consult Promat.

PROMASEAL® FyreStrip and PROMASEAL® Electrical Junction Seal are manufactured under a quality management system certified in accordance with ISO 9001: 2008. The production unit has passed the site audit of ISO 14001 and all manufacturing processes are in accordance with the environmental standards of ISO 14001: 2004 and the safety standards of AS 4801: 2001.

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General Description

PROMASEAL® IBS™ is a fire resistant, flexible foam strip which, when placed in joints and around service penetrations in floors and walls, will maintain the fire resistance of the separating element. It is a factory made product and can be easily verified as being installed in the correct manner. In most instances the addition of PROMASEAL®-A Acrylic Sealant to the surface is necessary. On some occasions a non fire resistant sealant can be applied.

PROMASEAL® IBS™ is generally used in lieu of a fire resistant sealant where the specifying authority or certifying body is concerned that the correct depths of sealant or the correct type sealant may not be applied by the contractor.

PROMASEAL® IBS™ accommodates movement in building services, e.g. the expansion or contraction of metal pipes, while maintaining the integrity of the penetration. It can be used for external wall joints in conjunction with an exterior grade sealant.

PROMASEAL® IBS™ is not designed for use in control joints that are designed to accommodate high or ongoing movement. As a general rule, PROMASEAL® IBS™ should be compressed by approximately 20% when inserted into the joint or gap. This will then accommodate small movements. If movement is an important factor in the choice of product, please refer to PROMASEAL® FyreStrip.

PROMASEAL® IBS™ is supplied in plastic bags in the following dimensions:

- 16mm diameter
- 22mm diameter
- 29mm diameter
- 38mm diameter
- 50mm x 20mm flat strip
- 100mm x 10mm flat strip



Applications

- Gap joint seals in lightweight partitions, floor and wall slabs
- Gap joint seals in shadow line of lightweight ceilings
- Gap joint seals in head deflection of wall slabs
- Metal pipe, electrical cable and cable tray penetration seals through lightweight partitions
- Steel pipe penetration seals through floor slabs
- Fire damper penetration seals through wall slabs

General Description

PROMASEAL® Switchbox Intumescent helps maintain the integrity and fire resistant performance of the compartment drywall or masonry structures, where recessed switchboxes are often installed. Here, the fire barrier function formed by the separating walls between compartments is often jeopardised.

During a fire, the switchbox plate will disintegrate causing fire to enter the drywall cavity, resulting in premature failure. The fire resistant PROMASEAL® Switchbox Intumescent pad expands when this happens, creating an effective seal against ingress of fire and heat, thus preserving the fire resistant performance of the drywall construction.

PROMASEAL® Switchbox Intumescent has been tested up to 120 minute fire resistance.

PROMASEAL® Switchbox Intumescent is supplied through specialist electrical equipment suppliers as pads measuring 70mm x 70mm x 8mm thick. Other dimensions are available on request.



Application

- Electrical wiring seals within switchboxes in walls

Annotation and/or video of PROMASEAL® IBS™ and PROMASEAL® Switchbox Intumescent penetration seals is available in digital format. For system details, please refer to <http://www.promat-ap.com>. For further installation details, please consult Promat.

PROMASEAL® IBS™ and PROMASEAL® Switchbox Intumescent are manufactured under a quality management system certified in accordance with ISO 9001: 2008. The production unit has passed the site audit of ISO 14001 and all manufacturing processes are in accordance with the environmental standards of ISO 14001: 2004 and the safety standards of AS 4801: 2001.

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Loading/Unloading

Promat 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. All 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. Promat boards should always be stored on a rigid base.

Storage

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



Stacking of Promat boards

- d) The boards must be stored under cover.



Complete protection for stacked and covered boards in storage

- b) Pallets should be a maximum of 800mm high ($h \leq 800\text{mm}$), on firm level ground. If two or more pallets are stacked, the total stack height must be less than 3200mm ($H \leq 3200\text{mm}$).



Maximum height of stacking

Handling

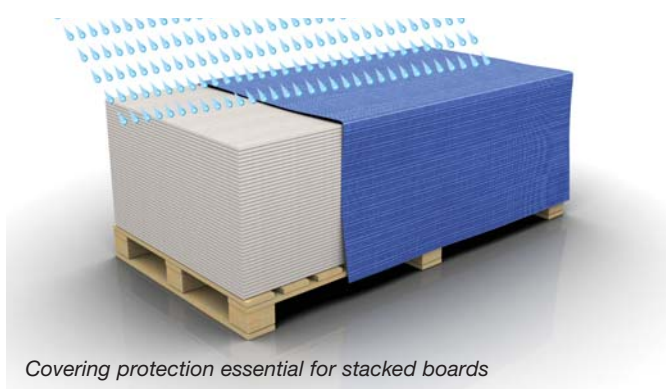
The following recommendations must be always taken into account when handling all Promat boards:

- i) Wherever possible, always lift boards from the stack below rather than slide board on board. This will prevent damage or scratches occurring to the face of the lower boards.



Lifting Promat boards

- c) The boards must be protected from inclement weather.



