OCCUPATION CERTIFICATE APPLICATION

BLACKETT MAGUIRE+ GOLDSMITH

Environmental Planning and Assessment Act 1979, s.109H
Environmental Planning and Assessment Regulation 2000, clauses 149 and 151

APPLICATION SOUGHT

✓ Final Occupation Certificate

APPLICANT

An application for an occupation certificate may only be made by a person who is eligible to appoint the PCA for the development, it cannot be the Builder unless they are the Owner Builder

Company: bassike — ABN (if applicable):

Applicant Name: Billy Voss

Applicant Postal Address: 14/2 Daydream street, Warriewood, 2102 NSW

Phone: 02 9457 6801 — Fax: — Mobile: 0402 012 958

Email: billy@bassike.com

Signature: x B.Voss — Date: 10/09/2015

31/10/16

SUBJECT LAND

Location and title details of the land where the building work or subdivision work is to be carried out.

Unit / Street No: 14/2 — Street Name: Daydream street

Suburb / Town: Warriewood — State: NSW — Postcode: 2102

Lot No: — DP / SP No:

DESCRIPTION OF DEVELOPMENT

Briefly describe the development, if the application relates to a new use of the building or apart of the building, also describe the new use.

Description: new office development

Part of the Building (for Interim OC):

BCA Classification:

DEVELOPMENT CONSENT

Development Consent / CDC No: — Date of Determination:

Consent Authority: — DA / CDC Applicant Name:

OFFICE USE – RECEIPT OF APPLICATION

This Occupation Certificate Application was received by Blackett Maguire + Goldsmith on:

(Please stamp 'Received' stamp or write date received in the space provided)

Date Received:

Received
02-Oct-15
Blackett Maguire + Goldsmith

Address: Suite 2.01, 22-36 Mountain St Ultimo NSW 2007
Postal: PO Box 167 Broadway NSW 2007
ABN: 18 408 985 851
Contact: Ph: 02 9211 7777 Fax: 02 9211 7774 Email: admin@bmplusg.com.au

CONSTRUCTION CERTIFICATE (Not applicable for CDC's)

Construction Certificate No | Date of Determination

Does the development involve an alternative solution under the BCA in respect of a fire safety requirement?

☐ Yes ☐ No

If yes, please ensure Blackett Maguire · Goldsmith have copies of either the compliance certificate or the written report from a 'Fire Safety Engineer'.

Does the application relate to a residential flat development for which the development application was required under Clause 50(1A) of the EP&A Regulation to be accompanied by a design verification from a qualified designer?

☐ Yes ☐ No

If yes, provide a statement from a qualified designer which verifies that the residential flat development achieves the design quality of the development as shown in the plans and specifications on which the construction certificate was issued, having regard to the design quality principles set out in Part 2 of State Environmental Planning Policy No. 65 – Design quality of Residential Flat Development (SEPP 65).

OWNERS DETAILS

Company / Full Name: LIVPAC DEVELOPMENTS P/L ABN (if applicable) 65 122 395 091

Postal Address: PO Box 2215 ROYAL EXCHANGE NSW 1225

Phone 02 8270 0400 Fax Mobile

Email mlivingstone@livpac.com.au.

DELIVERY OF THE APPLICATION

Applications for construction certificates must be delivered to the principal office of Blackett Maguire · Goldsmith by one of the following methods:

- By hand;
- By post; or
- Transmitted electronically.

Applications MAY NOT be sent by fax.

REQUIRED DOCUMENTATION

Please refer to the OC Requirements list issued separately for all documentation required to be forwarded to our office to support this application and facilitate the approval of the Occupation Certificate.

Fire Safety Certificate

Issued under the Environmental Planning and Assessment Regulation 2000, Clauses 170 to 174

Type of Certificate ☐ Interim ☒ Final

Owner / Agent I, Rhys McInerney

Address of 845 Pacific Hwy Chatswood

Certify that:

each of the essential fire safety measures specified in the current fire safety schedule for the building to which the certificate relates:

a) has been assessed by a properly qualified person, and

b) was found, when it was assessed, to be capable of performing to at least the standard required by the current fire safety schedule for the building for which the certificate is issued.

Identification of Building

Address	2 Daydream Street, Warriewood
Building Name	
Side of Street	
Nearest Cross Street	

Particulars of Building

Scope	☐ Whole ☐ Part
Description of Part (where applicable)	Fitout for office use at Level 2, and warehouse racking within warehouse tenancy G2
Date of Assessment	31/10/16

Owner's Details

Name	Mark Livingstone
Address	PO BOX R215 Royal Exchange NSW 1225

Schedule

Statutory Fire Safety Measure	Design/Installation Standard	Existing	Proposed
Alarm Signalling Equipment	AS1670.3 - 2004	✓	
Automatic Fire Detection & Alarm System *Tenancy 1 (Amber Technology) & Level 2 of Stage 2 Development*	Clause 5 of BCA Specification E2.2a Fire Engineering Report prepared by Exova Warringtonfire, Report No. 2567602- RPT01-2, Revision 2 dated 22/12/2011 Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	✓
Automatic Fire Suppression Systems (Excluding Swim school tenancy)	BCA Spec. E1.5 & AS 2118.1-1999 Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	✓
Building Occupant Warning System activated by the Sprinkler System	Clause 8 of BCA Spec E1.5 & Clause 3.22 of AS 1670.1 - 2004	✓	✓
Emergency Lighting	BCA Clause E4.4 & AS 2293.1 - 2005	✓	✓

Statutory Fire Safety Measure	Design/Installation Standard	Existing	Proposed
Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS 2293.1 - 2005	✓	✓
Fire Blankets	AS 3504 - 1995 & AS 2444 - 2001	✓	
Fire Dampers	BCA Clause C3.15, AS 1668.1 - 1998 & AS 1682.1 & 2 - 1990	✓	
Fire Doors	BCA Clause C2.12, C2.13, C3.2, C3.4, C3.5, C3.6, C3.7 & C3.8 and AS 1905.1 - 2005	✓	
Fire Hose Reels	BCA Clause E1.4 & AS 2441 - 2005	✓	
Fire Hydrant Systems	Clause E1.3 & AS 2419.1 - 2005	✓	
Fire Seals	BCA Clause C3.15, AS 1530.4 & AS4072.1 - 2005	✓	✓
Lightweight Construction	BCA Clause C1.8 & AS 1530.3 - 1999	✓	
Mechanical Air Handling Systems	BCA Clause E2.2, AS/NZS 1668.1 - 1998 & AS 1668.2 - 1991	✓	✓
Paths of Travel	EP & A Regulation Clause 186 and Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	✓
Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 - 2001	✓	✓
Required Exit Doors (power operated)	BCA Clause D2.19(b)	✓	
Warning & Operational signs	Section 183 of the EP&A Regulations 2000, AS 1905.1 - 2005, BCA Clause C3.6, D2.23, E3.3	✓	✓
Wall-wetting sprinklers (Stage 2 - Pool tenancy and fire stair 1)	AS 2118.1-1999 Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	
Fire Engineered Alternative Solution relating to fire resisting construction (allowing reduced FRL's from 4hrs to 2hrs)	BCA Performance Requirements CP1 & CP2 Stage 1: Fire Engineering Report prepared by Exova Warringtonfire, Report No. 2567600-RPT02-3, Revision 3 dated 6/10/2011. Stage 2: Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	
Fire Engineered Alternative Solution relating to distances between alternative exits in Tenancy 1 (Amber Technology) comprising 75m in Lieu of 60m - Stage 1 development	Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	
Fire Engineered Alternative Solutions for the Stage 2 Development relating to: ▪ To allow the provision of a 120/120/120 FRL fire walls, floors and columns in lieu of 240/240/240 FRL to the warehouse areas. ▪ To allow drencher protected glazing in lieu of 120/120/120 FRL to the Ground Floor entry lobby of the swim school and Stair 2. ▪ Fire isolation of Fire Stair 2, and separation of rising and descending stairs in fire isolated exits.	BCA Performance Requirements CP1, CP2, DP4, DP5, EP1.4 & EP2.2 Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	

Statutory Fire Safety Measure	Design/Installation Standard	Existing	Proposed
▪ Travel distance of up to 65m to an exit within the basement carpark in lieu of 40m. ▪ Travel distance of up to 120m between alternative exits within the car parking basement levels in lieu of 60m. ▪ Travel distance up to 25m to the single exit in lieu of 20m within the warehouse mezzanine. ▪ Travel distance of up to 30m to the single exit in lieu of 20m within the Level 2 office. ▪ Travel distance up to 70m between alternative exits within Tenancy G.3 in lieu of 60m. ▪ Travel distance within the childcare centre on Level 2 of up to 70m between alternative exits in lieu of 60m. ▪ To allow the travel path egress width within the swim school between columns and the pools is 820mm wide, in lieu of 1m. ▪ The non-provision of a sprinkler system to the swim school tenancy. ▪ The use of jet-fans in lieu of a conventional exhaust air system in the basement carpark where the jet-fans do not comply with the requirements and recommendations in clause 5.5 of AS/NZS 1668.1. ▪ The provision of Danpalon and Alucobond Plus, which are not considered "non-combustible", to form part of the external walls at various locations. ▪ Non-provision 120/120/120 FRL to the timber floor and timber columns supporting the floor of the offices of the Level 1 Swim School			

Date of Certificate dated this 31 day of October 2016

Signature _____

A copy of this certificate together with the relevant fire safety schedule must be forwarded to the Council and the Commissioner of the New South Wales Brigades. A copy of this certificate together with the relevant fire safety schedule must be prominently displayed in the building.

Notes for completing the Fire Safety Certificate

Note 1

An **interim fire safety certificate or a final fire safety certificate** is required before:

- an interim occupation certificate can be issued to allow a partially completed new building (including and altered portion of, or an extension to, a new building) to be occupied or used, or
- an interim occupation certification can be issued to allow a change of building use for part of an existing building.

A **final fire safety certificate** is required:

- before a final occupation certificate can be issued to allow a new building (including an altered portion of, or extension to, a new building) to be occupied or used, or
- before a final occupation certificate can be issued to allow a change of building use for an existing building, or
- in accordance with a fire safety order given by a council.

An **interim fire safety certificate** is issued for part of the building and may deal only with those essential fire safety measures appearing on the most recent fire safety schedule (see note 3) relevant to the part of the building for which interim occupation certificate will be sought.

A **final fire safety certificate** must deal with all essential fire safety measures appearing on the most recent fire safety schedule (see note 3), subject to the following.

An **interim fire safety certificate or a final fire safety certificate** need not deal with those essential fire safety measures which have been the subject of some other final fire safety certificate or annual fire safety statement within the previous 6 months, unless the person or authority responsible for determining the relevant development consent, complying development certificate, construction certificate or fire safety order, has specified otherwise in the schedule. See also note 3.

Note 2

The person who carries out the assessment:

- must inspect and verify the performance of each fire safety measure being assessed; and
- in the case of a (interim or final) fire safety certificate for a new building (not an alteration to, or enlargement or extension of an existing building) must test the operation of each item of fire safety equipment installed in the building.

Note 3

The relevant essential fire safety measures are those specified in the most recent fire safety schedule, attached to one of the following:

- development consent for a change of building use; or
- complying development certificate for the erection of a building or a change of building use; or
- construction certificate for proposed building work, including building work associated with a change of building use; or
- a fire safety order.

The fire safety schedule will also identify standard of performance for each essential fire safety measure.

T.A.G. Cabling Systems
A.B.N. 61 057 430 654
7/276 New Line Rd Dural 2158
Ph: (612) 9653 9695 Fax: (612) 9653 9694

Fire Safety Certificate (Form 15)

Issued under the Environmental Planning and Assessment Regulation 2000, Clauses 170 to 174

Type of Certificate ☐ Interim ☒ Final

Owner / Agent I, Steve Chatman of The Aquarian Group P/L
Trading as T.A.G. Cabling Systems

Address 7 / 276 New Line Road, Dural NSW, 2158

Certify that:

each of the essential fire safety measures specified in the current fire safety schedule for the building to which the certificate relates:

a) has been assessed by a properly qualified person, and

b) was found, when it was assessed, to be capable of performing to at least the standard required by the current fire safety schedule for the building for which the certificate is issued.

Identification of Building

Street	2 Daydream Street, Warriewood NSW
House/Unit No. or Building Name	Level 2
Side of Street	
Nearest Cross Street	Jubilee Avenue

Particulars of Building

Scope	☐ Whole ☒ Part
Description of Part (where applicable)	Level 2 Tenancy & Warehouse
House/Unit No. or Building Name	Level 2, 2 Daydream Street, Warriewood NSW
Date of Assessment	21/09/2015

Owner's Details

Name	Bassike
Address	Level 2, 2 Daydream Street, Warriewood NSW

Essential Fire and Other Safety Measures	Standard of Performance
13 Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS 2293.1 - 2005
13 Emergency Light Fittings	BCA Clauses E4.4 and AS 2293.1-2005

Date of Certificate 22/09/2015

Signature _____

~~Owner~~/agent Steve Chatman

A copy of this certificate together with the relevant fire safety schedule must be forwarded to the Council and the Commissioner of the New South Wales Brigades.

A copy of this certificate together with the relevant fire safety schedule must be prominently displayed in the building.

Notes for completing the Fire Safety Certificate

Note 1

An **interim fire safety certificate or a final fire safety certificate** is required before:

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A **final fire safety certificate** is required:

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- before a final occupation certificate can be issued to allow a change of building use for an existing building, or
- in accordance with a fire safety order given by a council.

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Note 2

The person who carries out the assessment:

- must inspect and verify the performance of each fire safety measure being assessed; and
- in the case of a (interim or final) fire safety certificate for a new building (not an alteration to, or enlargement or extension of an existing building) must test the operation of each item of fire safety equipment installed in the building.

Note 3

The relevant essential fire safety measures are those specified in the most recent fire safety schedule, attached to one of the following:

- development consent for a change of building use; or
- complying development certificate for the erection of a building or a change of building use; or
- construction certificate for proposed building work, including building work associated with a change of building use; or
- a fire safety order.

The fire safety schedule will also identify standard of performance for each essential fire safety measure.

FIRE STOPPING
PASSIVE FIRE PROTECTION
ABN 47 064 568 770

NSW Office
PO Box 737
Balgowlah, NSW 2093

Unit 6, 252 Allambie Road,
Allambie Heights, NSW 2100

Phone: (02) 9907 0700
Fax: (02) 9907 0728

QLD Office
PO Box 562
Virginia BC, QLD 4014

Unit 7, 53 Northlink Place
Virginia, QLD 4014

Phone: (07) 3265 7781
Fax: (07) 3265 5976

28 September 2015
Our ref: AJ15-7045
ASJ

Mr. Rhys McInerney
IPG Pty Ltd
Level 5, 845 Pacific Highway
CHATSWOOD NSW 2067

Dear Rhys,

STATEMENT OF INSTALLATION COMPLIANCE RE: 2 DAYDREAM STREET, WARRIEWOOD – BASSIKE PROJECT

This is to verify that the Fire Stopping Materials listed below have been installed to the manufacturer's design & details and tested in accordance with AS1530.4-2005 Fire Resistance Test of Elements of Building Construction, AS4072.1-2005 and BCA Clause C3.15.

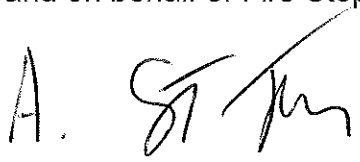
AREAS OF INSTALLATION:

LEVEL/AREA	METHOD USED	FRL	TEST REF.
Level 2 – Fire Wall Between Warehouse and Office Areas			
To fire seal 4 x nominated core hole, wall penetrations containing electrical cables	Thermachek Fire pillows	-/120/120	CSIRO FCO-3031
	Trafalgar Fyreflex Fire Rated Sealant	-/120/120	CSIRO FCO-1579 (Revision)
	Promaseal Grafitex	-/120/120	WFRA No. F91622

An inspection of the above works was carried out on Friday the 25th of September 2015. No responsibility will be taken for alterations, additions and/or damage caused by other persons since the date of inspection.

The information contained in this document is, to the best of my knowledge and belief, true and accurate.

For and on behalf of Fire Stopping Pty Ltd



Andrew St John
SUPERVISOR

DHP
DANNY HALL PLUMBING Pty Ltd
Hydraulic and Civil contractors

Danny Hall Plumbing Pty Ltd
PO Box 58, Galston NSW 2159
Ph. 02 9656 1800
Fax. 02 9656 1710
Mob. 0417 525 123
danny@dhphc.com.au

9th September 2015

Integrated Project Group
Level 5, 845 Pacific Hwy,
Chatswood NSW 2067

Attention: Mr Rhys McInerney

Dear Sir,

RE: Warriewood (Stage 2) – Level 2 Bassike Fitout
2 Daydream Street, Warriewood NSW 2102

Fire Seal Certificate

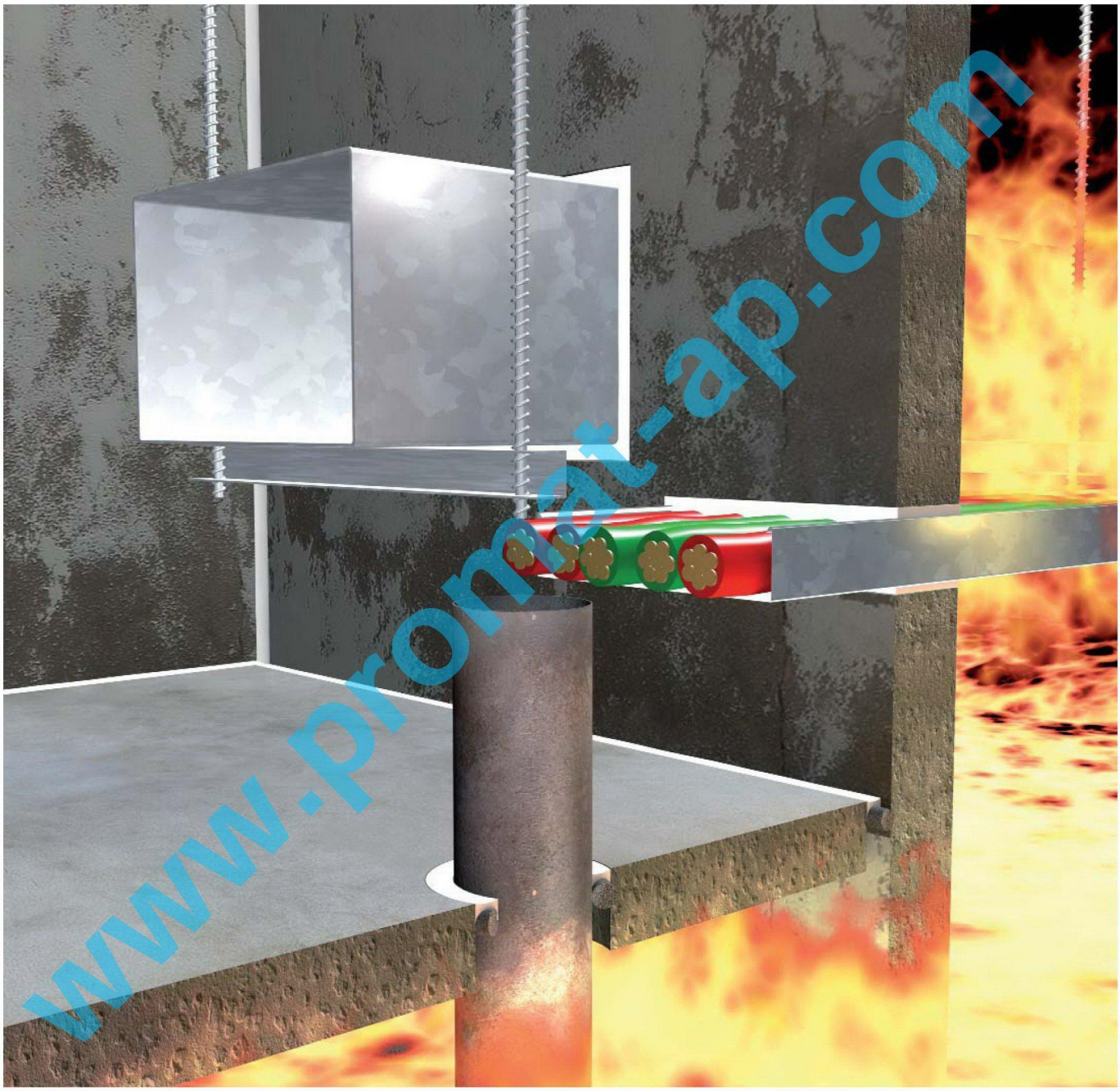
I, Danny Hall, hereby certify that all plastic pipes that penetrate between fire compartments have been protected with either, a cast in or retrofit fire collar or fire sealant. Both Collars and sealants have been procured and installed in accordance with BCA Clause C3.15, AS 1530.4 & AS 4072.1 – 2005. Details of each product used by DHP are attached.