Covering protection essential for stacked boards

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



Carrying Promat boards



PROMATECT®-H, PROMATECT®-L, PROMATECT®-L500, PROMATECT® 50, PROMATECT® 100, PROMATECT® 250, PROMINA® 60 and PROMINA®-HD boards can be worked with conventional woodworking equipment although the use of hand saws with hardened teeth is recommended. Boards greater than 6mm in thickness may be more easily cut using a power circular saw with a tungsten carbide tipped blade, or a jigsaw. For rough cutting, 6mm sheets can be deeply scribed and broken over a straight edge.

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 Promat 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 Promat 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. These are 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 teeth (TCT) provide a more than adequate cut.
- High speed electric tools generate very fine dust. Inhaling fine dust can be harmful to health. Thus, dust extraction equipment or wet cutting is necessary. Although Promat boards contain no harmful fibres, inhalation of excessive nuisance dust can be detrimental. It is also recommended that when cutting or drilling any Promat products, appropriate face masks and PPE (personal protection equipment) should always be worn.
- Slow running tools produce coarse dust or chips but are not so efficient at cutting.
- The speed of cutting is best determined by:
 - thickness of the board;
 - hardness of the board;
 - 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 Promat 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. The following are considered standard types.

The industrial machine described below is for dry cutting only. The machine will work with both high and low speed electric motors.

The high speed electric motor with diamond tipped blades can be used for other building materials such as concrete, natural stone, brick etc. The low speed motor with tungsten carbide tipped blades is better suited for cutting fibre cement materials.

Cutting Promat boards with this machine provides a neat cut and smooth edges.



Cutting Promat boards with "Schelling 1" cut-to-size machine



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.

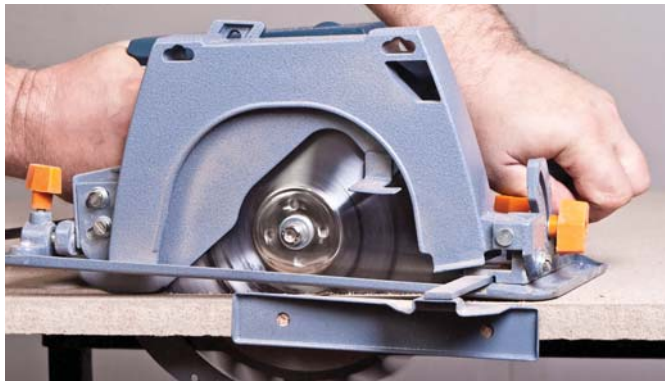
❶ Power Tools With Dust Extraction Equipment

Sawing machines such as FESTO, Bosch and Makita 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.



Cutting with circular saw



Cutting with jigsaw

❷ 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.

❸ 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 Promat 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.

❹ Hand saw

Hand sawing is suitable for general cutting operations and for small cuts, notchings or small penetrations. However, this method of cutting can be rather time intensive. As always, the fastest method of cutting is to allow the saw to work at its own speed, trying to force the tool to cut faster merely blunts the teeth.

❺ 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.

❻ 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 Promat board products, the use of drills with point angles of 60° to 80° rather than the more usual 120° type, are preferable and more efficient.



Cutting with hand saw



Drilling with power drill



Promat boards are easy to handle and work using conventional tools. However, basic standard safety precautions should be routine at all times during installation. Highlighted on the following pages are some general guidance notes for reference in fixing and board fabrication systems.

Tools



PROMATECT®-H, PROMATECT® 50, PROMATECT® 100, PROMATECT® 250, PROMINA® 60 and PROMINA®-HD boards

Nails can be driven directly through these 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.

Fixing guide as follows, used in conjunction with below illustration:

From edge	From corner	Centres at edge	Centres from midpoint
Minimum 12mm	50mm and 100mm	Centres depend on product and system, please consult Promat for relevant details.	

Fixing & Fabrication

The type of fixings used when installing Promat boards are important as they determine the support of joints and stability of a structure. In general, a fixing should meet the following rules/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.