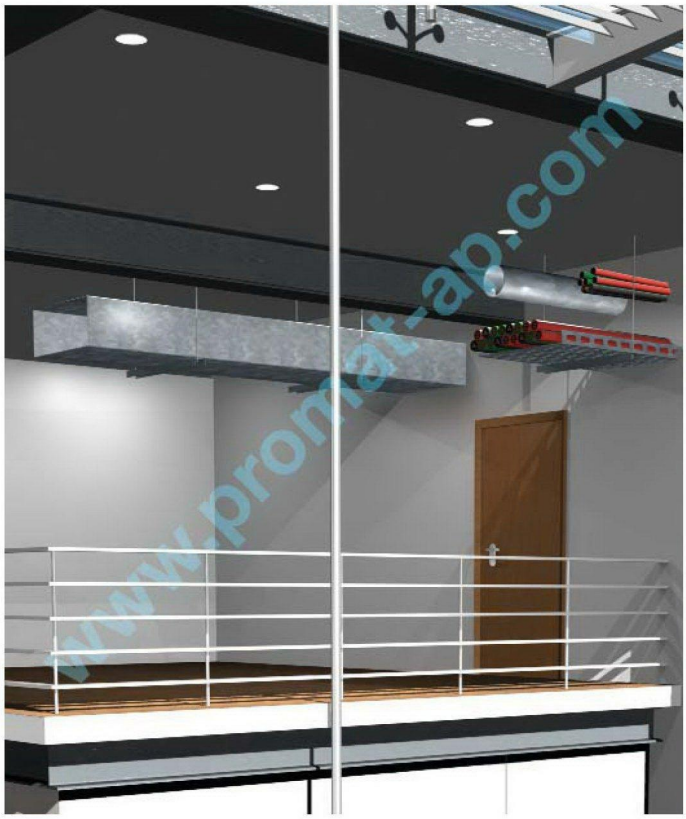
Yours Sincerely,
Danny Hall Plumbing Pty Ltd

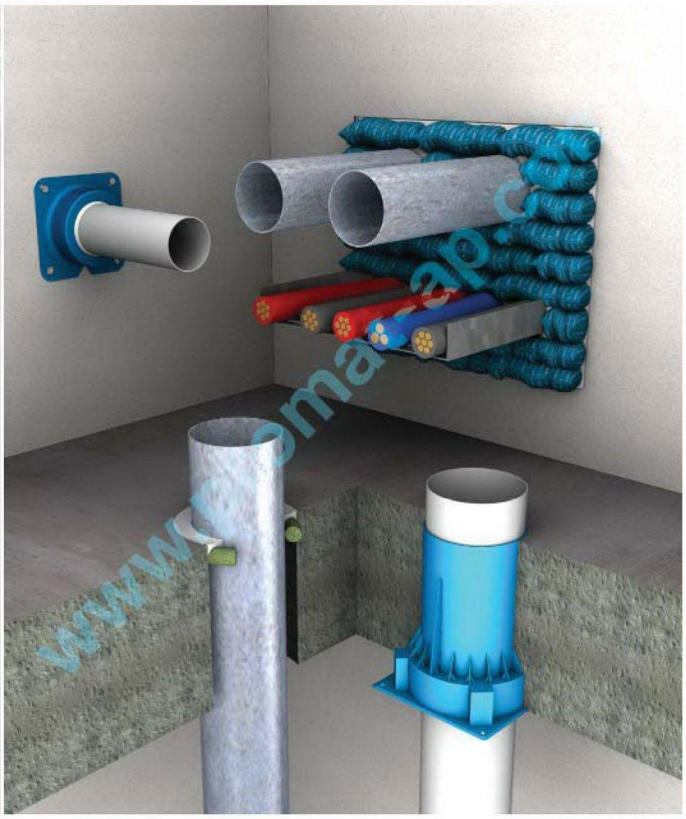
Danny Hall
Director

Promat

PROMASEAL® AN Acrylic Sealant For Control Joints And Penetration Seals







Introduction

While fire resisting compartments are created to contain fire and smoke from spreading within building structures, this also presents a parallel threat as most concealed cavities between fire resisting walls and floors are interlinked. The importance of sealing gaps in this type of construction is therefore vital to ensure the compartmentation systems work to their maximum ability to save life and property. Such gaps are typically at service penetrations through walls and floors, but would also include gaps left for structural movement and gaps left due to poor workmanship.

Recognising this, the development of effective solutions to seal gaps at service penetrations has increased over the past few years and Promat has become a world leader in supplying such solutions. Note should be taken that every service passing through fire resistant building elements react in different ways to fire, so there is no single solution or product that will protect all services.

Services must be tested in accordance with the test method set out in appropriate standards. Tests are generally carried out in accordance with the General Principles of BS476: Part 20: 1987 or EN1366: Part 3 and 4 covering both penetration seals and linear joint seals respectively. In addition, many countries use the Australian Standard AS4072: Part 1: 2005 (Components for the Protection of Openings in Fire-Resistant Separating Elements), which specifies testing in accordance with the test method set out in AS1530: Part 4: 2005. It is important to note that although all of the above test methods can be considered similar, there are some major differences which can affect a particular application (see following pages for comparison of test methods).

Failure Criteria

Failure is measured in terms of integrity and insulation. Stability (or Structural Adequacy) is not recorded for service penetrations, except those which are required to be loadbearing, e.g. PROMASTOP® Cement.

Integrity failure occurs when cracks, holes or openings occur through which flames or hot gases can pass. This is measured in different ways, depending upon the Standard used.

For instance, AS1530: Part 4: 2005 measure integrity failure as flaming on the unexposed face for a time greater than 10 seconds. Other Standards measure integrity failure using the same criteria but with different methods of measurement.

a) Using a cotton pad, held against any gap, to see if the cotton pad ignites within 10 seconds; or

b) If the gap is equal to or greater than 150mm x 6mm; or

c) If a 25mm diameter probe can pass through a gap.

Insulation failure occurs when the temperature rise on the unexposed surface of the service, on the unexposed face of the building element 25mm from the penetration or on the seal itself exceeds 180°C. Insulation failure is inevitable on many metal service penetrations and is often waived as a failure criterion by local building regulations. Under such circumstances it is essential that combustibles be kept at least 100mm clear of these services at the point of penetration.

The PROMASEAL® and PROMASTOP® range of products were introduced to complement Promat's wide range of fire protection board systems.

Due to continuous development of draft fire test standards for this application, and the regular improvements and additions to the product range, only brief details are given in this section of the handbook concerning the products available at the time of writing.

For detailed information and advice on the current range of PROMASEAL® products, please contact Promat.

IMPORTANT: Because of the diversity of applications and the on-going test programme, the above and the following notes in this section are of a general nature only and it is essential to confirm that the system specified or being installed is approved for use. Always contact Promat to confirm the specification is correct prior to usage.

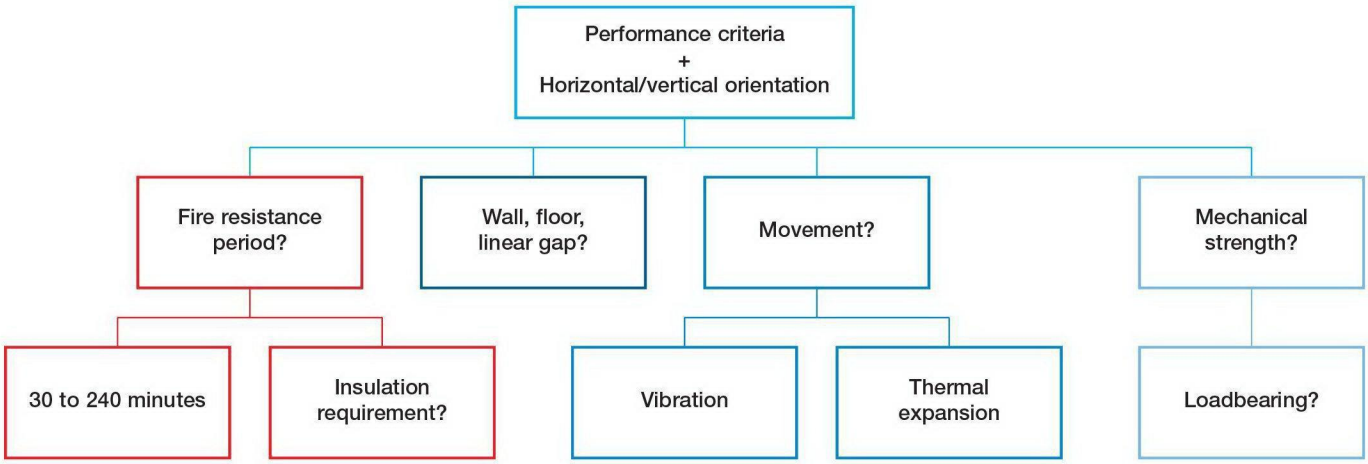
	British Standards BS476: Part 20: 1987	European Standards EN1366: Part 3: 2004/ EN1366: Part 4: 2006	Australian Standards AS4072: Part 1: 2005/ AS1530: Part 4: 2005	United States Standards ASTM E814: 1997/ UL1479: 1998
Orientation	Requires representative specimen in both orientations. For asymmetrical specimens, a test should be conducted from each side using separate specimens.	Representative or standard service configurations tested both in horizontal and vertical orientation.	Requires full size or representative specimen and testing in both horizontal and vertical orientation if intended for use in both orientation. Provide standard test configurations.	UL requires both orientations must be tested unless it can be demonstrated that testing in a single orientation does not affect the results. ASTM does not specify but there are differences in temperature and pressure measurements for the two orientations so that, by default, both would be required.
Test sample	Does not specify projection distances of through penetrating elements. The end conditions of pipes should reflect the "as installed" conditions.	The services shall be installed so that they extend 500mm on each side of the supporting construction, of which at least 300mm shall extend beyond the extremities of the sealing system. No part of the service shall be <200mm from the furnace wall or another service. Movement joint seals shall be installed in uniform design cross-sectional area and to maximum length that can be accommodated by separating test element. For non-movement joint seals a shorter length may be used subject to a minimum of 900mm.	The ends of the services shall be sealed on the exposed side of the furnace, to simulate normal extension through compartment. If the end condition of the the unexposed side is unspecified, it shall be left unsealed. The penetrating element shall extend 500mm into the furnace and 2000mm outside the furnace for plastic pipes, all other elements are 500mm inside and outside the furnace.	The penetrating item should extend into the furnace by 300mm and out of it by 910mm. The end of the item on the exposed face is capped, but uncapped on the unexposed side, unless is it to represent a closed system in which case it may be capped. The periphery of the specimen should not to be closer than 1.5 the thickness of the assembly, or 300mm to the furnace edge, whichever is greater.
Conditioning	Materials shall, at time of test, be at a condition approximating the state of strength and moisture content that would be expected in normal service.	The test specimens shall not be tested until both strength and moisture content approximate values the service expects to attain.	The test specimens shall not be tested until both strength and moisture content approximate values the service expects to attain.	Prior to fire testing, each test sample and test assembly is to be conditioned, if necessary, to provide a moisture condition likely to exist in similarly constructed buildings.
Protection of assembly and sample	Ambient temperature should be within 5-35°C prior to heating period, and temperature measurements on the unexposed face must be in draught-free conditions.	Provide reference for test frames and the ambient condition must be 20°C(±10°C) at the commencement of test. During testing, the laboratory temperature shall not decrease >5°C or increase by >20°C for all insulated separating elements while they still satisfy the insulation criterion.	Not specified except that the initial furnace temperature must be not less than 10°C and not more than 40°C.	The testing equipment and test sample are to be protected from any condition of wind or weather that might influence the test results (i.e. ambient temperature at the time of testing must be within 10-32°C while the velocity of air across the sample must not exceed 1.3m per second).
Pressure differential	At mid height of vertical systems, the pressure differential is 15Pa, and the same pressure 100mm below horizontal systems.	For a vertical system with height <1000mm, the pressure differential should be 15±2Pa. If the height >1000mm, pressure differential should be 20±2Pa at the top of the specimen. In this case penetrations should be included in the zone where the pressure is >10Pa. For a horizontal system, the pressure differential should be 20±2Pa at 100±10mm under the supporting construction.	Not less than 20Pa at notional 100mm below the soffit height of horizontal element or at a level with lowest point of the penetration seal of a vertical element it should be 15Pa±3.	Except for the first 10 minutes of the test, the furnace pressure shall be at least 2.5Pa greater than the pressure on the unexposed side of the following locations: a) Wall – at lowest elevation of the test specimen; b) Floors – at the location of the pressure probes. Test sponsor may also specify a unique pressure condition in which case it must be maintained throughout the duration of the test, excluding the first 10 minutes, within 20% of the specification.

Penetration Seals
Comparison of Building Standards

	British Standards BS476: Part 20: 1987	European Standards EN1366: Part 3: 2004/ EN1366: Part 4: 2006	Australian Standards AS4072: Part 1: 2005/ AS1530: Part 4: 2005	United States Standards ASTM E814: 1997/ UL1479: 1998
Integrity	a) Cotton pad test; b) Gap gauge; c) Sustained flaming of more than 10 seconds.	a) Cotton pad test is generally performed. For penetration seal tests the use of reduced size cotton pad is permitted if necessary. b) Whilst gap gauge is used for measurement in general test specimens, it shall not be used for evaluation of penetration and linear joint seals tests. c) Sustained flaming.	Failed when: a) Cotton pad test, or b) Flaming takes place at the unexposed face of the specimen for a period exceeding 10 seconds.	Shall not permit the passage of flame throughout the fire test, or water through the hose stream test. Mandatory for all ratings in both standards, i.e. ASTM and UL.
Insulation	The insulation of the specimen is judged to have failed if the temperature on the unexposed side and on penetrations reaches 180°C above the initial temperature.	The insulation of the specimen is judged to have failed if the temperature on the unexposed side and on penetrations reaches 180°C (K) above its initial temperature.	The criteria for failure of insulation is if the temperature of any of the thermocouples on the unexposed side reaches 180°C above the initial temperature.	Shall not permit the passage of flame through the fire test, or water through the hose stream test or allow the temperature to increase by 180°C on the unexposed side. Mandatory for T rating in both standards.
Hose stream test	No specification.	No specification.	No specification.	For both F and T ratings, a duplicate specimen is subjected to a fire exposure test for period half of the desired rating but not more than 60 minutes. Immediately after the fire exposure, the specimen shall be subject to the hose stream test. Same test assembly can be used for both tests but must take place within 10 minutes from the completion of the fire test.
Specification	a) Integrity; b) Insulation; c) Loadbearing capacity where applicable.	a) Integrity; b) Gap gauge (not applicable for penetration and linear joints seal tests); c) Cotton pad; d) Insulation; e) Insulation area 2 (if the test element incorporating two discrete areas of different thermal insulation).	AS1530: Part 4 states results to be expressed in: a) Structural adequacy; b) Integrity; c) Insulation; d) Resistance to incipient spread of flame.	Specified in terms of F rating which require a hose stream test, and T rating which does not require a hose stream test, measures the insulation. UL have an additional L rating for air-leakage.
Reporting	a) Temperature data from all specified critical thermocouple; b) A detailed description of all penetrating services; c) A detailed description of the test construction.	In addition to requirements of EN1363: Part 1, the following are necessary for penetration seal tests: a) For tests on pipes, statement of the pipe end configuration (capped or uncapped); b) For cables, the cable dimensions; c) For metallic pipes, the pipe dimensions; d) For unsupported seals, the maximum area free of services; e) Whether multiple penetrations have been tested in a single test construction. For linear joint seal test, the following shall be included: a) Full description of any procedure used to induce relative movement of the seal faces; b) Orientation of test specimen; c) The limits of the range of nominal widths and the movement capability successfully tested; d) Full description of the splicing method(s) used.	In addition to the requirements of AS1530: Part 3, the report should have: a) Temperature data from all specified critical thermocouple; b) A detailed description of all penetrating services; c) A detailed description of the test construction.	Report must have: a) Description of assembly and materials; b) Relative humidties; c) Temperature recordings; d) The achieved rating; e) Location of pressure probes and differential pressure of the test; f) Record of all observations; g) Correction factor.
Commentary	For positions of thermocouples and other items not specified in this standard, laboratories refer to the EN standard.	These standards are now in effect for use within the industry.	Comprehensive and simple standard configurations, as well as details on permissible variations.	UL also have an addition L rating which is to be reported as the largest leakage rate determined from the air leakage test.

Which System(s) To Use

As penetrations can occur in various building elements, there are a number of important criteria that require consideration in determining the appropriate type of sealing system to be used, simplified in the following chart.

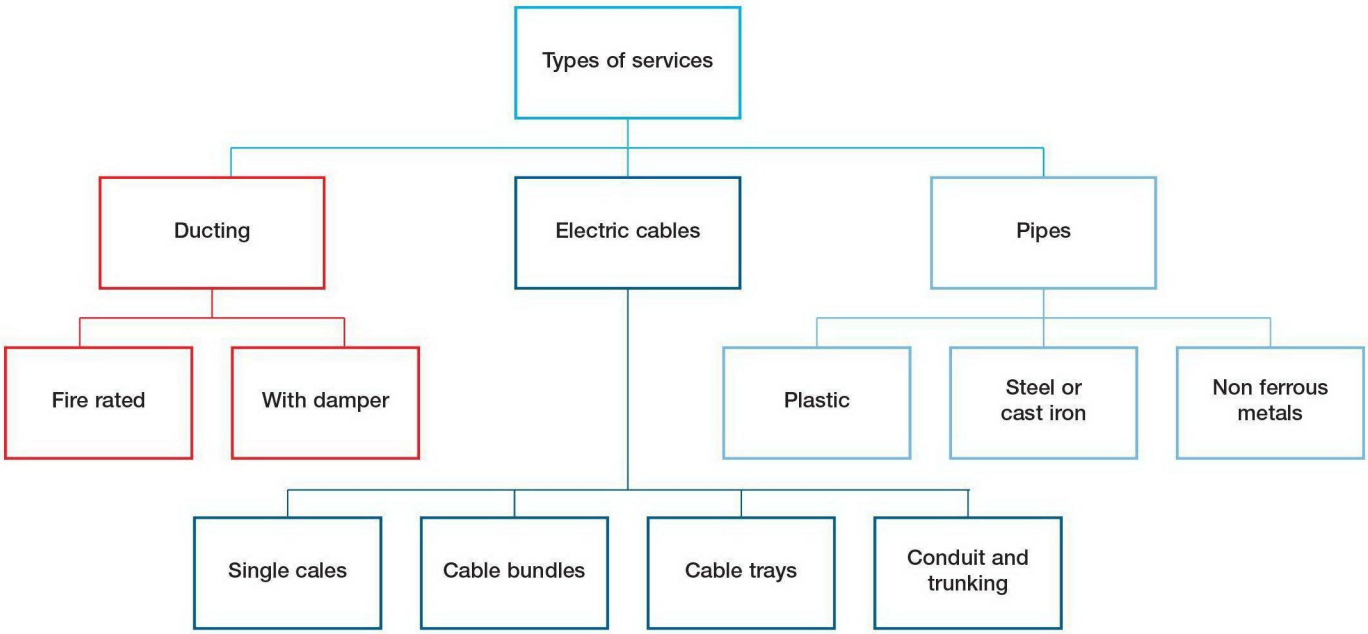


Limitations of Use

- Size of opening
- Penetration services
- Flexibility of seal(s)
- Smoke or gas lightness
- Ambient conditions
- Design life
- Frequecy of change to services
- Parent construction (type of substrate)

Special Considerations

In instances where electrical and mechanical services are involved, the selection of penetration sealing system also require the following additional elements to be carefully considered.



Compatability Considerations

- Intumescent systems in lightweight constructions
- Rigid seals in “dynamic” barriers
- Large spans and thermal expansion
- Smoke or toxicity in populated zones
- Dusty or friable materials in clean-room applications

PROMASEAL® AN Acrylic Sealant is a gunable sealant designed for the sealing of joints and services penetrations against the spread of fire, smoke and hot gases for up to 240 minutes fire resistance when tested to AS1530: Part 4, AS4072: Part 1 and BS476: Part 20. In addition, PROMASEAL® AN Acrylic Sealant may be used as acoustic sealant due to its density and flexibility.

PROMASEAL® AN Acrylic Sealant should be used in conjunction with all penetration sealing systems to provide a secure cold smoke seal. Where the location of a fire is some distance from a penetration seal, there will be insufficient heat to activate an intumescent material. As such, cool smoke can rapidly pass through buildings, creating a toxic, life threatening environment.

While the use of a cold smoke seal is not needed for meeting fire resistance performance requirements, it should be considered as a necessity to prevent smoke movement through buildings via penetrations, and is therefore highly recommended.

PROMASEAL® AN Acrylic Sealant can be supplied in:

- 300ml cartridges,
- 600ml foil packs.

Installation Guide

Penetration seals

PROMASEAL® AN Acrylic Sealant is used to seal around small gaps, with or without penetrating elements. The sealant is ideal for sealing around metal pipes, cables, conduits, busways and ducts which penetrate walls or floors. See illustrations on pages 7 and 8.

This product bonds to masonry, concrete, calcium silicate board, plasterboard, metal and cable coverings and remains flexible after curing, thus accommoding building movement.

The fire resistance achieved will be limited to the fire resistance of the building element through which the service passes. The size of the gaps around services that can be protected with PROMASEAL® AN Acrylic Sealant has limitations.

For metal pipes passing through floors the gap between the pipe and floor should be no greater than 38mm, for walls no greater than 20mm. For bundles of cables passing through floors, the maximum opening should be no greater than Ø50mm (approximately 2000mm²) and through walls, Ø38mm (approximately 1100mm²).

For cables on steel cable trays passing through walls, the maximum opening size should not exceed 70mm high x 440mm wide. In some installations when gaps are at the upper end of the range, sealant may be inclined to slump. In such cases the use of PROMASEAL® IBS™ may be the better solution. Please refer to pages 7 and 8.

Control joints

When specifying or sourcing a sealant for a control joint, it is essential that the characteristics of each control joint are taken into account. Control joints are provided either within or between elements of construction to allow for differential movement caused by a number of factors including shrinkage, thermal expansion, service loads, creep or as a means of joining pre cast units. See illustrations on pages 7 and 8.

Adhesion is excellent to most types of surface. For optimum performance the surfaces of the building element must be free of any dust or grease and be suitably primed. Once applied, they cure in air naturally to form a non-hardening, tack-free seal. Please contact Promat for details.

PROMASEAL® AN Acrylic Sealant varies in its movement capabilities. As a general rule, the sealant has low movement properties (typically around ±12.5% movement) and should not be used where movement is a high priority. For high movement joints, please refer to PROMASEAL® FyreStrip on separate PDF.

Recommended Specification

Where appropriate, the specified joints and gaps within floor/wall openings should be properly fire stopped using PROMASEAL® AN Acrylic Sealant capable of providing a fire resistance up to -/240/- or -/240/240 when tested and assessed in accordance with AS1530: Part 4 and/or BS476: Part 20: 1987. Installation of any fire stopping product should be carried out according to the manufacturer's recommendations. Please consult Promat for more details.

TECHNICAL DATA

1a For FRL up to -/240/- in floor penetrations and up to -/180/- in wall penetrations, depending on application and types of the services and penetrating elements, insulation criteria may vary.* Please contact Promat for details before installation.
PROMASEAL® AN Acrylic Sealant

1b For FRL up to -/240/240 in control joints
PROMASEAL® AN Acrylic Sealant, sealing depth for control joints as below. Please check with local Promat office to ensure the correct use of the sealant specified.

2 Polyethylene backing strip

3 *Cast-in type for FRL of -/240/- or cored hole-fixed type for FRL of -/120/-
Metal pipe up to 150mm diamater

4 Electrical cables

5 Steel cable tray

6 Services support system to be within 300mm on the barrier side

7 Steel ventilation duct

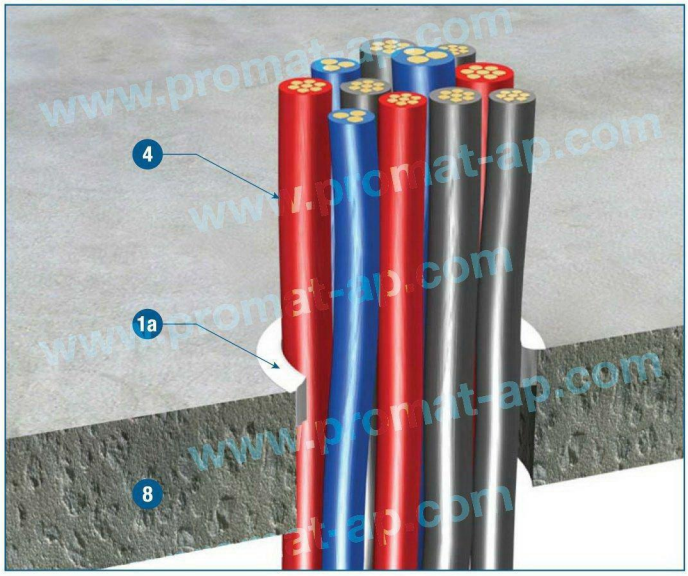
8 Masonry or concrete floor slab/wall

For FRL of -/120/120 (Minimum 120mm element thickness)					
Gap width (a)	10mm	20mm	30mm	40mm	50mm
Fire side only (b)	10mm	10mm	15mm	#	#
Non fire side	10mm	10mm	#	#	#
Both sides	10mm	10mm	15mm	20mm	20mm
For FRL of -/180/180 (Minimum 150mm element thickness)					
Gap width (a)	10mm	20mm	30mm	40mm	50mm
Fire side only (b)	10mm	10mm	15mm	#	#
Non fire side	10mm	10mm	#	#	#
Both sides	10mm	10mm	15mm	20mm	20mm
For FRL of -/240/240 (Minimum 170mm element thickness)					
Gap width (a)	10mm	20mm	30mm	40mm	50mm
Fire side only (b)	20mm	20mm	20mm	#	#
Non fire side	10mm (FRL -/240/180)	10mm (FRL -/240/180)	#	#	#
Both sides	10mm	10mm	15mm	20mm	20mm

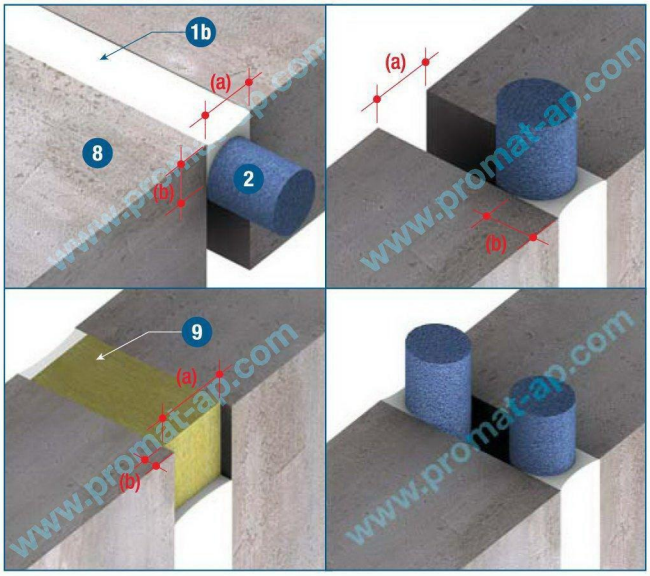
Please refer to PROMASEAL® IBS™ on separate PDF.
NOTE: Typical floor and wall element thicknesses are 120mm, 150mm, 170mm for 120, 180, 240 minutes respectively.

USAGE: To calculate the sealant volume, multiply joint width (mm) x depth (mm) x length (M) and divide by the container volume (ml).
For example, 20mm x 10mm x 50M ÷ 600ml = 17 foil packs of PROMASEAL® AN Acrylic Sealant.

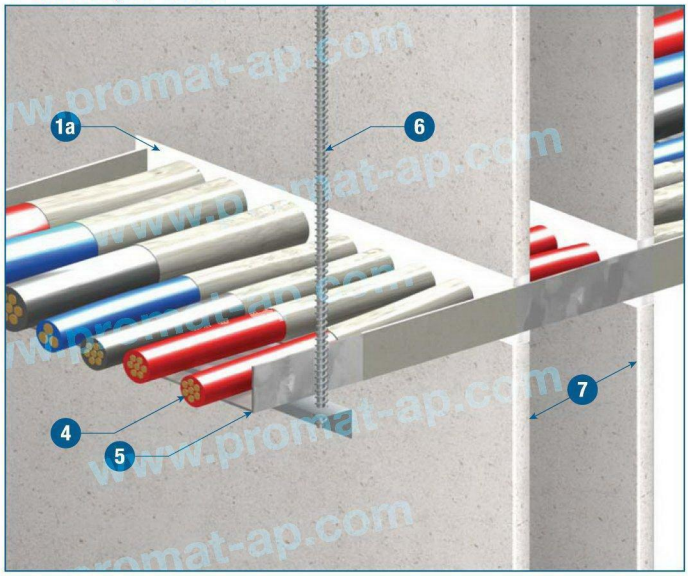
Electrical cables through masonry or concrete floor
*For FRL up to -/120/-



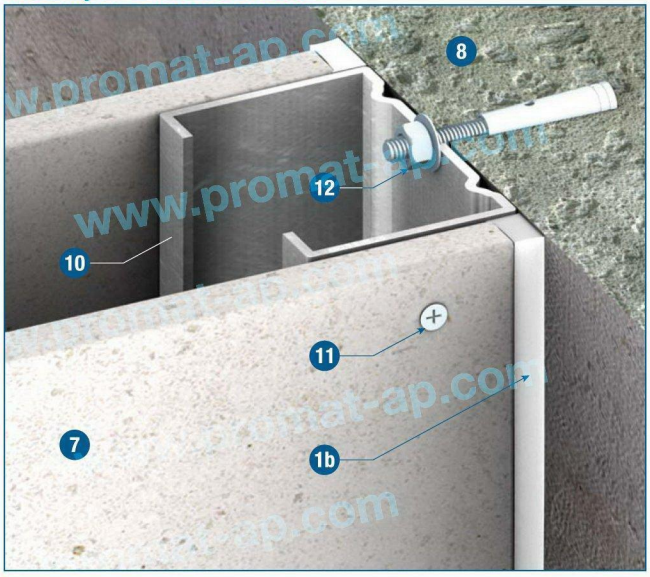
Control joints for gaps in masonry or concrete floor or wall
Clockwise: 1-sided in floor, 1-sided in wall, 2-sided in wall and big gap in wall



Cable tray through lightweight partition
*For FRL up to -/240/-



Junction of lightweight partition to masonry or concrete substrate



Metal pipe through lightweight partition
*For FRL up to -/120/-

TECHNICAL DATA

- **1a** For FRL up to -/240/- in floor penetrations and up to -/180/- in wall penetrations, depending on application and types of the services and penetrating elements, insulation criteria may vary.*
  PROMASEAL® AN Acrylic Sealant
- **1b** For FRL up to -/240/240 in control joints
  PROMASEAL® AN Acrylic Sealant, sealing depth for control joints as per page 7.
- **2** Polyethylene backing strip
- **3** Metal pipe up to 150mm diamater
- **4** Electrical cables
- **5** Steel cable tray
- **6** Threaded steel hanger rods
- **7** Lightweight partition
- **8** Masonry or concrete floor slab/wall
- **9** Mineral wool
- **10** Steel channel
- **11** Drywall type self-tapping screws
- **12** Anchor fixing

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2. Promat is not responsible if recipients of fire test reports, assessments or literature incorrectly interpret said contents and use products based on those interpretations.

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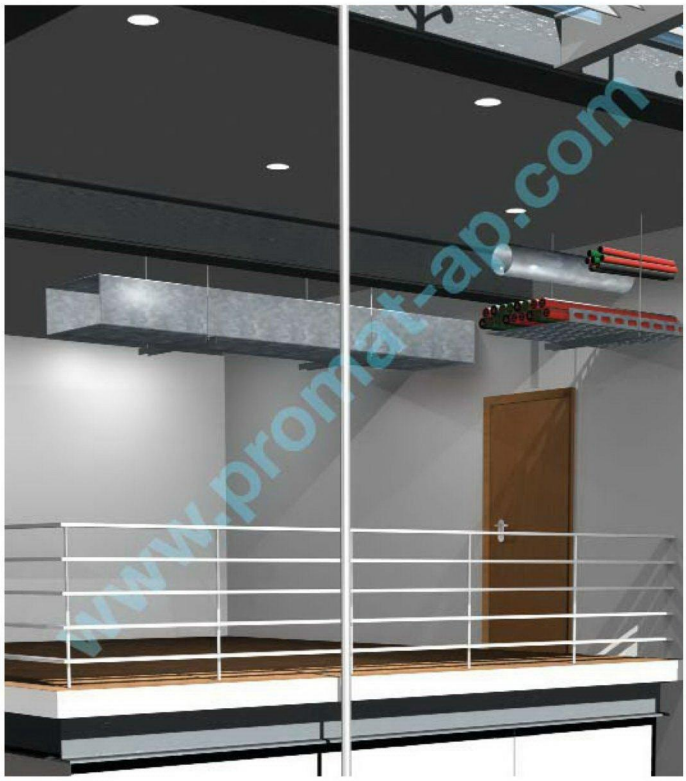
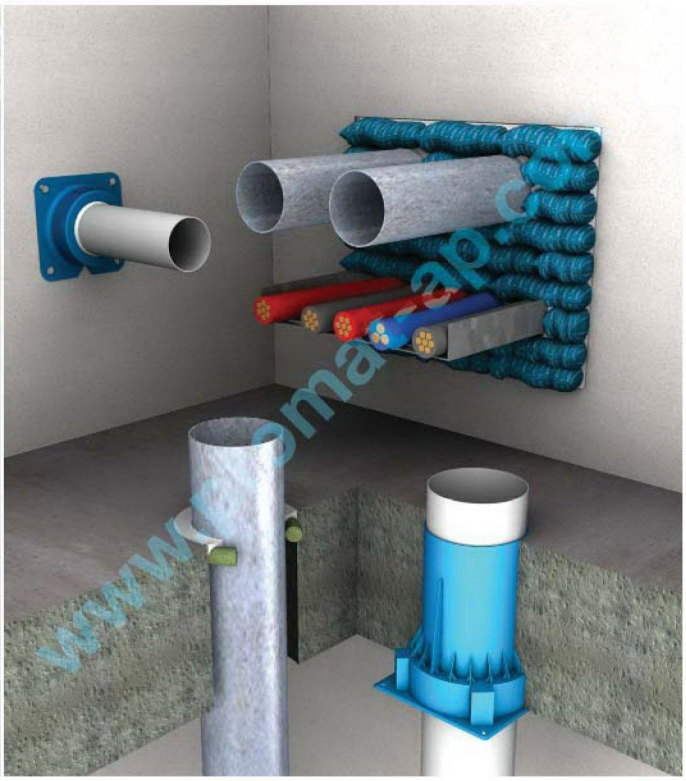




Introduction

Fire resisting compartments are created to inhibit and prevent fire and smoke from spreading within building structures. This also creates a parallel threat as most concealed cavities between fire resisting walls and floors are interlinked. The importance of sealing gaps in this type of construction is thus vital to the integrity of compartmentation systems and their ability to prevent fatalities and loss of property. Such gaps are typically service penetrations through walls and floors but also include gaps created for structural movement and gaps due to poor workmanship.

These unfortunate but inevitable facts of construction industry life have led in recent years to the increased development of effective solutions to seal gaps wherever they occur. Intumex is a leading worldwide solution provider.

It should be noted that every service passing through fire resistant building elements reacts in a different way to fire, heat, smoke and fumes. There is no single solution, product or system that will protect all services.

Services must be tested in accordance with the test method outlined in appropriate standards. Tests are generally carried out in accordance with the General Principles of BS476: Part 20: 1987 or EN1366: Part 3 and 4 covering both penetration seals and linear joint seals respectively. In addition, many countries use the Australian Standard AS4072: Part 1: 2005 (Components for the Protection of Openings in Fire-Resistant Separating Elements), which specifies testing in accordance with the test method set out in AS1530: Part 4: 2005. It is also important to note that although all of the above test methods can be considered similar, there are some major differences which affect particular applications. Please see following pages for comparative test method/data.

Failure Criteria

Failure is measured in terms of integrity and insulation. Stability (or Structural Adequacy) is not recorded for service penetrations except those which are required to be loadbearing, e.g. PROMASTOP® Cement.

Integrity failure occurs when cracks, holes or openings allow the passage of flames or hot gases. Furthermore, integrity failure is measured in different ways, depending on which standard is used.

For example, AS1530: Part 4: 2005 measures integrity failure as flaming on the unexposed face for a time greater than 10 seconds and by using a cotton pad, held against any gap, to see if the cotton pad ignites within 10 seconds. Other standards measure integrity failure using the same criteria but also using additional methods such as:

a) using a cotton pad, held against any gap, to see if the cotton pad ignites within 10 seconds; or

b) if the gap is equal to or greater than 150mm x 6mm; or

c) if a 25mm diameter probe can pass through a gap.

Insulation failure occurs when the temperature rise on the unexposed surface of the service, on the unexposed face of the building element 25mm from the penetration or on the seal itself exceeds 180°C. Insulation failure is inevitable on many metal service penetrations and is often waived as a failure criterion by local building regulations. Under such circumstances it is essential that combustibles be kept at least 100mm clear of these services at the point of penetration.

The PROMASEAL® and PROMASTOP® range of products were introduced to complement Promat's wide range of fire protection board systems.

Due to the ongoing development of fire test standards for this product, penetration seals and similar applications, only brief details can be provided at the time of this press. For detailed information and advice on the current range of PROMASEAL® and PROMASTOP® range of products, please contact Promat.

IMPORTANT: Because of the diversity of applications and the on-going test programme, the above and the following notes in this section are of a general nature only and it is essential to confirm that the system specified or being installed is approved for use. Always contact Promat to confirm the specification is correct prior to usage.