1 Nailing

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

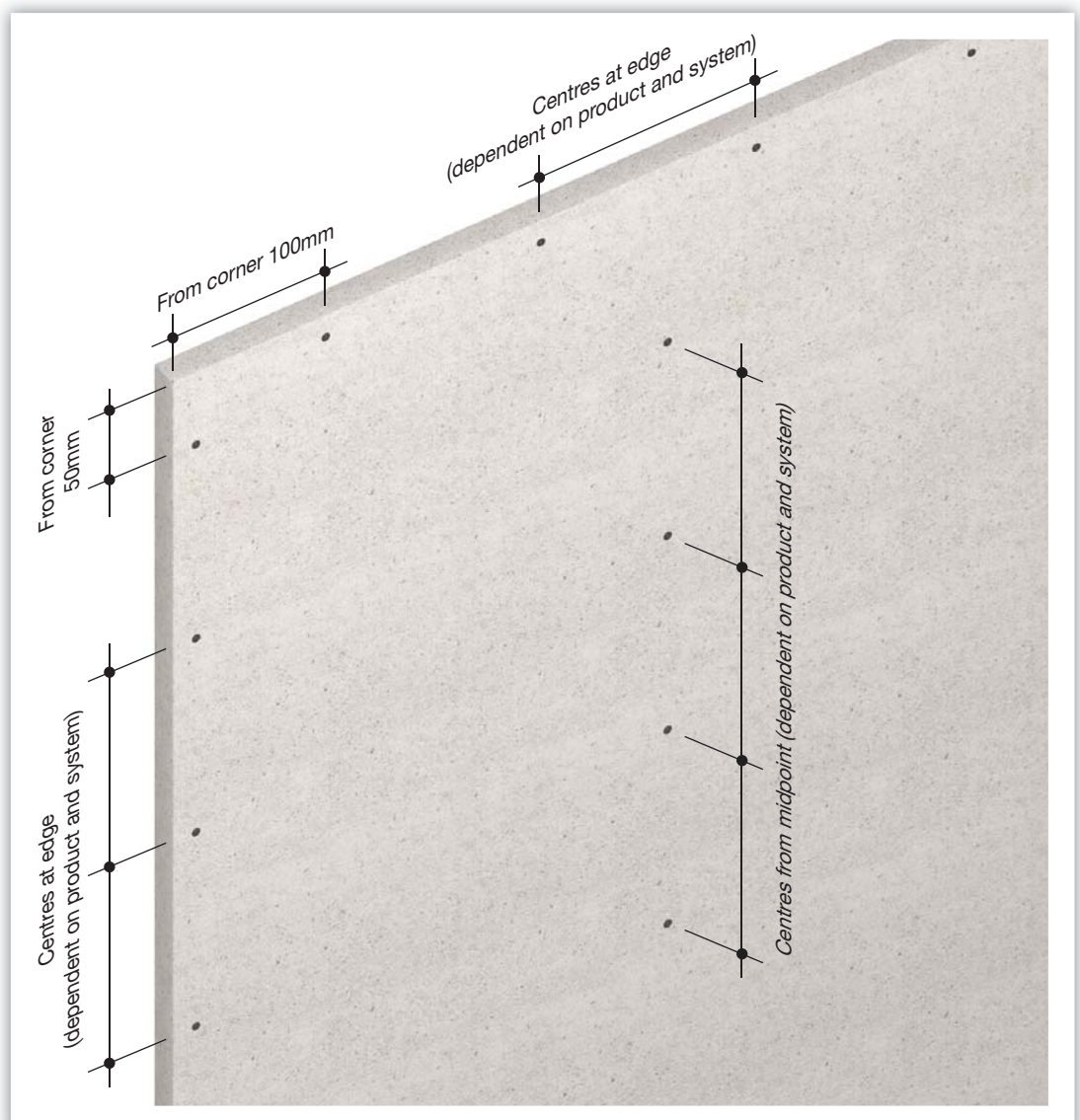
When fixing Promat board with nails, the following should be noted clearly:

- 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.

PROMATECT®-L and PROMATECT®-L500 boards

Not suitable for nailing.

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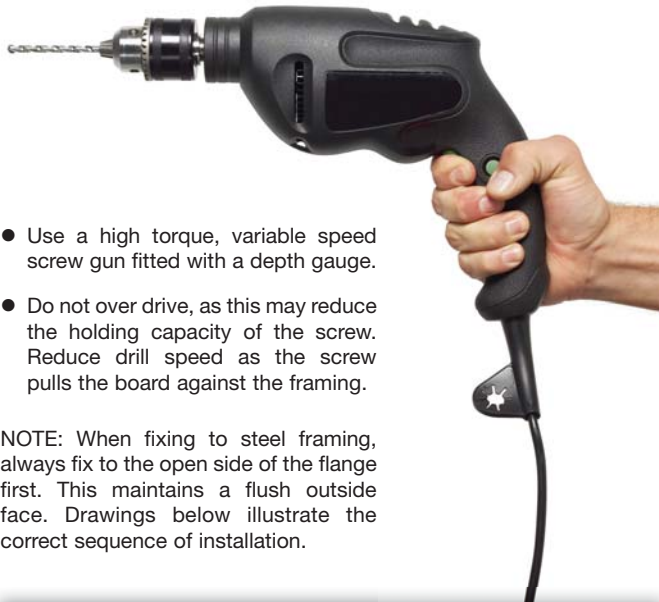


Fixing & Fabrication

2 Screw Fixing

When fixing Promat 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.

NOTE: When fixing to steel framing, always fix to the open side of the flange first. This maintains a flush outside face. Drawings below illustrate the correct sequence of installation.

PROMATECT®-H, PROMATECT® 50, PROMATECT® 100, PROMATECT® 250, PROMINA® 60 and PROMINA®-HD boards

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.

For all 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.

PROMATECT®-L and PROMATECT®-L500 boards

Pilot holes should be predrilled not less than half the board thickness from the edge of the board and countersunk if required. Screws should have a deep thread (e.g. Hilo or drywall type) when securing one board to another. Self-drilling or self-tapping screws are also suitable. Screws at corners should be positioned at a distance equal to the board thickness from the corner, or a minimum of 50mm, whichever is greater. PROMATECT®-L can be edge screwed or screwed face to face. Care should be taken not to over turn screws.