Penetration Seals
Comparison of Building Standards

	British Standards BS476: Part 20: 1987	European Standards EN1366: Part 3: 2004/ EN1366: Part 4: 2006	Australian Standards AS4072: Part 1: 2005/ AS1530: Part 4: 2005	United States Standards ASTM E814: 1997/ UL1479: 1998
Orientation	Requires representative specimen in both orientations. For asymmetrical specimens, a test should be conducted from each side using separate specimens.	Representative or standard service configurations tested both in horizontal and vertical orientation.	Requires full size or representative specimen and testing in both horizontal and vertical orientation if intended for use in both orientation. Provide standard test configurations.	UL requires both orientations must be tested unless it can be demonstrated that testing in a single orientation does not affect the results. ASTM does not specify but there are differences in temperature and pressure measurements for the two orientations so that, by default, both would be required.
Test sample	Does not specify projection distances of through penetrating elements. The end conditions of pipes should reflect the "as installed" conditions.	The services shall be installed so that they extend 500mm on each side of the supporting construction, of which at least 300mm shall extend beyond the extremities of the sealing system. No part of the service shall be <200mm from the furnace wall or another service. Movement joint seals shall be installed in uniform design cross-sectional area and to maximum length that can be accommodated by separating test element. For non-movement joint seals a shorter length may be used subject to a minimum of 900mm.	The ends of the services shall be sealed on the exposed side of the furnace, to simulate normal extension through compartment. If the end condition of the the unexposed side is unspecified, it shall be left unsealed. The penetrating element shall extend 500mm into the furnace and 2000mm outside the furnace for plastic pipes, all other elements are 500mm inside and outside the furnace.	The penetrating item should extend into the furnace by 300mm and out of it by 910mm. The end of the item on the exposed face is capped, but uncapped on the unexposed side, unless is it to represent a closed system in which case it may be capped. The periphery of the specimen should not to be closer than 1.5 the thickness of the assembly, or 300mm to the furnace edge, whichever is greater.
Conditioning	Materials shall, at time of test, be at a condition approximating the state of strength and moisture content that would be expected in normal service.	The test specimens shall not be tested until both strength and moisture content approximate values the service expects to attain.	The test specimens shall not be tested until both strength and moisture content approximate values the service expects to attain.	Prior to fire testing, each test sample and test assembly is to be conditioned, if necessary, to provide a moisture condition likely to exist in similarly constructed buildings.
Protection of assembly and sample	Ambient temperature should be within 5-35°C prior to heating period, and temperature measurements on the unexposed face must be in draught-free conditions.	Provide reference for test frames and the ambient condition must be 20°C(±10°C) at the commencement of test. During testing, the laboratory temperature shall not decrease >5°C or increase by >20°C for all insulated separating elements while they still satisfy the insulation criterion.	Not specified except that the initial furnace temperature must be not less than 10°C and not more than 40°C.	The testing equipment and test sample are to be protected from any condition of wind or weather that might influence the test results (i.e. ambient temperature at the time of testing must be within 10-32°C while the velocity of air across the sample must not exceed 1.3m per second).
Pressure differential	At mid height of vertical systems, the pressure differential is 15Pa, and the same pressure 100mm below horizontal systems.	For a vertical system with height <1000mm, the pressure differential should be 15±2Pa. If the height >1000mm, pressure differential should be 20±2Pa at the top of the specimen. In this case penetrations should be included in the zone where the pressure is >10Pa. For a horizontal system, the pressure differential should be 20±2Pa at 100±10mm under the supporting construction.	Not less than 20Pa at notional 100mm below the soffit height of horizontal element or at a level with lowest point of the penetration seal of a vertical element it should be 15Pa±3.	Except for the first 10 minutes of the test, the furnace pressure shall be at least 2.5Pa greater than the pressure on the unexposed side of the following locations: a) Wall – at lowest elevation of the test specimen; b) Floors – at the location of the pressure probes. Test sponsor may also specify a unique pressure condition in which case it must be maintained throughout the duration of the test, excluding the first 10 minutes, within 20% of the specification.

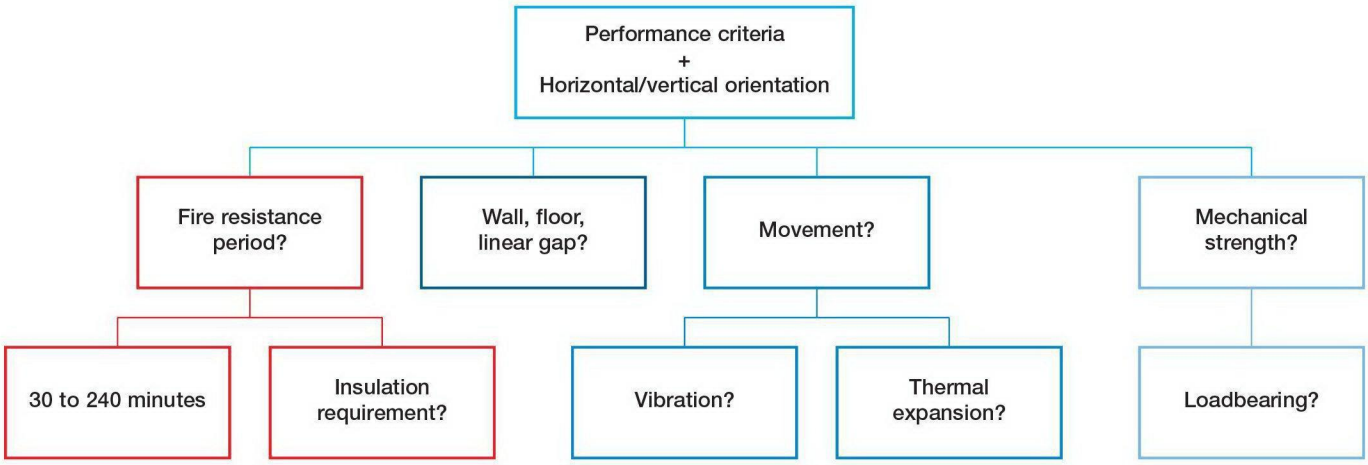
Promat

Penetration Seals
Comparison of Building Standards

	British Standards BS476: Part 20: 1987	European Standards EN1366: Part 3: 2004/ EN1366: Part 4: 2006	Australian Standards AS4072: Part 1: 2005/ AS1530: Part 4: 2005	United States Standards ASTM E814: 1997/ UL1479: 1998
Integrity	a) Cotton pad test; b) Gap gauge; c) Sustained flaming of more than 10 seconds.	a) Cotton pad test is generally performed. For penetration seal tests the use of reduced size cotton pad is permitted if necessary. b) Whilst gap gauge is used for measurement in general test specimens, it shall not be used for evaluation of penetration and linear joint seals tests. c) Sustained flaming.	Failed when: a) Cotton pad test, or b) Flaming takes place at the unexposed face of the specimen for a period exceeding 10 seconds.	Shall not permit the passage of flame throughout the fire test, or water through the hose stream test. Mandatory for all ratings in both standards, i.e. ASTM and UL.
Insulation	The insulation of the specimen is judged to have failed if the temperature on the unexposed side and on penetrations reaches 180°C above the initial temperature.	The insulation of the specimen is judged to have failed if the temperature on the unexposed side and on penetrations reaches 180°C (K) above its initial temperature.	The criteria for failure of insulation is if the temperature of any of the thermocouples on the unexposed side reaches 180°C above the initial temperature.	Shall not permit the passage of flame through the fire test, or water through the hose stream test or allow the temperature to increase by 180°C on the unexposed side. Mandatory for T rating in both standards.
Hose stream test	No specification.	No specification.	No specification.	For both F and T ratings, a duplicate specimen is subjected to a fire exposure test for period half of the desired rating but not more than 60 minutes. Immediately after the fire exposure, the specimen shall be subject to the hose stream test. Same test assembly can be used for both tests but must take place within 10 minutes from the completion of the fire test.
Specification	a) Integrity; b) Insulation; c) Loadbearing capacity where applicable.	a) Integrity; b) Gap gauge (not applicable for penetration and linear joints seal tests); c) Cotton pad; d) Insulation; e) Insulation area 2 (if the test element incorporating two discrete areas of different thermal insulation).	AS1530: Part 4 states results to be expressed in: a) Integrity; b) Insulation.	Specified in terms of F rating which require a hose stream test, and T rating which does not require a hose stream test, measures the insulation. UL have an additional L rating for air-leakage.
Reporting	a) Temperature data from all specified critical thermocouple; b) A detailed description of all penetrating services; c) A detailed description of the test construction.	In addition to requirements of EN1363: Part 1, the following are necessary for penetration seal tests: a) For tests on pipes, statement of the pipe end configuration (capped or uncapped); b) For cables, the cable dimensions; c) For metallic pipes, the pipe dimensions; d) For unsupported seals, the maximum area free of services; e) Whether multiple penetrations have been tested in a single test construction. For linear joint seal test, the following shall be included: a) Full description of any procedure used to induce relative movement of the seal faces; b) Orientation of test specimen; c) The limits of the range of nominal widths and the movement capability successfully tested; d) Full description of the splicing method(s) used.	In addition to the requirements of AS1530.3, some of the requirments in AS1530.3: Part 4 are: a) Temperature data from all specified critical thermocouple; b) A detailed description of all penetrating services; c) A detailed description of the test construction.	Report must have: a) Description of assembly and materials; b) Relative humidties; c) Temperature recordings; d) The achieved rating; e) Location of pressure probes and differential pressure of the test; f) Record of all observations; g) Correction factor.
Commentary	For positions of thermocouples and other items not specified in this standard, laboratories refer to the EN standard.	These standards are now in effect for use within the industry.	Comprehensive and simple standard configurations, as well as details on permissible variations.	UL also have an addition L rating which is to be reported as the largest leakage rate determined from the air leakage test.

Which System(s) To Use

As penetrations can occur in various building elements, there are a number of important criteria that require consideration in determining the appropriate type of sealing system to be used, simplified in the following chart.

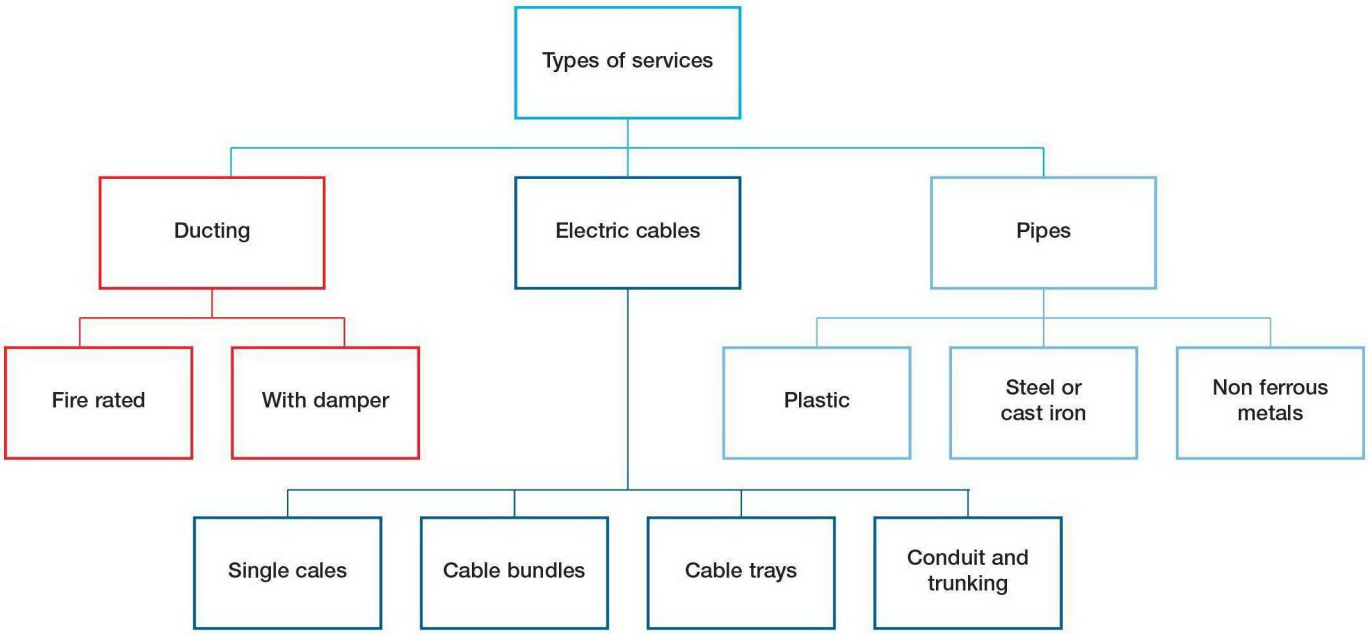


Limitations of Use

- Size of opening
- Penetration services
- Flexibility of seal(s)
- Smoke or gas lightness
- Ambient conditions
- Design life
- Frequecy of change to services
- Parent construction (type of substrate)

Special Considerations

In instances where electrical and mechanical services are involved, the selection of penetration sealing system also require the following additional elements to be carefully considered.



Compatability Considerations

- Intumescent systems in lightweight constructions
- Rigid seals in “dynamic” barriers
- Large spans and thermal expansion
- Smoke or toxicity in populated zones
- Dusty or friable materials in clean room applications

It has been shown that plastic pipes penetrating compartment walls or floors or other fire barriers represent potential for fire to pass from one compartment to another when the plastic burns and melts away. All building regulations specify that the fire resistance of the separating element of construction between compartments must not be impaired by services that pass through them.

In general, methods of maintaining acceptable fire resistance will vary between countries and regulatory authorities. The most common method of fire resistance, however, is to install fire collars around plastic pipes, penetrating separating elements.

All fire collars are designed to prevent the spread of fire where plastic pipes, cables and other services penetrate fire resistant elements of construction, maintaining the Fire Resistance Level (FRL) of the element.

Virtually all fire collars consist of intumescent compounds which, exposed to fire or sufficient heat, expand under pressure to set and seal the penetrations. The unique and patented design of PROMASEAL® and PROMASTOP® collars contain no asbestos, fibres or solvents. They are unaffected by water and most atmospheric conditions

In the case of plastic pipe penetrations, it should be clearly noted that particular care must be exercised when accepting assessments or test reports. Abundant research and empirical data indicates that different types of plastic behave in very different ways under actual fire conditions. Indeed, realistic test data reflects the following:

1. The Type of Plastic

Building materials made of different type of plastics, such as high density polyethylene (HDPE), polyvinyl chloride (PVC), unplasticised polyvinyl chloride (uPVC), polyethylene (PE), polypropylene (PP), acrylonitrile butadiene styrene (ABS) etc, are commonly used in modern buildings. These plastics soften, melt or burn at different rates and temperatures. Fire stopping products, particularly collars, have to be shown capable of coping with all variables, including the full range of diameters, in all different plastic thicknesses, in both horizontal and vertical orientations.

2. Pipe Diameters

The bigger the pipe the more difficult it is to seal, mainly due to the rate of the intumescent reaction for the fire stopping material to seal the openings.

3. The Orientation of Pipe (to Wall or Floor)

Pipes tested in a floor will not necessarily behave in the same manner when tested in a wall and the reverse equally applies.

4. The Wall Thickness of Pipe

Thin wall pipes collapse fast and fire collars have to react swiftly to close the opening. Thick walled pipes collapse slowly and fire collars have to retain sufficient expanded intumescent product to seal openings over a longer period of exposure.

5. Pipe End Conditions During Test

Pipes that have been fire tested with both the end inside and the end outside of the test furnace and capped (sealed) must only be protected with these fire collars when the end conditions on site are similar.

It is generally accepted that if a pipe is tested with the end inside the furnace capped, and the end outside the furnace uncapped, that this test would cover storm waste, sewage and water supply. If pipes are tested with both ends capped, this would represent a less onerous position, e.g. pipes that have taps or valves or water traps in line.

The Promat range of fire collars are purpose made of plastic (cast-in) painted steel shells (retrofit) with integral mounting points, containing a specially formulated intumescent material. They prevent the passage of fire through gaps in compartment walls and floors caused by the collapse and/or melting of combustible services in the event of fire. It is essential that the correct fire collars are specified and that they are installed in accordance with Promat instructions.

As a general rule there are THREE (3) types of collars:

Surface Mounted (Retrofit) Type

Surface mounted collars (also known as retrofit collars) are fixed around the plastic pipe, onto the surface of a building element. For floor slabs this is on the underside of the slab. For walls, they are generally placed on both sides to protect against fire exposure from either direction.

If it can be shown that the fire can only come from one side, then the fire collar may be placed on the fire risk side of the wall provided that test data is available to prove the application achieves the required fire resistance. PROMASTOP® UniCollar® (with the code of UC) and PROMASEAL® fire collars (with the code of CFC, FC or FCS) can all be used as retrofit collars.

Insert Type

Insert collars are placed around the pipes, within the thickness of the wall or floor. Generally, only one collar is required to protect from either direction for walls.

PROMASEAL® Wall Collars (with code FCW) can be used as insert wall collars. These collars sit within the cavity of lightweight partitions, ideal for use where space is at a premium. This is particularly useful for work in shafts or any area where access for installation is restricted to one side.

PROMASTOP® UniCollar® may also be used on some types of pipe for these applications.

Cast-in Type

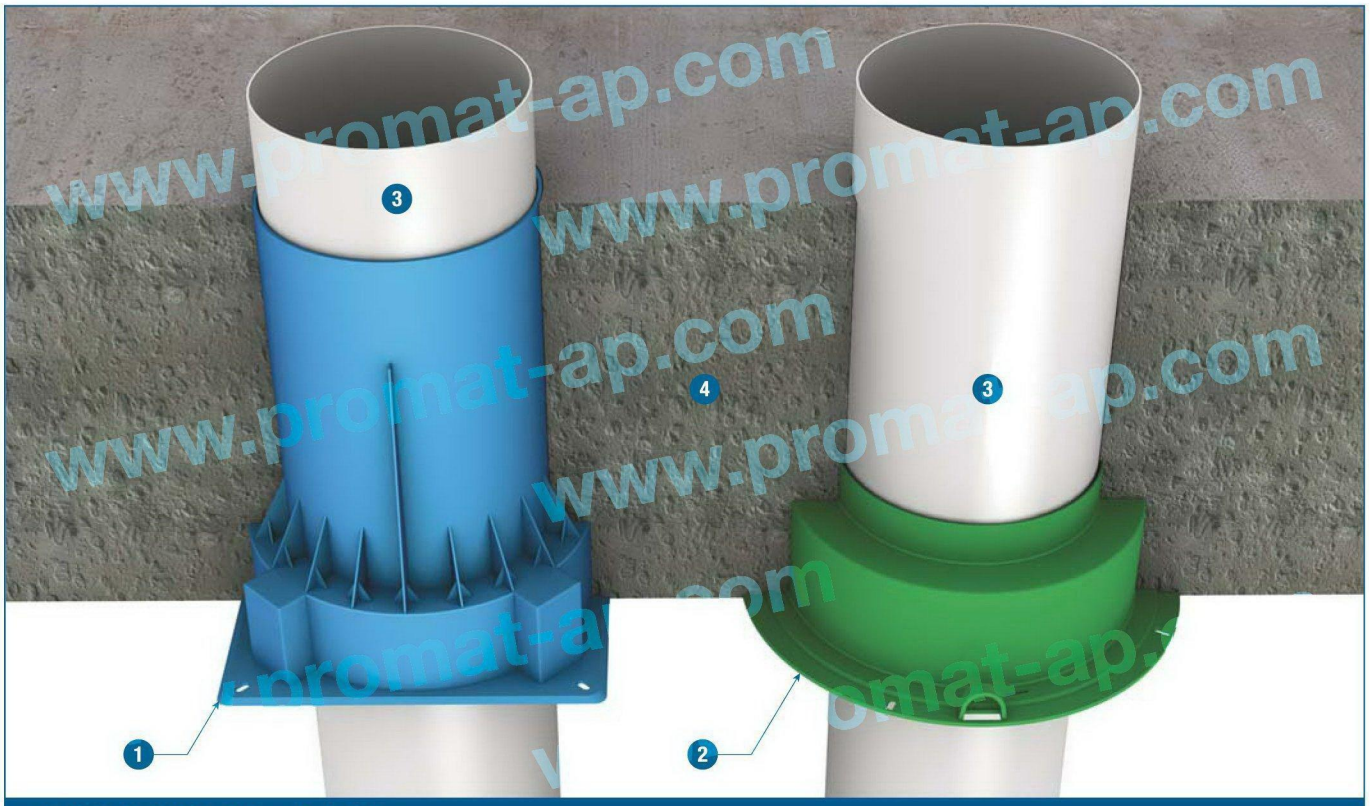
Cast-in collars are used only in floor slabs and are placed into position, on the formwork, before a slab is poured. This method means accurate setting out of all plumbing work is vital.

PROMASEAL® fire collars (with the code of Hi-Blu, Green or PSS), can be used as cast-in collars. For use with floor waste, there are two special collars, PROMASEAL® cast-in type collar (FWS) and retrofit type collar (FWR).

Recommended Specification

Where appropriate, the specified plastics penetrations through floor/wall openings should be properly fire stopped using a PROMASTOP®/PROMASEAL® collar capable of providing fire resistance of -/240/-, -/240/240, -/180/180 or -/120/120 or as specified in the appropriate regulations or by the relevant regulatory body, when tested and assessed in accordance with AS1530: Part 4 or BS476: Part 20: 1987 as applicable. From 2008 the BCA no longer allows the waiving of insulation criteria for plastic pipe penetrations as a Deemed to Satisfy solution. Such waiving is now treated as an alternate solution. Installation of any fire stopping product should be carried out according to the manufacturer's recommendations. Please consult Promat for further details.

IMPORTANT: Because of the diversity of applications and Promat's on-going test programme, the above information and the following notes in this section are of a general nature only and it is essential to confirm that the fire collar specified or being installed is approved for use on the size and type of plastic pipe, the orientation and type of service. Always contact Promat to confirm the specification is correct.