3 Adhesive Fixing

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

4 Staple Fixing

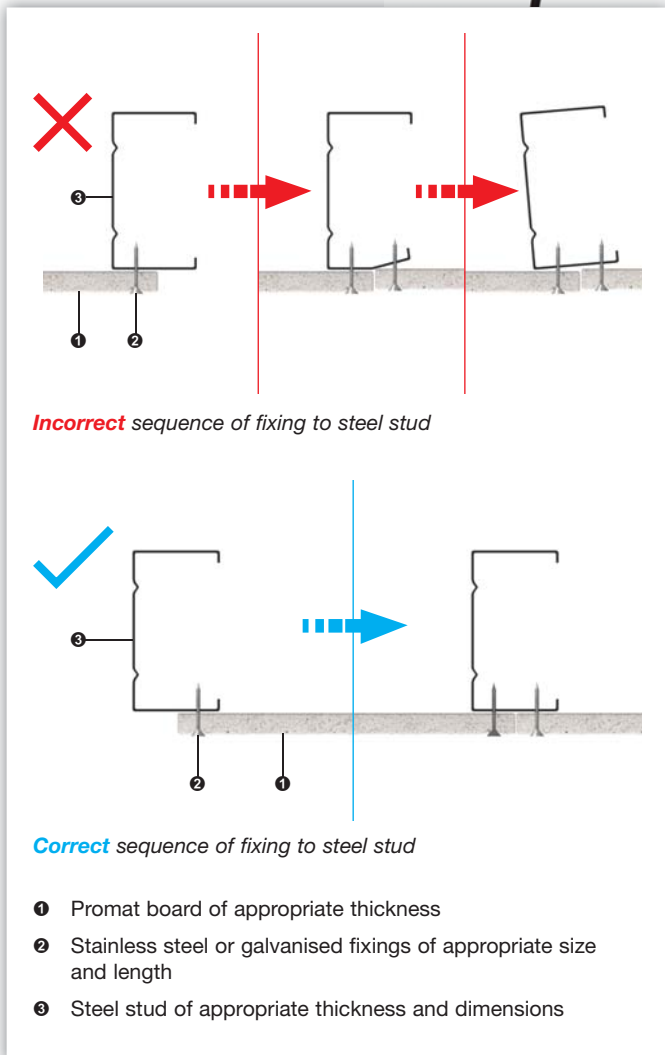
PROMATECT®-H, PROMATECT® 50, PROMATECT® 100, PROMATECT® 250, PROMINA® 60 and PROMINA®-HD boards

These 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 but Promat should be consulted for further details.

PROMATECT®-L and PROMATECT®-L500 boards

These boards may be stapled. Minimum staple length should be board thickness + 25mm or two times of the board thickness, whichever is the longer length.

In the case of fire resistance in excess of 120 minutes, please consult Promat for further details.

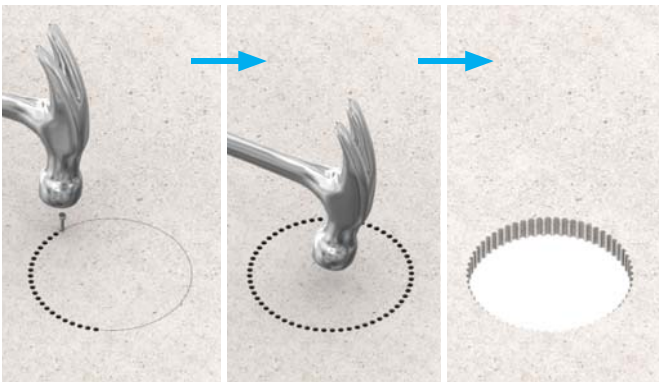




6 Forming Holes

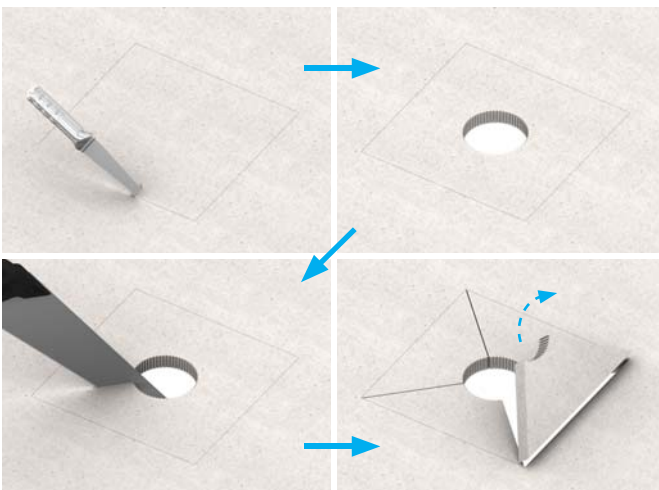
Apertures often need to be cut within a board to allow for penetration of services such as switchboxes, lights, access panels etc. The following procedures therefore serve as general guidelines only. Any method that allows for cutting of holes without damaging the board is acceptable.