TECHNICAL DATA

1. For FRL up to -/240/180 (uPVC) and -/240/240 (HDPE), insulation criteria will vary depending on type and sizes of the pipes, and the type of penetrating elements.
   PROMASEAL® Hi-Blu Collar
2. For FRL up to -/240/240
   PROMASEAL® Green Cast-in Collar
3. **Plastic piping, e.g. HDPE, uPVC etc.**
4. **Concrete floor slab**

PROMASEAL® Hi-Blu Collar

PROMASEAL® Hi-Blu Collar is designed to be fixed to formwork prior to pouring of concrete floor slabs. It has been tested with various uPVC and HDPE pipes achieving a fire resistance up to 240 minutes in accordance with AS1530: Part 4 and AS4072: Part 1. Hi-Blu comes in THREE 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.

PROMASEAL® Green Cast-in Collar

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

PROMASEAL® Green Cast-in Collar will close both pipe and pipe fitting in the event of fire. The collar has been tested for up to 240 minutes in accordance with AS1530: Part 4 and AS4072 with uPVC and some HDPE pipes. The collar provides integrity only criteria when tested to AS1530: Part 4 and AS4072: Part 1 for uPVC floor waste traps of 50mm and 80mm diameters. BCA 2008 no longer allows the waiving of insulation criteria for plastic pipe penetrations as a Deemed to Satisfy solution. Such waiving is now treated as an alternate solution.

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

Dimensions Guide

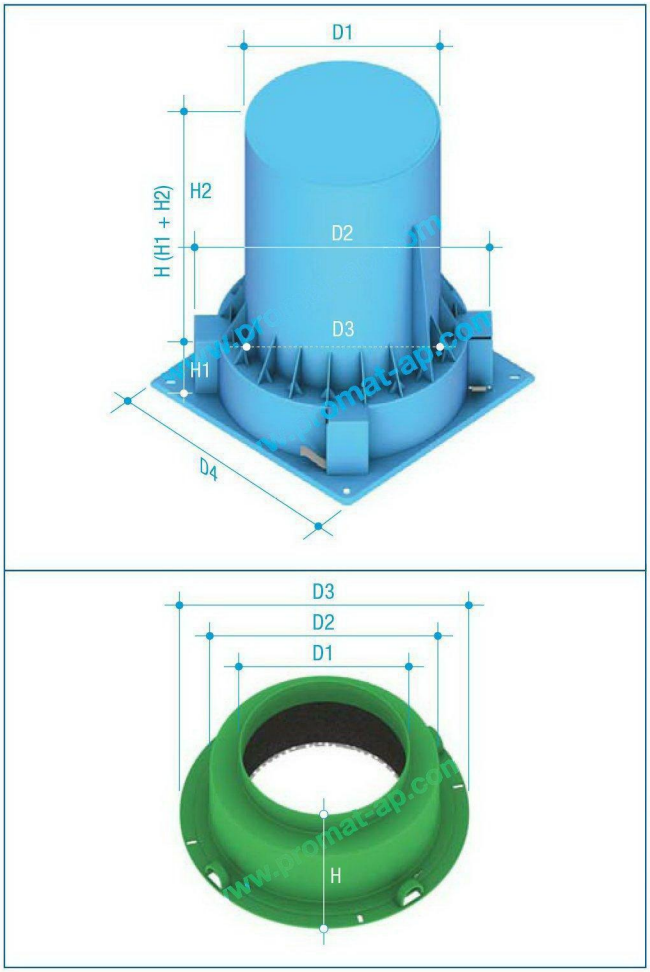
PROMASEAL® Hi-Blu Collar

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

PROMASEAL® Green Cast-in Collar

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

*Additional height of upright pipe grip



Dimensions of PROMASEAL® Green Cast-in Collar and Hi-Blu Collar.

Installation Guide

PROMASEAL® Hi-Blu Collar

PROMASEAL® Hi-Blu Collars accommodate the pipe fitting inside the soffit of the slab enabling height space savings to be achieved.

position with 20mm x 3mm flat head clouts, nailed through the notches provided. DO NOT SKEW THE NAILS. After the formwork is stripped, the short section of pipe used during casting may be knocked out of the collar and replaced with the complete pipe section.

It should be noted that if the pipe is pushed in from the top, the rubber seal will be forced downwards. Lift the pipe slightly to ensure that the rubber seal projects upwards. Any gap between the pipe and the collar must be back filled with concrete or commercial grade mortar mix.

PROMASEAL® Green Cast-in Collar

Nail or screw the collar to the formwork through the slots in the flange of the collar.

The collar sizes range from pipe OD 43mm to 110mm for fire ratings up to 180 minutes with uPVC and HDPE pipe. Different collar designs for various applications have FRL's ranging up to 240 minutes.

PROMASEAL® Green Cast-in Collars have been tested for 240 minutes with 50mm and 80mm uPVC floor waste systems for integrity only in accordance with the provisions of the BCA (insulation criteria waived). For 100mm floor waste pipes, please contact Promat for information to enable compliance with the provisions of the BCA.

Promat

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

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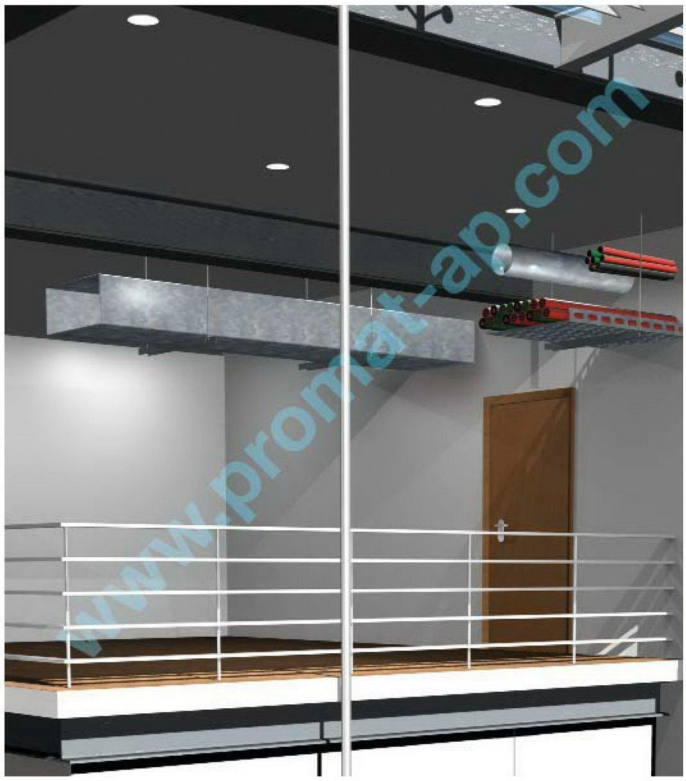
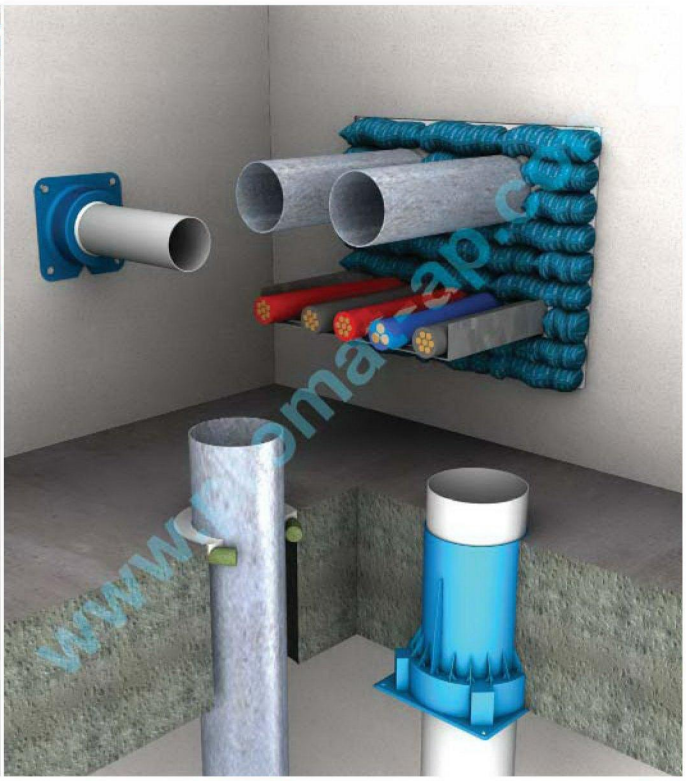
PROMASEAL® Retrofit Collars For Plastic Pipes Fire Protection





Introduction

Fire resisting compartments are created to inhibit and prevent fire and smoke from spreading within building structures. This also creates a parallel threat as most concealed cavities between fire resisting walls and floors are interlinked. The importance of sealing gaps in this type of construction is thus vital to the integrity of compartmentation systems and their ability to prevent fatalities and loss of property. Such gaps are typically service penetrations through walls and floors but also include gaps created for structural movement and gaps due to poor workmanship.

These unfortunate but inevitable facts of construction industry life have led in recent years to the increased development of effective solutions to seal gaps wherever they occur. Intumex is a leading worldwide solution provider.

It should be noted that every service passing through fire resistant building elements reacts in a different way to fire, heat, smoke and fumes. There is no single solution, product or system that will protect all services.

Services must be tested in accordance with the test method outlined in appropriate standards. Tests are generally carried out in accordance with the General Principles of BS476: Part 20: 1987 or EN1366: Part 3 and 4 covering both penetration seals and linear joint seals respectively. In addition, many countries use the Australian Standard AS4072: Part 1: 2005 (Components for the Protection of Openings in Fire-Resistant Separating Elements), which specifies testing in accordance with the test method set out in AS1530: Part 4: 2005. It is also important to note that although all of the above test methods can be considered similar, there are some major differences which affect particular applications. Please see following pages for comparative test method/data.

Failure Criteria

Failure is measured in terms of integrity and insulation. Stability (or Structural Adequacy) is not recorded for service penetrations except those which are required to be loadbearing, e.g. PROMASTOP® Cement.

Integrity failure occurs when cracks, holes or openings allow the passage of flames or hot gases. Furthermore, integrity failure is measured in different ways, depending on which standard is used.

For example, AS1530: Part 4: 2005 measures integrity failure as flaming on the unexposed face for a time greater than 10 seconds and by using a cotton pad, held against any gap, to see if the cotton pad ignites within 10 seconds. Other standards measure integrity failure using the same criteria but also using additional methods such as:

a) using a cotton pad, held against any gap, to see if the cotton pad ignites within 10 seconds; or

b) if the gap is equal to or greater than 150mm x 6mm; or

c) if a 25mm diameter probe can pass through a gap.

Insulation failure occurs when the temperature rise on the unexposed surface of the service, on the unexposed face of the building element 25mm from the penetration or on the seal itself exceeds 180°C. Insulation failure is inevitable on many metal service penetrations and is often waived as a failure criterion by local building regulations. Under such circumstances it is essential that combustibles be kept at least 100mm clear of these services at the point of penetration.

The PROMASEAL® and PROMASTOP® range of products were introduced to complement Promat's wide range of fire protection board systems.

Due to the ongoing development of fire test standards for this product, penetration seals and similar applications, only brief details can be provided at the time of this press. For detailed information and advice on the current range of PROMASEAL® and PROMASTOP® range of products, please contact Promat.

IMPORTANT: Because of the diversity of applications and the on-going test programme, the above and the following notes in this section are of a general nature only and it is essential to confirm that the system specified or being installed is approved for use. Always contact Promat to confirm the specification is correct prior to usage.

Penetration Seals
Comparison of Building Standards

	British Standards BS476: Part 20: 1987	European Standards EN1366: Part 3: 2004/ EN1366: Part 4: 2006	Australian Standards AS4072: Part 1: 2005/ AS1530: Part 4: 2005	United States Standards ASTM E814: 1997/ UL1479: 1998
Orientation	Requires representative specimen in both orientations. For asymmetrical specimens, a test should be conducted from each side using separate specimens.	Representative or standard service configurations tested both in horizontal and vertical orientation.	Requires full size or representative specimen and testing in both horizontal and vertical orientation if intended for use in both orientation. Provide standard test configurations.	UL requires both orientations must be tested unless it can be demonstrated that testing in a single orientation does not affect the results. ASTM does not specify but there are differences in temperature and pressure measurements for the two orientations so that, by default, both would be required.
Test sample	Does not specify projection distances of through penetrating elements. The end conditions of pipes should reflect the "as installed" conditions.	The services shall be installed so that they extend 500mm on each side of the supporting construction, of which at least 300mm shall extend beyond the extremities of the sealing system. No part of the service shall be <200mm from the furnace wall or another service. Movement joint seals shall be installed in uniform design cross-sectional area and to maximum length that can be accommodated by separating test element. For non-movement joint seals a shorter length may be used subject to a minimum of 900mm.	The ends of the services shall be sealed on the exposed side of the furnace, to simulate normal extension through compartment. If the end condition of the the unexposed side is unspecified, it shall be left unsealed. The penetrating element shall extend 500mm into the furnace and 2000mm outside the furnace for plastic pipes, all other elements are 500mm inside and outside the furnace.	The penetrating item should extend into the furnace by 300mm and out of it by 910mm. The end of the item on the exposed face is capped, but uncapped on the unexposed side, unless is it to represent a closed system in which case it may be capped. The periphery of the specimen should not to be closer than 1.5 the thickness of the assembly, or 300mm to the furnace edge, whichever is greater.
Conditioning	Materials shall, at time of test, be at a condition approximating the state of strength and moisture content that would be expected in normal service.	The test specimens shall not be tested until both strength and moisture content approximate values the service expects to attain.	The test specimens shall not be tested until both strength and moisture content approximate values the service expects to attain.	Prior to fire testing, each test sample and test assembly is to be conditioned, if necessary, to provide a moisture condition likely to exist in similarly constructed buildings.
Protection of assembly and sample	Ambient temperature should be within 5-35°C prior to heating period, and temperature measurements on the unexposed face must be in draught-free conditions.	Provide reference for test frames and the ambient condition must be 20°C(±10°C) at the commencement of test. During testing, the laboratory temperature shall not decrease >5°C or increase by >20°C for all insulated separating elements while they still satisfy the insulation criterion.	Not specified except that the initial furnace temperature must be not less than 10°C and not more than 40°C.	The testing equipment and test sample are to be protected from any condition of wind or weather that might influence the test results (i.e. ambient temperature at the time of testing must be within 10-32°C while the velocity of air across the sample must not exceed 1.3m per second).
Pressure differential	At mid height of vertical systems, the pressure differential is 15Pa, and the same pressure 100mm below horizontal systems.	For a vertical system with height <1000mm, the pressure differential should be 15±2Pa. If the height >1000mm, pressure differential should be 20±2Pa at the top of the specimen. In this case penetrations should be included in the zone where the pressure is >10Pa. For a horizontal system, the pressure differential should be 20±2Pa at 100±10mm under the supporting construction.	Not less than 20Pa at notional 100mm below the soffit height of horizontal element or at a level with lowest point of the penetration seal of a vertical element it should be 15Pa±3.	Except for the first 10 minutes of the test, the furnace pressure shall be at least 2.5Pa greater than the pressure on the unexposed side of the following locations: a) Wall – at lowest elevation of the test specimen; b) Floors – at the location of the pressure probes. Test sponsor may also specify a unique pressure condition in which case it must be maintained throughout the duration of the test, excluding the first 10 minutes, within 20% of the specification.

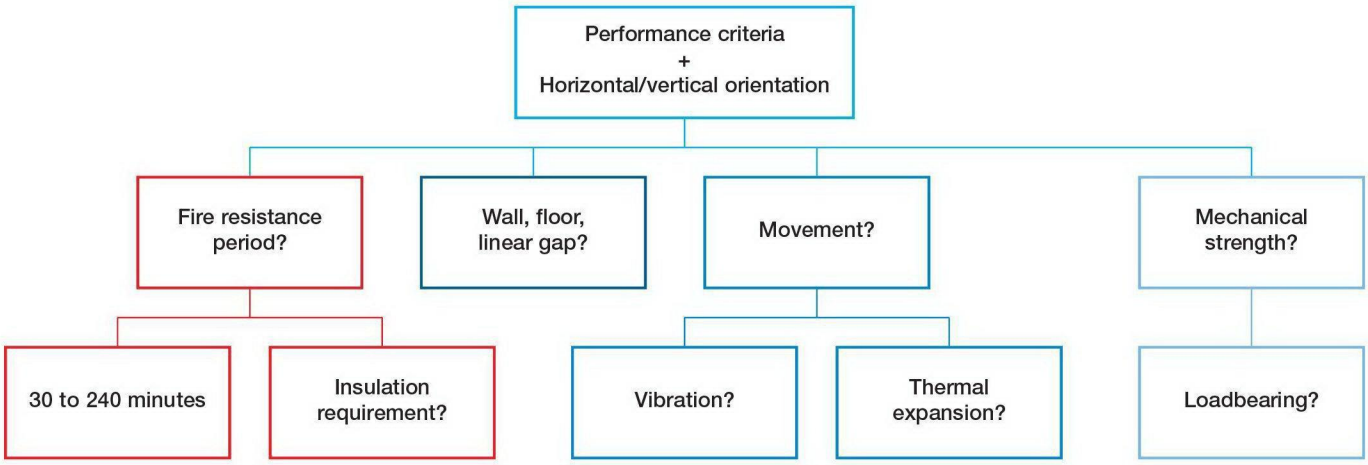
Promat

Penetration Seals
Comparison of Building Standards

	British Standards BS476: Part 20: 1987	European Standards EN1366: Part 3: 2004/ EN1366: Part 4: 2006	Australian Standards AS4072: Part 1: 2005/ AS1530: Part 4: 2005	United States Standards ASTM E814: 1997/ UL1479: 1998
Integrity	a) Cotton pad test; b) Gap gauge; c) Sustained flaming of more than 10 seconds.	a) Cotton pad test is generally performed. For penetration seal tests the use of reduced size cotton pad is permitted if necessary. b) Whilst gap gauge is used for measurement in general test specimens, it shall not be used for evaluation of penetration and linear joint seals tests. c) Sustained flaming.	Failed when: a) Cotton pad test, or b) Flaming takes place at the unexposed face of the specimen for a period exceeding 10 seconds.	Shall not permit the passage of flame throughout the fire test, or water through the hose stream test. Mandatory for all ratings in both standards, i.e. ASTM and UL.
Insulation	The insulation of the specimen is judged to have failed if the temperature on the unexposed side and on penetrations reaches 180°C above the initial temperature.	The insulation of the specimen is judged to have failed if the temperature on the unexposed side and on penetrations reaches 180°C (K) above its initial temperature.	The criteria for failure of insulation is if the temperature of any of the thermocouples on the unexposed side reaches 180°C above the initial temperature.	Shall not permit the passage of flame through the fire test, or water through the hose stream test or allow the temperature to increase by 180°C on the unexposed side. Mandatory for T rating in both standards.
Hose stream test	No specification.	No specification.	No specification.	For both F and T ratings, a duplicate specimen is subjected to a fire exposure test for period half of the desired rating but not more than 60 minutes. Immediately after the fire exposure, the specimen shall be subject to the hose stream test. Same test assembly can be used for both tests but must take place within 10 minutes from the completion of the fire test.
Specification	a) Integrity; b) Insulation; c) Loadbearing capacity where applicable.	a) Integrity; b) Gap gauge (not applicable for penetration and linear joints seal tests); c) Cotton pad; d) Insulation; e) Insulation area 2 (if the test element incorporating two discrete areas of different thermal insulation).	AS1530: Part 4 states results to be expressed in: a) Integrity; b) Insulation.	Specified in terms of F rating which require a hose stream test, and T rating which does not require a hose stream test, measures the insulation. UL have an additional L rating for air-leakage.
Reporting	a) Temperature data from all specified critical thermocouple; b) A detailed description of all penetrating services; c) A detailed description of the test construction.	In addition to requirements of EN1363: Part 1, the following are necessary for penetration seal tests: a) For tests on pipes, statement of the pipe end configuration (capped or uncapped); b) For cables, the cable dimensions; c) For metallic pipes, the pipe dimensions; d) For unsupported seals, the maximum area free of services; e) Whether multiple penetrations have been tested in a single test construction. For linear joint seal test, the following shall be included: a) Full description of any procedure used to induce relative movement of the seal faces; b) Orientation of test specimen; c) The limits of the range of nominal widths and the movement capability successfully tested; d) Full description of the splicing method(s) used.	In addition to the requirements of AS1530.3, some of the requirments in AS1530.3: Part 4 are: a) Temperature data from all specified critical thermocouple; b) A detailed description of all penetrating services; c) A detailed description of the test construction.	Report must have: a) Description of assembly and materials; b) Relative humidties; c) Temperature recordings; d) The achieved rating; e) Location of pressure probes and differential pressure of the test; f) Record of all observations; g) Correction factor.
Commentary	For positions of thermocouples and other items not specified in this standard, laboratories refer to the EN standard.	These standards are now in effect for use within the industry.	Comprehensive and simple standard configurations, as well as details on permissible variations.	UL also have an addition L rating which is to be reported as the largest leakage rate determined from the air leakage test.

Which System(s) To Use

As penetrations can occur in various building elements, there are a number of important criteria that require consideration in determining the appropriate type of sealing system to be used, simplified in the following chart.

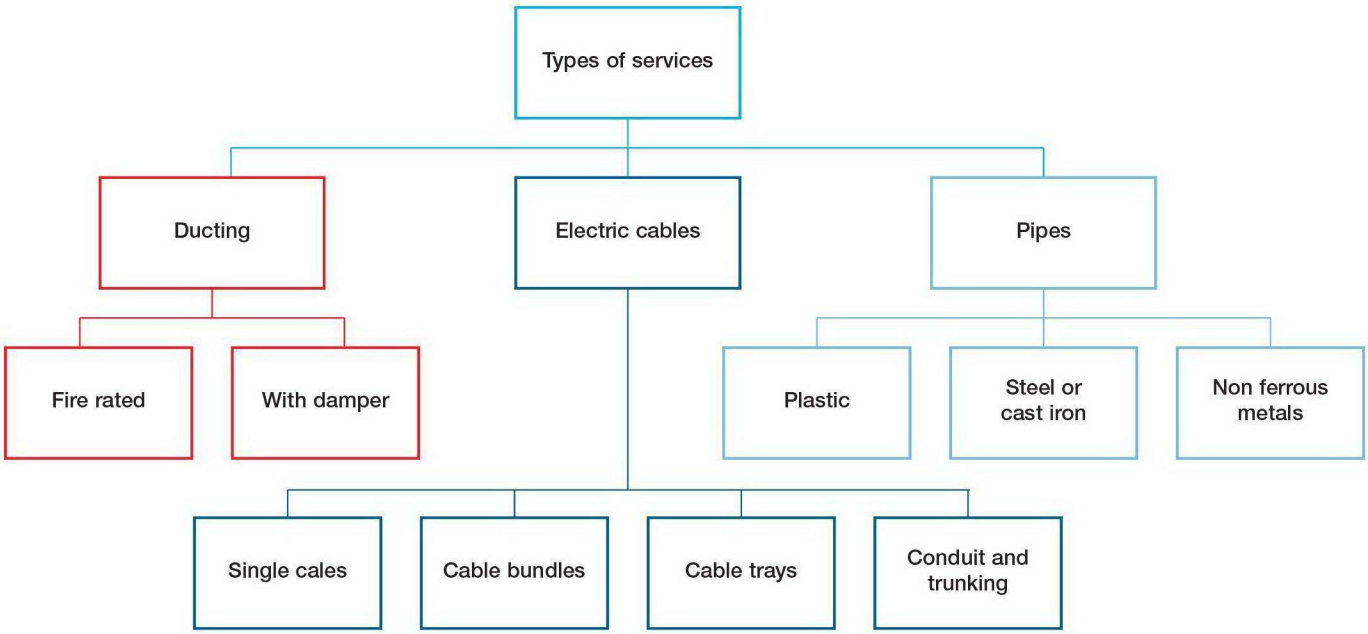


Limitations of Use

- Size of opening
- Penetration services
- Flexibility of seal(s)
- Smoke or gas lightness
- Ambient conditions
- Design life
- Frequecy of change to services
- Parent construction (type of substrate)

Special Considerations

In instances where electrical and mechanical services are involved, the selection of penetration sealing system also require the following additional elements to be carefully considered.



Compatability Considerations

- Intumescent systems in lightweight constructions
- Rigid seals in “dynamic” barriers
- Large spans and thermal expansion
- Smoke or toxicity in populated zones
- Dusty or friable materials in clean room applications

It has been shown that plastic pipes penetrating compartment walls or floors or other fire barriers represent potential for fire to pass from one compartment to another when the plastic burns and melts away. All building regulations specify that the fire resistance of the separating element of construction between compartments must not be impaired by services that pass through them.

In general, methods of maintaining acceptable fire resistance will vary between countries and regulatory authorities. The most common method of fire resistance, however, is to install fire collars around plastic pipes, penetrating separating elements.

All fire collars are designed to prevent the spread of fire where plastic pipes, cables and other services penetrate fire resistant elements of construction, maintaining the Fire Resistance Level (FRL) of the element.

Virtually all fire collars consist of intumescent compounds which, exposed to fire or sufficient heat, expand under pressure to set and seal the penetrations. The unique and patented design of PROMASEAL® and PROMASTOP® collars contain no asbestos, fibres or solvents. They are unaffected by water and most atmospheric conditions

In the case of plastic pipe penetrations, it should be clearly noted that particular care must be exercised when accepting assessments or test reports. Abundant research and empirical data indicates that different types of plastic behave in very different ways under actual fire conditions. Indeed, realistic test data reflects the following:

1. The Type of Plastic

Building materials made of different type of plastics, such as high density polyethylene (HDPE), polyvinyl chloride (PVC), unplasticised polyvinyl chloride (uPVC), polyethylene (PE), polypropylene (PP), acrylonitrile butadiene styrene (ABS) etc, are commonly used in modern buildings. These plastics soften, melt or burn at different rates and temperatures. Fire stopping products, particularly collars, have to be shown capable of coping with all variables, including the full range of diameters, in all different plastic thicknesses, in both horizontal and vertical orientations.

2. Pipe Diameters

The bigger the pipe the more difficult it is to seal, mainly due to the rate of the intumescent reaction for the fire stopping material to seal the openings.

3. The Orientation of Pipe (to Wall or Floor)

Pipes tested in a floor will not necessarily behave in the same manner when tested in a wall and the reverse equally applies.

4. The Wall Thickness of Pipe

Thin wall pipes collapse fast and fire collars have to react swiftly to close the opening. Thick walled pipes collapse slowly and fire collars have to retain sufficient expanded intumescent product to seal openings over a longer period of exposure.

5. Pipe End Conditions During Test

Pipes that have been fire tested with both the end inside and the end outside of the test furnace and capped (sealed) must only be protected with these fire collars when the end conditions on site are similar.

It is generally accepted that if a pipe is tested with the end inside the furnace capped, and the end outside the furnace uncapped, that this test would cover storm waste, sewage and water supply. If pipes are tested with both ends capped, this would represent a less onerous position, e.g. pipes that have taps or valves or water traps in line.

The Promat range of fire collars are purpose made of plastic (cast-in) painted steel shells (retrofit) with integral mounting points, containing a specially formulated intumescent material. They prevent the passage of fire through gaps in compartment walls and floors caused by the collapse and/or melting of combustible services in the event of fire. It is essential that the correct fire collars are specified and that they are installed in accordance with Promat instructions.

As a general rule there are THREE (3) types of collars:

Surface Mounted (Retrofit) Type

Surface mounted collars (also known as retrofit collars) are fixed around the plastic pipe, onto the surface of a building element. For floor slabs this is on the underside of the slab. For walls, they are generally placed on both sides to protect against fire exposure from either direction.

If it can be shown that the fire can only come from one side, then the fire collar may be placed on the fire risk side of the wall provided that test data is available to prove the application achieves the required fire resistance. PROMASTOP® UniCollar® (with the code of UC) and PROMASEAL® fire collars (with the code of CFC, FC or FCS) can all be used as retrofit collars.

Insert Type

Insert collars are placed around the pipes, within the thickness of the wall or floor. Generally, only one collar is required to protect from either direction for walls.

PROMASEAL® Wall Collars (with code FCW) can be used as insert wall collars. These collars sit within the cavity of lightweight partitions, ideal for use where space is at a premium. This is particularly useful for work in shafts or any area where access for installation is restricted to one side.

PROMASTOP® UniCollar® may also be used on some types of pipe for these applications.

Cast-in Type

Cast-in collars are used only in floor slabs and are placed into position, on the formwork, before a slab is poured. This method means accurate setting out of all plumbing work is vital.

PROMASEAL® fire collars (with the code of Hi-Blu, Green or PSS), can be used as cast-in collars. For use with floor waste, there are two special collars, PROMASEAL® cast-in type collar (FWS) and retrofit type collar (FWR).

Recommended Specification

Where appropriate, the specified plastics penetrations through floor/wall openings should be properly fire stopped using a PROMASTOP®/PROMASEAL® collar capable of providing fire resistance of -/240/-, -/240/240, -/180/180 or -/120/120 or as specified in the appropriate regulations or by the relevant regulatory body, when tested and assessed in accordance with AS1530: Part 4 or BS476: Part 20: 1987 as applicable. From 2008 the BCA no longer allows the waiving of insulation criteria for plastic pipe penetrations as a Deemed to Satisfy solution. Such waiving is now treated as an alternate solution. Installation of any fire stopping product should be carried out according to the manufacturer's recommendations. Please consult Promat for further details.

IMPORTANT: Because of the diversity of applications and Promat's on-going test programme, the above information and the following notes in this section are of a general nature only and it is essential to confirm that the fire collar specified or being installed is approved for use on the size and type of plastic pipe, the orientation and type of service. Always contact Promat to confirm the specification is correct.

PROMASEAL® FC Retrofit Collar (square base)

PROMASEAL® FC Retrofit Collars are multi-purpose collars designed for use with concrete slabs, masonry and lightweight walls and lined ceilings.

These split type collars can be retrofited where necessary. They are available in a range of sizes to suit plastic pipes up to 315mm *outside diameter**. The collars have been tested for up to 240 minutes FRL in accordance with the criteria of AS1530: Part 4 and AS4072: Part 1 with various types and sizes of plastic pipe.

PROMASEAL® FC Retrofit Collars above 200mm have a circular base, not square as are smaller diameters.

**It should be noted that the FRL for some of the larger collars is restricted in some types of application, therefore before using any collar with a diameter in excess of 110mm, please consult Promat to ensure the proposed application and requisite FRL can be achieved.*

PROMASEAL® FCS Retrofit Collar (circular base)

PROMASEAL® FCS Retrofit Collars are designed to be fitted around installed pipes that pass through floor slabs and have been tested with uPVC, HDPE and ABS pipes in accordance with the criteria of AS1530: Part 4 and AS4072: Part 1, on pipes up to 150mm diameter.

The larger opening within the collars will accommodate pipes (and UPVC pipe fittings) that have differing outside diameters.

The collars should be unclipped, placed around the pipe, re-clipped and pushed tight to the substrate.

PROMASEAL® FCS Retrofit Collars have been tested for FRL of up to 240 minutes in floors with uPVC pipes and ABS pipes, and 180 minutes in floors with HDPE pipe (except 100mm which is tested to 240 minutes), and on floors and walls for Post Mix drink lines for 120 minutes.

Both PROMASEAL® FC and FCS Retrofit Collars are split to enable them to be retrofitted or relocated when necessary.

Installation Guide

PROMASEAL® FC/FCS Retrofit Collar
For pipes up to 315mm/162mm diameter with mortar

PROMASEAL® FC and FCS Retrofit Collars are to be fixed to the under side of the floor slabs. Ensure all fixing points are used. Maximum diameters of pipes for FC type is up to 315mm and FCS type up to 162mm.

For FRL of up to 240 minutes with pipes up to 225mm outside diameter, the collars are bolted to the soffit of a floor slab using 38mm steel expanding anchors or steel wedge anchors. Fixings for collars up to 162mm diameter may be 25mm steel sleeve anchors. Pipes with 315mm outside diameter can achieve up to 120 minutes fire resistance in this application.

FC type collars greater than 250mm are for un-vented pipes.

PROMASEAL® AN Acrylic Sealant may be applied around the pipe on the top side if a water seal is required. If there is a possibility of pipe movement occurring that will cause cracks or fissures in the seal between the pipe and mortar mix, it is advisable to seal around the pipe with PROMASEAL® AN Acrylic Sealant to prevent cold smoke leakage. This, however is not required for the fire resistance to be achieved.

If there is a gap greater than 12mm between the pipe and cored hole, backfill with PROMASEAL® Mortar. For gaps less than 12mm, seal with PROMASEAL® AN Acrylic Sealant. See illustration on page 8 for example.

PROMASEAL® FC Retrofit Collar
For uPVC pipes up to 110mm diameter

For FRL of up to 120 minutes in masonry or lightweight walls for uPVC pipes up to 110mm* diameter.

For FRL of up to 120 minutes on calcium silicate, masonry and plasterboard walls for pipes up to 110mm outside diameter. Minimum wall thickness is 116mm. The collars must be on both faces for lightweight timber or steel framed walls.

Fix the collar to a masonry wall using 50mm Tapcon “Hi Lo”, course thread screws suitable for masonry fixing or use steel masonry anchors. Fix the collars with No.10 x 40mm laminating screws to lightweight timber or steel framed walls.

*For specific installation for collars over 110mm diameter and single-sided application, please contact Promat.

See illustration on page 8 for example.

PROMASEAL® FC Retrofit Collar
For pipes up to 162mm diameter

FC PROMASEAL® Retrofit Collars can be cast into floor slabs for uPVC pipes up to 162mm diameter for FRL of up to 120 minutes. The collar should be installed to the soffit side of the floor. See PROMASEAL® Hi-Blu Collar and PROMASEAL® Green Cast-in Collar for general cast in applications. See PROMASEAL® FWS and FWR Collars for floor waste applications.

Nail the collar to the formwork. Cut a length of the pipe and push it firmly into the collar until it touches the formwork. Ensure the pipe is cut square so that the pipe sits on the formwork level.

It should be noted that this collar type is not designed to take a pipe fitting. For such an application use a Hi-Blu or Green collar.

See illustration on page 9 for example.

PROMASEAL® FC Retrofit Collar
For pipes up to 162mm diameter with mortar

FC PROMASEAL® Retrofit Collars can also be installed into a cored hole with PROMASEAL® Mortar used to back fill for a flush fit. This application is for uPVC pipes up to 162mm diameter.

For FRL up to 120 minutes with pipes up to 162mm outside diameter, bolted to the soffit of a floor slab using 25mm steel expanding anchors. Ensure all fixing points are used. Back fill the hole in the slab with PROMASEAL® Mortar or commercial grade mortar mix.

See illustration on page 9 for example.

PROMASEAL® FC Retrofit Collar
For pipes up to 162mm diameter with acrylic sealant on ceiling

FC PROMASEAL® Retroft Collars can be installed to uPVC and HDPE pipes in 60 or 120 minutes fire resistant ceilings. Use PROMASEAL® AN Acrylic Sealant to seal edges, provide additional framing to support the collar. This application is for pipes up to 162mm diameter.

60 and 120 minutes applications with pipes up to 162mm outside diameter, screw fixed to the framing grid to the underside of a ceiling system that provides a similar fire rating. The gap between the pipe and the opening through the ceiling liner board must be no more than 15mm and should be filled with PROMASEAL® AN Acrylic Sealant to the full depth of the lining board. Specific details are available for various ceiling systems on request.

See illustration on page 9 for example.

IMPORTANT: Always check with the Promat Technical Department to ensure the collar type under consideration is appropriate for the type, diameter, and thickness of the plastic pipe and the application and orientation are covered by relevant certification.

TECHNICAL DATA

For FRL up to -/240/240, insulation criteria will vary depending on type and sizes of the pipes, and the type of penetrating elements.

1. PROMASEAL® FC Retrofit Collar (square base)
2. PROMASEAL® FCS Retrofit Collar (circular base)
3. Fixing with suitable anchor, i.e. steel expanding fasteners or laminating screws.
4. Plastic piping, e.g. HDPE, uPVC etc.
5. Masonry or concrete floor slab/wall
6. Existing fire resistant wall, constructed from masonry or concrete, timber or steel framed lightweight partition.
7. PROMASEAL® AN Acrylic Sealant to act as a seal against the passage of cold smoke (not required for fire performance if the movement of cold smoke is not being considered)

NOTE: FCS collars allow for fittings and couplings to go within the collar depth, thus allowing pipes to fit closer to the substrate.

Dimensions Guide

PROMASEAL® FC Retrofit Collar (square base)

Code no.	Pipe nom. (mm)	Body (mm)			Flange (mm)
		H	D1	D2	D3
FC 40	40	43	45	77	112
FC 50	50	43	58	90	125
FC 65	65	43	71	103	138
FC 80	80	43	85	123	158
FC 100	100	53	112	150	185
FC 125	125	63	127	165	197
FC 150	150	73	162	200	235
FC 250*	250	120	254	316	380 Ø
FC 300*	300	160	318	402	466 Ø

*FC with circular base

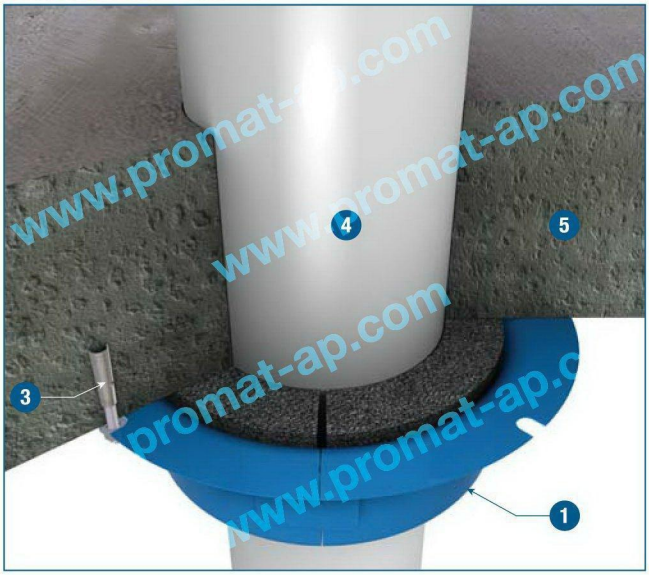
PROMASEAL® FCS Retrofit Collar (circular base) – For floors only

Code no.	uPVC pipe nom. (mm)	HDPE pipe nom. (mm)	ABS pipe nom. (mm)	Body (mm)			Flange (mm)
				H	D1	D2	D3
FCS 40	40	50	40	43	56	84	131
FCS 50	50	56	50	43	70	98	145
FCS 65	65	75	–	43	84	113	161
FCS 80	80	90	80	43	98	138	186
FCS 100	100	100	100	53	127	167	214
FCS 150	150	150	–	70	172	212	259

Dimensions of PROMASEAL® Retrofit Collar, FC (square) and FCS (circular) types.

PROMASEAL® FC Retrofit Collar
For pipes up to 162mm diameter

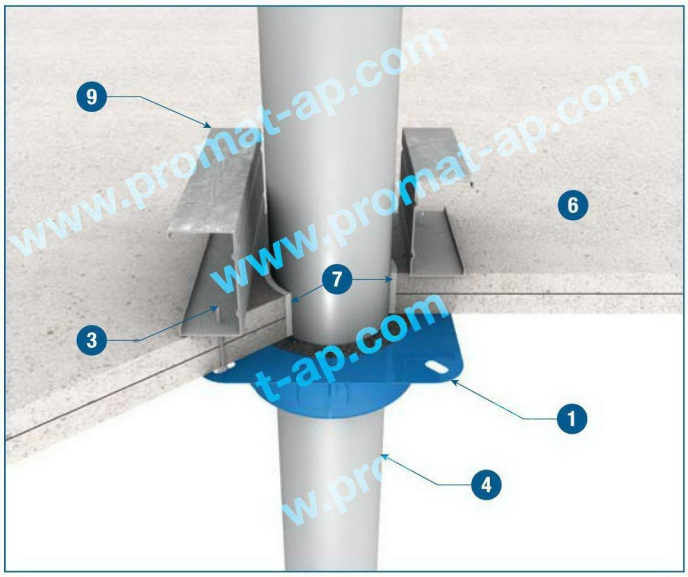
PROMASEAL® FC Retrofit Collar (>200mm diameter with circular base)
For pipes up to 315mm diameter



PROMASEAL® FC Retrofit Collar
For pipes up to 162mm diameter with mortar backfill

PROMASEAL® FCS Retrofit Collar
For pipes up to 162mm diameter

PROMASEAL® FC Retrofit Collar
For pipes up to 162mm diameter with acrylic sealant on ceiling



TECHNICAL DATA

For FRL up to -/240/240, insulation criteria will vary depending on type and sizes of the pipes, and the type of penetrating elements.