- i) For smooth, clean cut circular holes:
 - Mark the centre of the hole on the board;
 - Pre-drill 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.
- ii) 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.



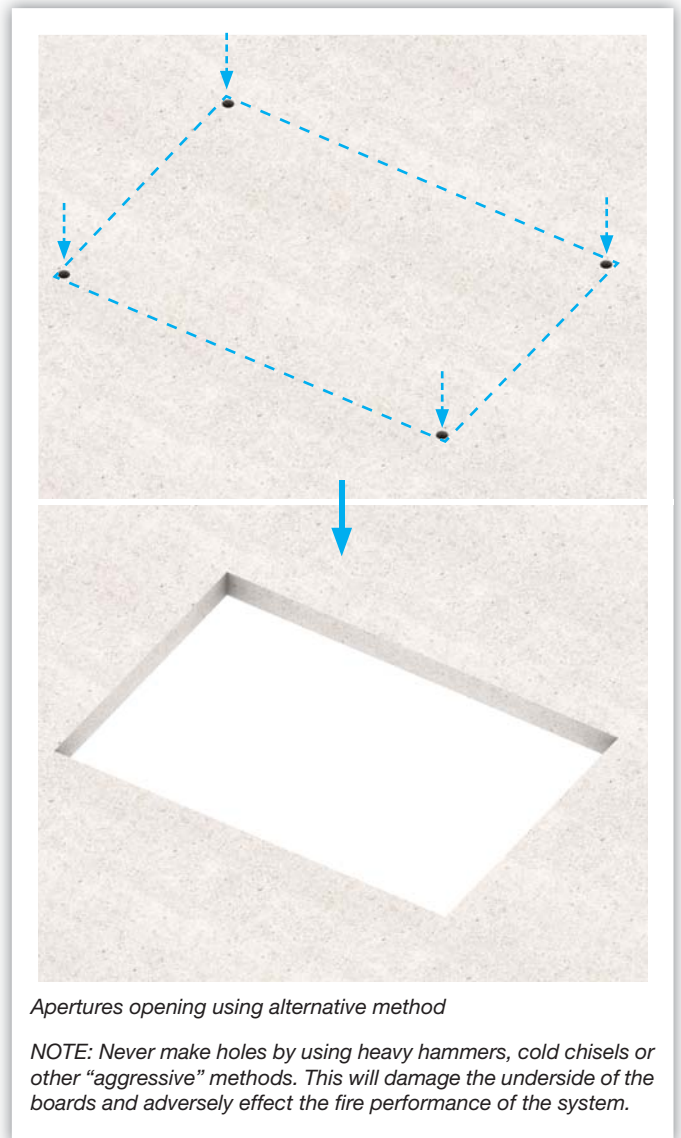
Nailing and hammering for openings

- iii) For large openings or apertures:
 - Score deeply around the perimeter of the opening using a sharp tool (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:

- Pre-drill 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

NOTE: 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.



Flush Jointing Between Boards

PROMATECT®-H, PROMATECT® 50, PROMATECT® 100, PROMATECT® 250 and PROMINA® 60 boards

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

PROMATECT®-L and PROMATECT®-L500 boards

These boards can be simply butt jointed with sheets having square edges. If required, a filler may be used to finish joints before decoration. Adhesives are not required except where used to seal joints in ventilation and smoke extract ducts.

PROMINA®-HD board

Please consult Promat.

Application Procedure

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.

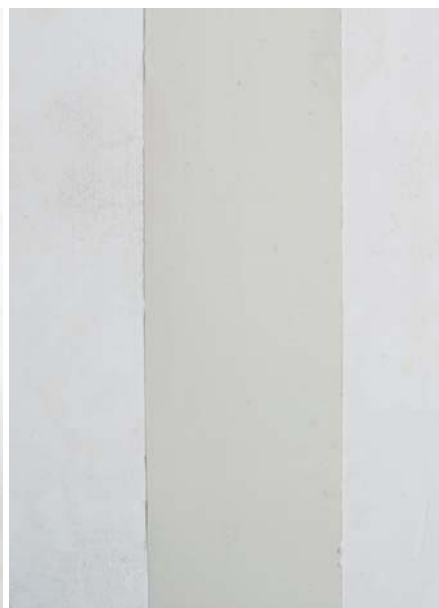
If primer is not going to be used, it is recommended that the areas to which the filler will be applied are pre-soaked. This prevents moisture from the filler being absorbed to rapidly into the boards and reduces the risk of cracking and/or delamination of the filler.



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.



Plastering

PROMATECT®-H, PROMATECT® 100, PROMATECT® 250 and PROMINA® 60 boards

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

PROMATECT® 50 board

These boards are generally supplied with an acceptable finish ready for the joints to be plastered so long as the painting and finishing recommendations for drywall boards are followed. This finish is available from Promat upon request.

PROMINA®-HD board

Please consult Promat.

Tiling

All Promat 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 carefully noted that Promat systems are used for their fire resistance properties.

Placing additional weight on the structural system, such as ceramic or marble tiling for instance, can have a significant effect on the overall performance of the fire resistance. It is for this reason that additional framing is required for partition systems etc which are to bear the weight of tiles and still maintain their fire performance.

As a general rule of thumb, partition systems which are to be tiled should be constructed with framing at nominal 450mm centres in both vertical and horizontal orientations. Minimum board thickness (9mm) usually applies.

While tiling the boards can be successfully achieved, care needs to be taken in sealing the boards thoroughly before applying any tile adhesive. This is due to the board's high suction loads which, in turn, accelerate the setting time of the tile adhesive.



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



PROMATECT®-H, PROMINA® 60 and PROMINA®-HD boards

Boards at least 9mm thick should be used and sealed preferably on all faces with diluted tile adhesive or a PVA sealant. Screw the boards at nominal 200mm centres to supports at 450mm centres in both directions before applying tiles with standard tile adhesive.

PROMATECT®-L, PROMATECT®-L500, PROMATECT® 50, PROMATECT® 100 and PROMATECT® 250 boards

While tiling these boards can be successfully achieved, care needs to be taken in sealing the boards thoroughly before applying any tile adhesive. This is due to the very high suction loads the boards have and which in turn accelerate the setting time of the tile adhesive.

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.

PROMATECT®-H, PROMINA® 60 and PROMINA®-HD boards

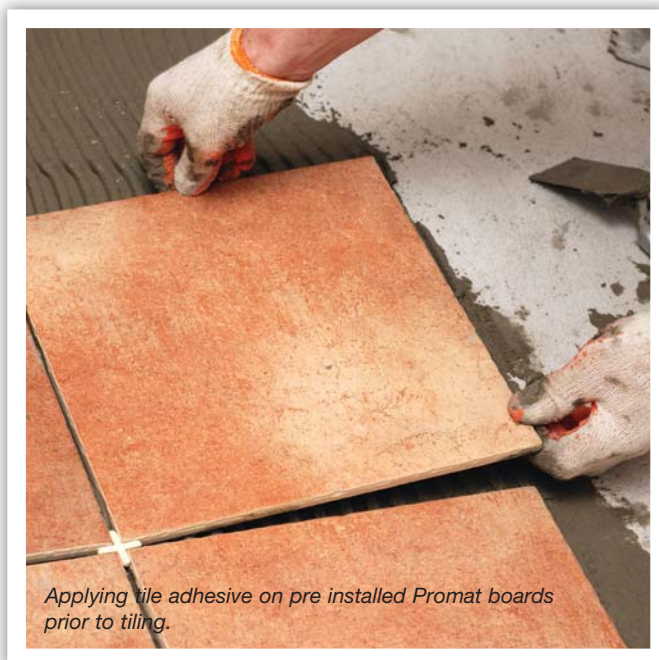
When using water based paints, a diluted first coat is recommended. For oil based paints a suitable alkali resisting primer should be used. Painted vapour barriers may be formed by the application of chlorinated rubber, epoxy resin or polyurethane paint.



Water or oil based paints applied on pre installed Promat boards.

PROMATECT®-L, PROMATECT®-L500, PROMATECT® 50, PROMATECT® 100 and PROMATECT® 250 boards

These boards have an attractive, smooth finish but if required can be painted with emulsion or oil based paints. With water based paints, a diluted first coat should be used. For oil based paints, use a universal primer. An alkali resisting primer is not required.



Applying tile adhesive on pre installed Promat boards prior to tiling.



1. BASIS OF SUPPLY

- 1.1 These Conditions of supply of goods and services of Promat International (Asia Pacific) Ltd (Promat) govern all orders to and contracts with Promat for the supply of goods and services and override any other terms or conditions stipulated, incorporated or referred to by the Customer. Accordingly these Conditions of supply of goods and services, except where they are varied by Promat in writing, are the conditions upon which Promat supplies goods or services.
- 1.2 No alteration or modification of these Conditions shall have effect unless such alteration or modification is accepted in writing by a duly authorised officer of Promat.

2. DRAWINGS, QUANTITIES & INTELLECTUAL PROPERTY

- 2.1 Any drawings or details of quantities or other information supplied by Promat must be treated as approximate and shall be subject to verification by the Customer and in the event of any alteration, modification or amendment thereto after quotation, Promat reserves the right to alter, modify or amend its quotation accordingly.
- 2.2 All intellectual property rights (including without limitation patents, copyrights, rights in a design and trade marks) in the goods or services are the property of Promat and nothing in these Conditions shall be construed as constituting an assignment or license thereof.
- 2.3 If the goods are manufactured by Promat, or Promat applies a process, in accordance with a specification of the Customer, then the Customer shall indemnify Promat against all loss, damage, cost and expense awarded against or incurred by Promat in connection with the infringement of any intellectual property rights of any other person resulting from Promat's use of the Customer's specification.
- 2.4 Promat's employees or agents are not authorised to make any representations, or give any advice or recommendations, concerning the goods or services unless confirmed by Promat in writing. In entering into the contract the Customer acknowledges that it does not rely on, and waives any claims for breach of, any such representations, advice or recommendations which are not so confirmed.