1. PROMASEAL® FC Retrofit Collar (square base)
2. PROMASEAL® FCS Retrofit Collar (circular base)
3. Fixing with suitable anchor, i.e. steel expanding fasteners or laminating screws.
4. Plastic piping, e.g. HDPE, uPVC etc.
5. Masonry or concrete floor slab
6. Existing fire resistant ceiling, constructed from lightweight boards
7. PROMASEAL® AN Acrylic Sealant to act as a seal against the passage of cold smoke (not required for fire performance if the movement of cold smoke is not being considered)
8. PROMASEAL® Mortar
9. Steel backing channels at fixing position

Promat

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

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Mob. 0417 525 123
danny@dhphc.com.au

9th September 2015

Integrated Project Group
Level 5, 845 Pacific Hwy,
Chatswood NSW 2067

Attention: Mr Rhys McInerney

Dear Sir,

RE: Warriewood (Stage 2) – Level 2 Bassike Fitout
2 Daydream Street, Warriewood NSW 2102

Hot Water Supply Certificate

I, Danny Hall, hereby certify that the Hot Water Supply to the above project has been installed in accordance with BCA Part J7, and Section 8 of AS 3500.4.

Yours Sincerely,
Danny Hall Plumbing Pty Ltd

Danny Hall
Director

DHP
DANNY HALL PLUMBING Pty Ltd
Hydraulic and Civil contractors

Danny Hall Plumbing Pty Ltd
PO Box 58, Galston NSW 2159
Ph. 02 9656 1800
Fax. 02 9656 1710
Mob. 0417 525 123
danny@dhphc.com.au

9th September 2015

Integrated Project Group
Level 5, 845 Pacific Hwy,
Chatswood NSW 2067

Attention: Mr Rhys McInerney

Dear Sir,

RE: Warriewood (Stage 2) – Level 2 Bassike Fitout
2 Daydream Street, Warriewood NSW 2102

Plumbing & Drainage Certificate

I, Danny Hall, hereby certify that all plumbing and drainage has been installed on the above project in accordance with AS 3500, and Volume 3 of the BCA.

Yours Sincerely,
Danny Hall Plumbing Pty Ltd

Danny Hall
Director

FLOORING

INSTALLATION CERTIFICATE

CERTIFICATION & SCHEDULE OF FIRE HAZARD PROPERTIES

Site Details:

Project Name.	**Bassike Head Office**				
Level/Unit no.	2	Street no. / Street name:		Daydream Street	
Suburb:	Warriewood	State:	**NSW**	Postcode:	2102

Description of Work: Installation of engineering timber floors

Development Consent:

Consent authority:

DA/CDC No.

Pursuant to the provisions of the Environment Planning and Assessment Regulations 2000 and Clause A2.2 of the Building Code of Australia:

I Jonas Urbonas (name) of JU Flooring (company)

hereby certify:-

that the following floor coverings, together with the relevant data sheet as list below, comply with the required critical radiant flux and smoke development rate for floor coverings in accordance with Specification C1.10 of the NCC Building Code of Australia.

Item	Finish	Product Name	Location	Data Sheet Reference
1	Engineering timber floor	"Tounge n Groove" Eterno engineering timber floors 189x15mm	Entry area,kitchen,dining area, corridors.	AWTA Product testing. Testing #7-587366-CN
2				
3				
4				
5				
10				

JU
FLOORING

a) Other practices or standards relied upon for this certification:

b) This Certificate relates to Whole / Part of the building (*nominate part if applicable*)

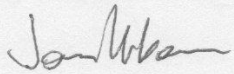
c) Exclusions: **Yes** (exclusions *must be clearly outlined*) or

No *(Certificate will be deemed unconditional & all inclusive)*

Details: _____

(Consultant to disclose any exclusion from specific certification)

Insurance Declaration: I do not possess Indemnity Insurance in relation to this project.

Name:	Jonas Urbonas	*Qualification:*	Builder
Company Name:	JU Flooring	*ABN No:*	22731889566
Company Address:	1/55 Chelmsford road S. Wentworthville	*Tel:*	0421230933
Signature:		*Position Title:*	Owner
		Date:	6/10/2015

Note: Attach all referenced data sheets to this certificate.

AWTA PRODUCT TESTING

Australian Wool Testing Authority Ltd - trading as AWTA Product Testing
A.B.N. 43 006 014 106
1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O. Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400 Fax (03) 9371 2499

TEST REPORT

CLIENT : TONGUE N GROOVE
LEVEL 2, 188 CHALMERS STREET
SURRY HILLS NSW 2010

TEST NUMBER : 7-587366-CN
ISSUE DATE : 08/10/2012
PRINT DATE : 10/10/2012

SAMPLE DESCRIPTION Clients Ref: "Tongue in Groove flooring"
Tongue 'n Groove engineered Oak timber flooring
Colour: Timber
Approx thickness: 15mm

Material Specification:
Nominal composition: Oak Timber
Approx total mass: 11.4kg/m2

ASISO 9239.1-2003 Reaction to Fire Tests for Floorings
Part 1 Determination of the Burning Behaviour
using a Radiant Heat Source

Date of sample arrival: 28/09/2012
Date tested: 04/10/2012
Results: CHF (Critical Heat Flux / Critical Radiant Flux)

	1	2	3	Mean	
Length	4.2	4.8	4.7	4.6	kW/m2
Width	6.2	-	-	-	kW/m2
		Smoke Value			
Length	13	8	19	13	% min
Width	10	-	-	-	% min

Observations: Glowing, Penetration of flame through substrate

Note: Sample was conditioned in accordance with BSEN 13238-2001 at a temperature of 23+/-2degC and Relative Humidity of 50+/-5% for a minimum of 48 hours prior to testing

Each specimen was clamped to a substrate of 6mm thick fibre reinforced cement board prior to testing

The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test, they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use

196748 1 (END OF REPORT) PAGE 1

This Laboratory is accredited by the National Association of Testing Authorities, Australia, for:
-Chemical Testing of Textiles & Related Products : Accreditation No. 983
-Mechanical Testing of Textiles & Related Products : Accreditation No. 985
-Heat & Temperature Measurement : Accreditation No. 1356

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MICHAEL A. JACKSON B.Sc.(Hons)
MANAGING DIRECTOR

0204/11/06 APPROVED SIGNATORY

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Integrated Project Group
ABN 86 803 600 493

14th September 2015

Tony Heaslip
Blacket Maguire+Goldsmith
Suite 2.01, 22-36 Mountain St
Ultimo NSW 2007

Dear Tony,

Re: Bassike Fitout works certification

We confirm all building works have been carried out in a good and workmanlike manner by appropriately licensed contractors, in accordance with all relevant codes and standards and in accordance with relevant conditions of the development consent and documentation approved under the complying development certificate.

Yours sincerely
Integrated Project Group

Rhys McInerney
Project Manager

Ωmega Partitions

Building. Quality. Safely.

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E: admin@omegapartitions.com.au

GLAZING CERTIFICATE

JOB ADDRESS: Bassike Head Office

2 Daydream Street

Warriewood, NSW, 2102

This letter is to certify that works have been inspected throughout construction and have been completed in accordance with design, specifications and the below nominated standards of performance.

Measure and/or System	Standard of Performance
Glazed Assembly, Glazed partitions, Windows/glass doors	BCA Clause F1.13; AS1288-2006; AS2047-1999

I, Frank Jeroncic of Omega Partitions Pty Ltd certify that:

(a) Each of the measures listed above

(i) Was assessed and installed by a properly qualified person and;

(ii) Was found, when it was assessed, to be properly implemented and to be capable of performing to a standard not less than that required by the most recent schedule for the subject for whom the schedule was issued.

(b) The information contained in this certificate is, to the best of my knowledge and belief, true and accurate.

Yours faithfully,

Frank Jeroncic

Project Manager
OMEGA PARTITIONS PTY LIMITED
Dated: 14th of September, 2015

Whiffen & Andrews The Air Conditioning Professionals

8 September 2015

Integrated Project Group
L5, 845 Pacific Highway
CHATSWOOD NSW 2067

Attention: Rhys McInerney

Dear Rhys

RE: Level 2 Bassike Fitout
Lot 17, 2 Daydream Street
WARRIEWOOD NSW 2102

CERTIFICATE OF DESIGN ***Mechanical Services***

SUBJECT PREMISES **LEVEL 2 BASSIKE FITOUT**

DEVELOPMENT APPLICATION

Pursuant to the provisions of **Clause A2.2 of the Building Code of Australia**, I hereby certify that the design for the above project is in accordance with normal engineering practice and will meet the requirements of the Building Code of Australia, any relevant fire safety engineering report, the Environmental Planning and Assessment Regulation, relevant Australian Standards, relevant conditions of the Development Consent and Engineered Solution. In particular the design intent will be in accordance with the following:

Australian Standard	BCA Clause Reference
AS/NZS 1668 – The use of ventilation and air conditioning in buildings Part 1 – 1998 Fire & smoke control in multi-compartment buildings	C2.5,C2.12,C3.15,D1.7,E2.2,F4.12, Spec E1.8, Spec E2.2a, Spec G3.8
AS1668 Part 2 – 2002 Mechanical ventilation for acceptable indoor air quality	F4.5, F4.11, F4.12
AS3000 – 2007 Amdt 1 2009	
AS 3666 Microbial Control of Air Handling & Water Systems in Buildings	F2.7, F4.5
AS4254.2 – 2012 – Ductwork for air-handling systems in the buildings	Spec C1.10, Spec J5.2
Energy Efficiency (Air Conditioning and Ventilation Systems)	Part J5 Spec J5.2 and 5.4

I am an appropriately qualified and competent person in this area and as such can certify that the design and performance of the design systems comply with the above.

I possess Indemnity Insurance to the satisfaction of the building owner or my principal.

Full Name of Designer:	Andrew Short
Qualifications:	B.E Mech. Eng. (Hons)
Address of Designer:	Unit 5-6 / 16 Narabang Way, Belrose NSW 2085
Business Telephone No:	02 9986 1199
Business Facsimile No:	02 9986 1299
Name of Employer:	Whiffen & Andrews Air Conditioning

Yours faithfully,

Whiffen & Andrews Air Conditioning

Andrew Short
Project Engineer

Whiffen & Andrews The Air Conditioning Professionals

Installation Mechanical Services - FINAL

CDC No	CDC-15074
Date of determination	27 July 2015
Date of issue	8 September 2015
Description of development	Office Fitout (L2 Bassike)
Subject land Address Lot, DP/MPS etc	Peninsula Business Estate Stage 2 Lot 17, 2 Daydream Street WARRIEWOOD NSW 2102
Type of Certificate (nominated type of certificate)	Installation – FINAL
Give details of the classification of the building in accordance with the Building Code of Australia (eg Class 1 (a))	5
Give details of the development and specific aspect of the development and the prescribed requirements it complies with	Air Conditioning and Mechanical Ventilation office fitout. Designed and installed to the requirements of BCA F4.5 and AS 1668.2 Appendix A.

Certification

Certificate

Certificate	I, Andrew Short
	Certify that: • The above described aspect of development complies with the prescribed requirement referred to above
Signature **Date of issue**	 **8 September 2015**

Whiffen & Andrews Air Conditioning
Unit 5-6/16 Narabang Way, BELROSE NSW 2085 Telephone: (02) 9986 1199 Fax: (02) 9986 1299

Whiffen & Andrews The Air Conditioning Professionals

Installation Mechanical Services

Certifier (company details)	**Whiffen & Andrews Air Conditioning**
Name of person signing off	**Andrew Short**
Address	**Unit 5-6, 16 Narabang Way Belrose NSW 2085**
Phone	**02 99861199**
Fax	**02 99861299**

Appendix A
Mechanical Standards

Australian Standard	BCA Clause Reference
AS/NZS 1668 – The use of ventilation and air conditioning in buildings Part 1 – 1998 Fire & smoke control in multi-compartment buildings	C3.15, E2.2, Spec E2.2a
AS1668 Part 2 – 2012 Mechanical ventilation for acceptable indoor air quality	F4.5
AS3000 – 2007 Amdt 1 2009	
AS 3666 Microbial Control of Air Handling & Water Systems in Buildings	F2.7, F4.5
AS4254.2 – 2012 – Ductwork for air-handling systems in the buildings	Spec C1.10, Spec J5.2
Energy Efficiency (Air Conditioning and Ventilation Systems)	Part J5 Spec J5.2 and 5.4

FLOORING

1/55 Chelmsford Rd.,
South Wentworthville,NSW
Contractor Licence # 249655C

INSTALLATION CERTIFICATE

PROJECT NAME: **Bassike Head Office**

PROJECT ADDRESS: **2 Daydream street Warriewood NSW**

DEVELOPMENT CONSENT NO.

Pursuant to the provisions of the Environment Planning and Assessment Regulations 2000 and Clause A2.2 of the Building Code of Australia:

I Jonas Urbonas (name) of JU Flooring (company)

hereby certify:-

That the timber floors (building work/element/system) installed at the above project complies with:-

The following Australian Standard: 1684.4 -2010

The works have been carried out and installed strictly in accordance with the manufacturers tested details.

The system/s have been inspected and tested following completion and comply with requirements, codes, standards etc specified above.

Full Name: Jonas Urbonas

Qualifications and Experience: Bachelor of Engineering in Civil Engineering Diploma in Engineering Practice, Cettificate 4 in Building and Construction.

Address: 1/55 Chelmsford Road South Wentworthville NSW 2145

Phone numbers: Mob: 0421230933

Signature: Jonas Urbonas Date: 15/09/2015

CERTIFICATE OF COMPLIANCE – ELECTRICAL WORK

Customer COPY

CERTIFICATE NO: 1887925

CUSTOMER DETAILS

Name: Bassike

Site Address: 2 Daydream st Warriewood

Cross Street: | Postcode: 2102

Telephone Contact: (02) 8457 6[illegible]

Meter No:

NMI (if applicable)

INSTALLATION WORK DETAILS Indicate the type of installation and types of work performed under this Notice

Type of Installation	☐ Residential	☑ Commercial	☐ Industrial	☐ Rural	☐ Other
Special Conditions	☐ over 100 amps	☐ High Voltage	☐ Hazardous Area	☐ Generator	☐ Unmetered Supply

CERTIFICATE MUST BE ISSUED TO THE CUSTOMER FOR ALL ELECTRICAL WORK

Work of the following type must ALSO be notified to the **ELECTRICITY DISTRIBUTOR (DNSP)**

☑ New Installation

☑ Additions or alterations to a switchboard or associated equipment

☐ Network connection or metering

☐ Defect Rectification No:

DETAILS OF EQUIPMENT *Describe the equipment and estimate load increase of the work affected by this Notice. If insufficient space attach separate sheets.*

EQUIPMENT	RATING	No.	PARTICULARS OF WORK
☑ Switchboards	63A	1	Installation of Sub board
☑ Circuits	20A	42	
☑ Lighting	20A	8	LED lighting
☑ Socket-outlets	20A	29	General pwr + Work stations
☑ Appliances	40, 20	4	Oven, Cooktop, Hot water heaters x 2
Estimated increase in load A/ph		40A	☑ Increased load is within capacity of installation/service mains
☑ Work is connected to supply			☐ Work is not connected to supply pending inspection by DNSP

The work has been carried out or supervised by: Benjamin Smith — *Licence No:* 637555

TEST REPORT *Indicate the relevant tests and checks that have been performed on the work. If test records are provided attach as separate sheets.*

☑ Earthing system integrity Ω	☑ Residual current device operation
☑ Insulation resistance MΩ	☑ Visual check that installation is suitable for connection to supply
☑ Polarity	☑ Stand-alone power system complies with AS 4509
☑ Correct circuit connections	☐ Fault loop impedance (if necessary)

I confirm that I have carried out the above tests and visually checked that the installation work described in this Certificate complies with AS/NZS 3000 and is suitable for its intended use.

Name: Benjamin Smith — *Licence No:* 637555

Signature: [signature] — *Date of Testing:* 22/9/15

CERTIFICATION

I, the Electrical Contractor give notice to the Customer and _____ (Name of DNSP or OFT), that the work described in this Certificate has been completed in accordance with the Electricity (Consumer Safety) Regulation 2006

Name: Benjamin Smith — *Licence No:* 637555

Signature: [signature] — *Date of Notice:* 22/9/15

Address: 7/276 Newline Rd Dural 2158 — *Telephone No. or Other Contact:* 02 9653 9695

ELECTRICITY DISTRIBUTOR (DNSP) REMARKS

Inspected by: | *Date*

Comments:

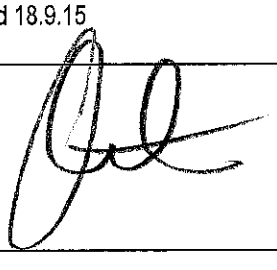
neca

FORCEFIRE
DETECT ▸ SUPPRESS

A.B.N. 51 120 605 290 A.C.N. 120 605290

FINAL/INTERIM FIRE SYSTEMS CERTIFICATE

issued under the Environmental Planning and Assessment Regulations 2000 (Part 9 Division 4)

Type of Certificate See note 1 (over leaf)	✓ interim final
Certificate name contractor See Note 2 (over leaf) assessment requirements See Note 3 (over leaf) relevant fire safety schedule	I, Paul Gatt of Force Fire Pty Ltd certify that: (a) each of the essential fire measures listed below: • has been assessed by a person (chosen by me) who was properly qualified to do so, and • was found, when it was assessed, to have been properly implemented and to be capable of performing to a standard not less than that required by the most recent fire safety schedule for the building for which the certificate is issued. • (b) the information contained in this certificate is, to the best of my knowledge and belief, true and accurate.
Identification of building Location	House/unit no or name 2 Street Daydream City Warriewood Nearest cross street
particulars of building	~~Whole~~/part Description of part (where applicable) Bassike Tenancy
Date of assessment	18/9/15
Owner's details name address	_____ _____
Essential fire safety measures See Note 3	Measure — Standard of Performance **Automatic Sprinkler System:** **AS 2118-1999** BCA Spec. E1.5 & AS 2118.1-1999 Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015. **Building Occupant Warning System:** **AS1670.4 -2004, BCA Clause E2.2a** **Automatic Smoke Detection System:** **AS1670.1 -2004, BCA Clause E2.2a** Clause 5 of BCA Specification E2.2a , Fire Engineering Report prepared by Exova Warringtonfire, Report No. 2567602- RPT01-2, Revision 2 dated 22/12/2011 Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.
Date of Certificate	Dated 18.9.15
Signature	

- A copy of this certificate together with the relevant fire safety schedule must be forwarded to the Council and the Commissioner of the New South Wales Fire Brigades.
- A copy of this certificate together with the relevant fire safety schedule must be prominently displayed in the building.

Note 1 An interim fire safety certificate or a final fire safety certificate is required before:

- an interim occupation certificate can be issued to allow a partially completed new building (including an altered portion of, or an extension to, a new building) to be occupied or used, or
- an interim occupation certificate can be issued to allow a change of building use for part of an existing building.

A final fire safety certificate is required:

- before a final occupation certificate can be issued to allow a new building (including an altered portion of, or extension to, a new building) to be occupied or used, or
- before a final occupation certificate can be issued to allow a change of building use for an existing building, or
- in accordance with a fire safety order given by a Council.

An **interim fire safety certificate** is issued for part of the building and may deal only with those essential fire safety measures appearing on the most recent fire safety schedule (see not 3) relevant to the part of the building for which an interim occupation certificate will be sought.

A **final fire safety certificate** must deal with all essential fire safety measures appearing on the most recent fire safety schedule (see note 3), subject to the following.

An **interim fire safety certificate** or a **final fire safety certificate** need not deal with those essential fire safety measures which have been subject of some other final fire safety certificate or annual fire safety statement within the previous 6 months, unless the person or authority responsible for determining the relevant development consent, complying development certificate, construction certificate or fire safety order, has specified otherwise in the Schedule.

See also note 3.