3. PRICES

- 3.1 All prices are exclusive of duty or tax and Promat reserves the right to increase prices as a result of the increase or imposition of any duty or tax or by adjustments or alterations in currency rates of exchange.
- 3.2 All prices exclude delivery (pursuant to and defined in Condition 4 below) and packaging and packing costs unless otherwise stated.

4. DELIVERY

- 4.1 All delivery dates or periods given by Promat whether before or after acceptance of the order are given in good faith but Promat shall be under no liability whatsoever for any failure or delay in despatch, supply or delivery nor for any loss or damage arising in connection therewith.
- 4.2 Should despatch or delivery of the goods, or the supply of services, or part of them be delayed or prevented from any cause whatsoever beyond Promat's control or for a reason attributable to the Customer or its customers or agents then, in Promat's opinion, either the contract or any unfulfilled part thereof shall be terminated or Promat may extend the time for delivery until a reasonable period after such cause shall have ceased in which event the Customer shall be responsible for all storage and other costs incurred by Promat in connection therewith (including, without limitation, delivery and redelivery costs). Any termination shall not prejudice the rights and obligations of either party in respect of any part of the contract already completed but Promat shall have the right to sell undelivered goods and charge the Customer for any shortfall below the price under the contract.
- 4.3 Unless otherwise agreed delivery shall take place at the godown/warehouse or factory of Promat or at a site nominated by Promat. The Customer shall be responsible for providing labour and facilities at the delivery point for the unloading of goods ordered by him and shall indemnify Promat against all claims whatever arising from such unloading operations. In the event Promat and the Customer agreed delivery to take place at a site nominated by the Customer, Promat reserves the right for its drivers and carriers to refuse to take their vehicles on such site if in the opinion of the driver or carrier the site conditions are such as to constitute a danger to the vehicles, the goods or to any persons or property in which event the provisions of Condition 4.2 apply.
- 4.4 Where the goods are to be delivered in instalments (but strictly without prejudice to Condition 6) each delivery shall constitute a separate contract and failure by Promat to deliver any or more of the instalments in accordance with these Conditions, or any claim by the Customer in respect of any one or more of the instalments, shall not entitle the Customer to treat the contract as a whole as repudiated.

5. PROPERTY & RISK

- 5.1 The risk in the goods shall pass to the Customer when Promat delivers the goods in accordance with these Conditions whether to the Customer or to any other person to whom Promat has been authorised by the Customer to deliver the goods.
- 5.2 Notwithstanding delivery and passing of risk the goods supplied hereunder shall remain the property of Promat until Promat has received payment in full in cash or cleared funds of all sums, which are or may hereafter become due from the Customer to Promat in respect of the goods or in respect of any other contract between the parties.
- 5.3 Until the property in the goods passes to the Customer the relationship between Promat and the Customer shall be that of bailor and bailee.
- 5.4 The Customer agrees to store the goods until they have been paid for in such a way that they are readily identifiable as the property of Promat.
- 5.5 The Customer shall nevertheless have authority until such time as property in the goods passes to the Customer to sell the goods to its customers, but in the event of the Customer selling the goods or otherwise disposing of them, it is hereby agreed that any such sub-sale or disposal shall be deemed to be made on behalf of Promat (but without imposing any liability on Promat to the Customer's customer), and the Customer shall hold the proceeds of sale or rights arising there from against the Customer's customer on behalf of Promat until such time as the Customer shall have made full payment for such goods and immediately upon such sale or disposal the property rights of Promat shall pass to the Customer on condition that the Customer ensures that the Customer's customer pays the purchase price into a separate bank account in the name of the Customer.
- 5.6 The Customer is hereby also authorised to use the goods in any manufacturing or other process in the normal course of its business before payment in full has been made as referred to in Condition 5.2 but upon so doing the Customer shall set aside the price of the goods so used in a separate account as referred to in Condition 5.5.
- 5.7 Until such time as property in the goods passes to the Customer then Promat may recover and/or resell the goods or any of them and may enter upon the Customer's premises by its servants or agents for that purpose and the Customer hereby grants to Promat an irrevocable license to this effect which shall survive the termination of the contract for any reason.
- 5.8 Nothing in this Condition 5 shall confer any right on the Customer to return goods supplied by Promat or to refuse or delay any payment for them.

- 5.9 If the goods or any part thereof are incorporated in or used as material for or in manufacturing other products before payment in full to Promat, the property in the whole of such products shall vest in and remain with Promat until such products have been sold and all Promat's rights hereunder in relation to the goods and/or the proceeds of sale thereof shall extend to such products. Promat's rights hereunder shall be in addition to any and all other rights it may have against the Customer at law or in equity.

6. PAYMENT & LIEN

- 6.1 Unless otherwise stated, payment for the goods or services shall be made by the last working day of the month (from Monday to Friday) following the month of delivery.
- 6.2 Interest shall be payable by the Customer to Promat or any sum outstanding beyond the due date for payment at the rate of 3% per annum above the Prime Lending Rate quoted by The HongKong and Shanghai Banking Corporation Limited of Hong Kong from time to time.
- 6.3 Where payment is to be made by instalments the failure of the Customer to pay any installment in due time shall entitle Promat to treat such failure as repudiation of the whole contract by the Customer and (without prejudice to any other rights) to recover damages for such breach of contract.
- 6.4 Promat shall have a general lien upon any goods of the Customer for the time being in the possession of Promat.

7. CANCELLATION

Once an order has been duly accepted by Promat cancellation by the Customer will only be accepted at the sole discretion of Promat subject to Promat being indemnified in full against all charges, losses (including loss of profit), costs and expenses incurred by Promat as a result of such cancellation.

8. SUSPENSION OR TERMINATION OF CONTRACT

- 8.1 If the Customer shall, in the sole opinion of Promat, be unable or be likely to be unable to pay any sums he owes Promat, Promat shall (without prejudice to any other rights) be entitled to demand security prior to delivery or the carrying out of any services either by payment in cash or by bank guarantee, notwithstanding any terms of payment previously agreed, and in the event that the Customer is unable to provide the security the Customer shall be deemed to have repudiated the contract and Promat shall be entitled to delay delivery of the goods indefinitely or refuse to commence any services or accept the repudiation of the contract without liability whatsoever.
- 8.2 If the Customer commits any breach of these Conditions or of the contract or if any distress or execution be levied upon the Customer or his property or if the Customer shall make or offer to make any arrangement with creditors or commit any act of bankruptcy or if any petition receiving order in bankruptcy be presented or made against him or if a receiver, administrative receiver, administrator or manager be appointed over all or any of the assets of the Customer or if a winding up order be made against the Customer or if the Customer goes into liquidation (otherwise than for the purpose of reconstruction or amalgamation) Promat shall, without prejudice to any other rights and remedies it might have and without any liability, have the right immediately by notice in writing to:
 - (i) suspend or terminate any contract or any unfulfilled part thereof; and
 - (ii) stop delivery of any goods or services; and
 - (iii) call for immediate payment of all monies owing to Promat under any contract.

9. STORAGE, FIXING, HEALTH & SAFETY

- 9.1 All goods supplied to the Customer hereunder shall be stored and fixed in accordance with the manufacturer's instructions set out in the latest written recommendation of Promat and any relevant British Standard Codes of Practice and Promat shall be under no liability whatsoever for any loss or damage which may arise as a result of the failure to adhere to such recommendations in all respects.
- 9.2 Nothing in these Conditions, nor any compendiums, brochures, price lists, instructions, method statements or other documents or designs issued by or on behalf of Promat shall create or be deemed to create any obligation, whether expressed or implied, on Promat.

10. GUARANTEE & LIABILITY

- 10.1 Save as provided in this Condition 10 and except that this Condition 10 may be rendered void or unenforceable under any enactment, no term or condition is made or to be implied as to the quality (satisfactory or otherwise) or fitness of goods supplied or that they will be suitable for any particular purpose or for use under any specific conditions which may be known or made known to Promat and accordingly there are excluded all conditions or warranties expressed or implied by statute, common law trade usage or otherwise and Promat shall be under no liability to the Customer for any loss, damage or injury or expense arising from a defect in the goods or from any cause whatsoever relating to the goods.
- 10.2 Promat shall not, notwithstanding any other provision of these Conditions, under any circumstances be liable in contract, tort (including negligence or breach of statutory duty), statute or otherwise for any indirect or consequential loss or damage of any kind or for any increased costs or expenses or loss of profit, business, contract, revenues or savings.
- 10.3 The Customer shall inspect all goods immediately upon delivery and in the event that the Customer alleges that the quantity of goods delivered does not correspond with the quantity stated in the delivery note or that such goods are defective he shall within three days of delivery give to Promat notice in writing specifying the particulars of his complaint. In the event of failing to give such notice as aforesaid, Promat shall have no liability in respect of any alleged non delivery of goods or defects therein which should have been apparent on a reasonable visual inspection at the time of delivery.

11. FORCE MAJEURE

Promat may cancel any contract without prejudice to any of the rights and remedies it may have and without any liability whatsoever if prevented from performing it, owing to any cause whatsoever beyond Promat's reasonable control.

12. MISCELLANEOUS

- 12.1 Time shall be of the essence of the contract.
- 12.2 Any notice to be given Promat or the Customer shall be sufficiently given if posted by first class letter post or delivered by hand to the other at the address set out in the contract. Every notice shall be deemed to have been received and given either forty-eight hours after posting or at the time of the delivery.
- 12.3 Promat shall be at liberty to enter into subcontracts with third parties or to assign the contract for the purpose of discharging its obligations under the contract.
- 12.4 No waiver by Promat by any breach of the contract by the Customer shall be considered as a waiver of any subsequent breach of the same or any other provision.
- 12.5 The contract and these Conditions are governed by Hong Kong Law and any dispute arising in relation to the goods supplied or the terms of the contract shall be determined by the Hong Kong Courts to whose jurisdiction and decision Promat and the Customer submit.

NOTE: SPECIFIC TERMS & CONDITIONS SHOULD BE OBTAINED FROM RESPECTIVE COUNTRY OFFICES.

For latest information of the Promat Asia Pacific organisation, please refer to www.promat-ap.com.

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