Note 2 The person who carries out the assessment:

- must inspect and verify the performance of each safety measure being assessed: and
- in the case of a (interim or final) fire safety certificate for a new building (not an alteration to, or enlargement or extension of an existing building) must test the operation of each item of fire safety equipment installed in the building.

Note 3 The relevant essential fire safety measures are those specified in the most recent fire safety schedule, attached to one of the following:

- development consent for a change of building use,
- complying development certificate for the erection of a building or a change of building use;
- construction certificate of proposed building work, including building work associated with a change of building use; or
- a fire safety order.
  The fire safety schedule will also identify the required standard of performance for each essential fire safety measure.

Myland Ceramics Pty Ltd A B N 39 132 051 346
P. O. BOX 212 Riverwood NSW 2210 Australia
Tel 02 9534 5572 Fax 02 9596 1833
Email : mylandceramics@hotmail.com

INSTALLATION CERTIFICATE

PROJECT NAME: Bassike

PROJECT ADDRESS: **2 Daydream St. Warriewood**

DEVELOPMENT CONSENT NO.

Pursuant to the provisions of the Environment Planning and Assessment Regulations 2000 and Clause A2.2 of the Building Code of Australia:

I Seung Ju. Yoo of Myland Ceramics P/L
(name) (company)

hereby certify:-

That the Tiling & Waterproofing installed at the above project complies with:-
(building work/element/system)

a) The following conditions of Development Consent:

.....

b) The relevant clauses of the Building Code of Australia, as follows:

Waterproofing of wet area - BCA 2015 Clause F1.7.

c) The following Australian Standards: 3740-2010

d) Other practices or standards relied upon for this certification:

.....

Myland Ceramics Pty Ltd A B N 39 132 051 346
P. O. BOX 212 Riverwood NSW 2210 Australia
Tel 02 9534 5572 Fax 02 9596 1833
Email : mylandceramics@hotmail.com

e) The works have been carried out and installed strictly in accordance with the manufacturers tested detail/s:

(Yes) or No

Details: .....

f) The system/s have been inspected and tested following completion and comply with requirements, codes, standards etc specified above: (Yes) or No

Details: .....

g) Exclusions: Yes or (No)

Details: .....

.....

Full Name: Seung Ju, Yoo

Qualifications and Experience: Contractor License 33982C

.....

Address: P.O.Box 212 Riverwood NSW 2210

Phone numbers: Bus: 02 9534 5572 Fax: 0596 1833 Mob: 0411 070 928

Signature: ..... Date 9/9/2015

Sydney Office:
Unit6 /1-3 Dursley Rd
Yennora, NSW 2161
Ph: +612 9788 1471
Fax: +612 9788 1472

ABN: 78 150 757 305
ACN: 150 757 305
Licence #239221C
www.sydneyseal.com.au
info@sydneyseal.com.au

SYDNEY SEAL INSULATION WORKS P/L

WATERPROOFING COMPLIANCE CERTIFICATE

PRIMARY CONTRACTOR:	FDC BUILDING & CONSTRUCTION
PROJECT NAME:	Peninsula Business Estate (stage2) 2 Daydream Street Warriewood NSW 2102
APPLICATOR:	Sydney Seal Insulation Works P/L
PRODUCT:	Conipur Sikalastic 488
INSTALLATION COMPLETION DATE:	**30th June 2015**
AREAS OF APPLICATION INCLUDED IN CERTIFICATION:	Level 2 Tenant 1 Atrium Childcare Open Terrace

We Hereby Confirm That The Application and use of The Products Listed Above, Satisfactorily Meets All The Required Quality Control Measures and Australian Standards.

Sydney Seal Insulation have applied all waterproofing products to the above mentioned areas, in accordance with BCA Clause F1.4 – External Above Ground Membranes and AS4654-2012, architectural drawings and specifications provided by FDC. All waterproof products applied are also accredited in accordance with Part A2.2 of the BCA.

Sydney Seal Insulation Works Pty Ltd acknowledges and confirms that all products were installed in accordance with Manufacturer's published application procedures current at the time of installation, the product is compliant with manufacturers test details to AS1530.3, ISO9705 and ISO9239.

When the Application of Products Are Managed and Applied By the Applicator To Meet The Code Of Standards and Manufacturer Recommendations and Guidelines, Installation Shall Uphold Its Characteristics As Implied.

SYDNEY SEAL INSULATION WORKS P/L

FBoulos

Ms. Fida Boulos
Contracts Manager

DATE OF ISSUE: 13/07/2015

Accessibility Completion Statement

Office Tenancy Refurbishment – Suite 5

Level 2, 2 Daydream Street, Warriewood

17 September 2015

Prepared for: Bassike Pty Ltd

Report Number: **ACS5226_v1.0**

ACCESSIBILITY • ESSENTIAL FIRE SAFETY SERVICES
ABE Consulting Pty Ltd | ABN 69 163 787 826
02 8065 0400
Suite 2.02 | 92 Norton Street Leichhardt NSW
info@abeconsulting.com.au | www.abeconsulting.com.au

Accessibility Completion Statement

PROJECT: Office Tenancy Refurbishment – Suite 5
ADDRESS: Level 2, 2 Daydream Street, Warriewood

The proposed building work involves an internal fitout of an internal office tenancy fitout of Suite 5 located at Level 2 - 2 Daydream Street, Warriewood.

An inspection was carried out on 15 September 2015. This inspection was limited to the items addressed within the Accessibility Alternative Solution Report prepared by ABE Consulting No. ASR5226_v1.1 only.

ABE Consulting have completed a site inspection to evaluate the compliance and functionality of the development relative to accessibility requirements and can confirm compliance is achieved in the following areas.

BCA Clause	Section	Comment
D3.1	General building access requirements	Compliance Achieved – As per Alternative solution Report
F2.4	Accessible sanitary facilities	Compliance Achieved – As per Alternative solution Report

Associated Documentation

Document	Prepared by	Dated
Accessibility Alternative Solution Report ASR5110 - Rev. 1.1	ABE Consulting Pty Ltd	24.07.2015
CD D01 – Rev. C (Project # 282)	Akin Creative	16.07.2015

Following this inspection, ABE Consulting are able to confirm that at the completion stage, the development can provide appropriate accessibility requirements in accordance with the items identified within the accessibility Alternative Solution Report, AS1428.1-2009 and Disability (Access to Premises – Buildings) Standards 2010 for the relevant scope of works for the project.

PROVIDED BY

Abe Strbik
Director
Member – Association of Consultants in Access Australia #405

Ωmega Partitions

Building. Quality. Safely.

ABN 49 088 663 423
Mail: PO Box 261
Kingsgrove NSW 2208
T: (02) 9502 4734
F: (02) 9502 4754
E: admin@omegapartitions.com.au

INSTALLATION CERTIFICATE

JOB ADDRESS: Bassike Head Office

2 Daydream Street

Warriewood, NSW, 2102

Pursuant to the provisions of the Environment Planning and Assessment Regulations 2000

I, Frank Jeroncic, of Omega Partitions Pty Ltd hereby certify:-

That all wall and ceiling linings installed at the project comply with:-

A schedule of wall and ceilings linings used in the development together with the product data sheet/test report showing the required critical radiant flux for wall and material group number in with respect to the wall and ceiling linings in accordance with Specification C1.10 of the BCA for items installed by Omega Partitions Pty Ltd at the project:

a) Schedule:

Item installed by Omega Partitions Pty Ltd	**Location of Item**
13mm Knauf Mastashield	Throughout – new plasterboard partition walls and ceilings to non-wet areas
13mm Knauf Watershield	To wet areas – new plasterboard walls

The above linings comply with:-

a) The following conditions of Development Consent:

Inspection and certification Schedule item #17

b) The relevant clauses of the Building Code of Australia, as follows:

Specification C1.10 of the BCA

c) Other practices or standards relied upon for this certification:

Product data sheet/test report attached.

Ωmega Partitions

Building. Quality. Safely.

ABN 49 088 663 423
Mail: PO Box 261
Kingsgrove NSW 2208
T: (02) 9502 4734
F: (02) 9502 4754
E: admin@omegapartitions.com.au

Full Name: Frank Jeroncic

Qualifications and Experience: 6 years of experience in supply and installation of interior linings

---

Frank Jeroncic
Project Manager

Omega Partitions Pty Ltd

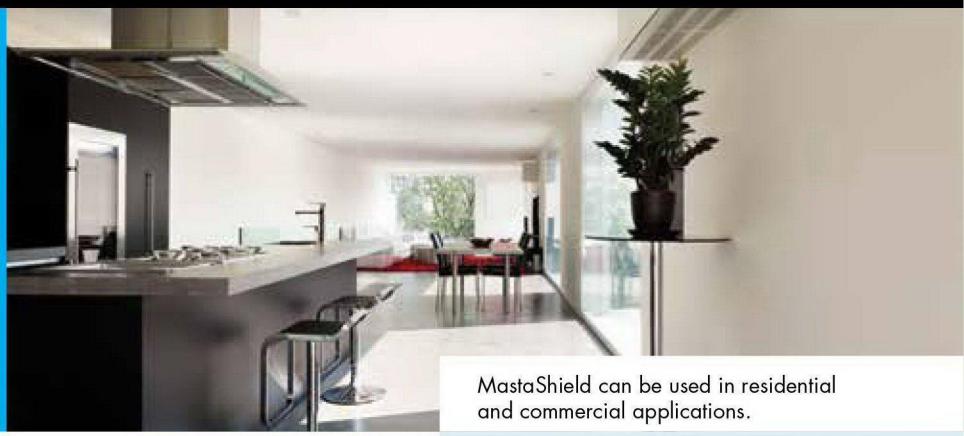
Address: 7/192a Kingsgrove Road, Kingsgrove NSW 2208
Postal: PO Box 261 Kingsgrove, NSW 2208
Phone: (02) 9502 4734
Fax: (02) 9502 4754
Mob: 0433 786 920

MastaShield

TECH DATA

Benefits

- Economical light weight construction
- Easy to install
- Available in a range of sizes including long sheets to minimise joints
- Certified for use in Green Star projects



MastaShield can be used in residential and commercial applications.

MastaShield is standard plasterboard made from a core of gypsum sandwiched between two layers of heavy duty recycled paper. The face paper is coloured ivory ready for paint or wall paper finish.

Application

MastaShield is an internal wall and ceiling lining suitable for residential and commercial applications. MastaShield is usually installed over a timber or steel frame and can also be installed over a masonry wall.

Installation

MastaShield is usually installed using the 'Fastener and Stud Adhesive Method'. It may also be installed using the 'Fastener Only Method' or 'Masonry Adhesive Method'.

Refer to the Knauf Plasterboard Installation guide for complete installation instructions.

Product Information

SHEET SIZE	THICKNESS (mm)	WIDTH (mm)	LENGTH (mm)	WEIGHT* (kg/m²)
	10	1200	2400, 2700, 3000, 3600, 4200, 4800, 5400, 6000	6.5
		1350	2400, 2700, 3000, 3600, 4200, 4800, 5400, 6000	
	13	1200	2400, 2700, 3000, 3600, 4200, 4800, 6000	8.5
		1350	3000, 3600, 4800, 6000	
FIRE HAZARD PROPERTIES	Group 1 material according to the requirements of BCA Section C1.10 Fire Hazard Properties Average Specific Extinction Area of <250 m²/kg as required by BCA Specification C1.10a, Clause 3(c) Group 1S according to NZBC Performance Clause 3.4(a)			
COMBUSTIBILITY	Classified as non-combustible according to the BCA Section C1.12			
VOLATILE ORGANIC COMPOUNDS	Less than 0.5 mg/m³ TVOC			
HAZARDS IDENTIFICATION	Not classified as hazardous according to the criteria of NOHSC Australia			

* Weights indicated are nominal

Certified System Quality ISO 9001 SAI GLOBAL

MastaShield is manufactured in Australia in accordance with quality systems certified as complying with AS/NZS ISO 9001:2008 and meets the requirements of AS/NZS 2588, *Gypsum Plasterboard*.

ecospecifier global GREEN TAG CERTIFIED GreenRate | Level A trust brands

MastaShield has been independently certified by Global GreenTag to GreenRate Level A, recognised by the GBCA for Materials and VOC credits, and by the NZGBC.

Warranty

Knauf's products are guaranteed by a 10 Year Warranty.
For details visit
knaufplasterboard.com.au
knaufplasterboard.co.nz

Technical Advice

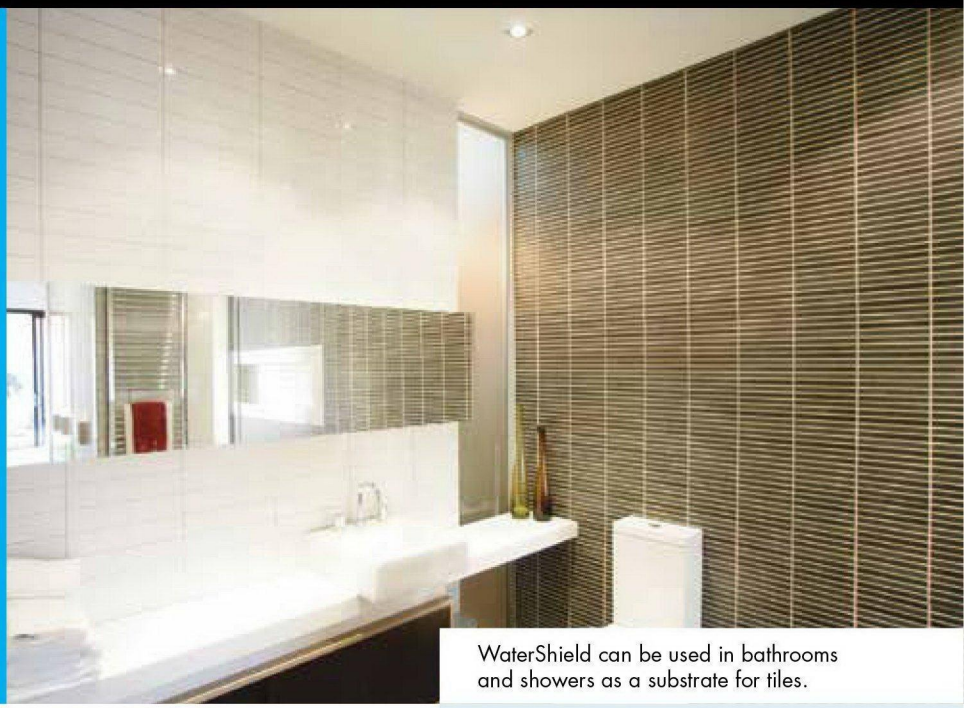
AU **1300 724 505**
NZ **0800 884 326**

WaterShield

TECH DATA

Benefits

- Non-hazardous, water resistant solution and protects framing members against water damage
- Easy to install and repair compared with other water resistant internal lining materials
- Lower risk of cracking and fewer control joints required compared with other water resistant internal lining materials
- Smoother finish and easy to paint
- Certified for use in Green Star projects



WaterShield can be used in bathrooms and showers as a substrate for tiles.

WaterShield is a water resistant plasterboard designed for use in internal wet areas and as a substrate for tiles. WaterShield is lined with recycled blue paper.

Product Information

SHEET SIZE	THICKNESS (mm)	WIDTH (mm)	LENGTH (mm)	WEIGHT* (kg/m²)
	10	1200	2400, 2700, 3000, 3600, 4200	7.6
		1350	3600, 4800	
	13	1200	2700, 3000	9.7
FIRE HAZARD PROPERTIES	Group 1 material according to the requirements of BCA Section C1.10 Fire Hazard Properties Average Specific Extinction Area < 250 m²/kg as required by BCA Specification C1.10a, Clause 3(c) Group 1S according to NZBC Performance Clause 3.4(a)			
COMBUSTIBILITY	Classified as non-combustible according to BCA Section C1.12			
VOLATILE ORGANIC COMPOUNDS	Less than 0.5 mg/m³ TVOC			

* Weights indicated are nominal

Application

WaterShield is used as a water resistant wall and ceiling lining in wet areas such as bathrooms, showers, toilets and laundries.

Other WaterShield applications include garage ceilings and for soil and waste pipe acoustic systems where water resistance is also required.

WaterShield may also be used as the wall lining for indoor swimming pools provided a waterproof membrane is applied over the wall.

WaterShield can be used within systems that require certified plasterboard to achieve 100% points in the relevant categories for Green Star projects.

WaterShield

TECH DATA

Performance

Water

WaterShield is manufactured to high internal standards that meet or exceed the requirements for water resistant gypsum board within AS/NZS 2588, *Gypsum Plasterboard*.

The installation of WaterShield in accordance with Knauf wet area installation instructions complies with the requirements from AS 3740, *Waterproofing of Wet Areas within Residential Buildings* and the Building Code for wet areas.

The Building Code requires wet area construction to protect the occupants from dangerous or unhealthy conditions and to protect the building from damage.

Installation

WaterShield is installed using the 'Fastener Only Method' in tiled areas. Masonry adhesive and stud adhesive is not permitted in tiled areas.

In areas that are not tiled, WaterShield may be installed using the 'Fastener and Stud Adhesive Method'.

For all plasterboard joints, corners and fastener heads use MastaBase or MastaLongset and cover with BindEx Waterproof Membrane dependent on the type of wet area. Refer to Table 1 for the wet area installation requirements. Refer to the latest Knauf Technical Manual on the website for complete installation instructions.

Wet Area Installation Requirements

Table 1.

AREA	LEVEL OF RISK	WALLS	JUNCTIONS	PENETRATIONS +
Shower area	High	Water resistant	Waterproof	Waterproof
Bathrooms	Medium	-	Waterproof ^	-
Areas adjacent to baths and spas	Medium	Water resistant	Waterproof	Waterproof *
Walls adjoining other vessels	Low	Water resistant	Waterproof	Waterproof
Laundries and WCs	Low	-	Waterproof ^	-
Bathrooms and laundries requiring a floor waste	High	-	Waterproof ^	Waterproof

+ Including mechanical fixing or fasteners ^ Applies to wall/floor junctions only
* Horizontal surface waterproof, vertical surface water resistant

Certified System Quality ISO 9001 SAI GLOBAL

WaterShield is manufactured in Australia in accordance with quality systems certified as complying with AS/NZS ISO 9001:2008 and meets the requirements of AS/NZS 2588, *Gypsum Plasterboard*.

WaterShield has been independently certified by Global GreenTag to GreenRate Level A, recognised by the GBCA for Materials and VOC credits, and by the NZGBC.

Warranty

Knauf's products are guaranteed by a 10 Year Warranty.
For details visit
knaufplasterboard.com.au
knaufplasterboard.co.nz

Technical Advice

AU **1300 724 505**
NZ **0800 884 326**

Ωmega Partitions

Building. Quality. Safely.

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F: (02) 9502 4754
E: admin@omegapartitions.com.au

INSTALLATION CERTIFICATE

JOB ADDRESS: Bassike Head Office

2 Daydream Street

Warriewood, NSW, 2102

Pursuant to the provisions of the Environment Planning and Assessment Regulations 2000

I, Frank Jeroncic, of Omega Partitions Pty Ltd hereby certify:-

That all wall and ceiling linings installed at the project comply with:-

A schedule of wall and ceilings linings used in the development together with the product data sheet/test report showing the required critical radiant flux for wall and material group number in with respect to the wall and ceiling linings in accordance with Specification C1.10 of the BCA for items installed by Omega Partitions Pty Ltd at the project:

a) Schedule:

Item installed by Omega Partitions Pty Ltd	**Location of Item**
13mm Knauf Mastashield	Throughout – new plasterboard partition walls and ceilings to non-wet areas
13mm Knauf Watershield	To wet areas – new plasterboard walls

The above linings comply with:-

a) The following conditions of Development Consent:

Inspection and certification Schedule item #17

b) The relevant clauses of the Building Code of Australia, as follows:

Specification C1.10 of the BCA

c) Other practices or standards relied upon for this certification:

Product data sheet/test report attached.

Ωmega Partitions

Building. Quality. Safely.

ABN 49 088 663 423
Mail: PO Box 261
Kingsgrove NSW 2208
T: (02) 9502 4734
F: (02) 9502 4754
E: admin@omegapartitions.com.au

Full Name: Frank Jeroncic

Qualifications and Experience: 6 years of experience in supply and installation of interior linings

---

Frank Jeroncic
Project Manager

Omega Partitions Pty Ltd

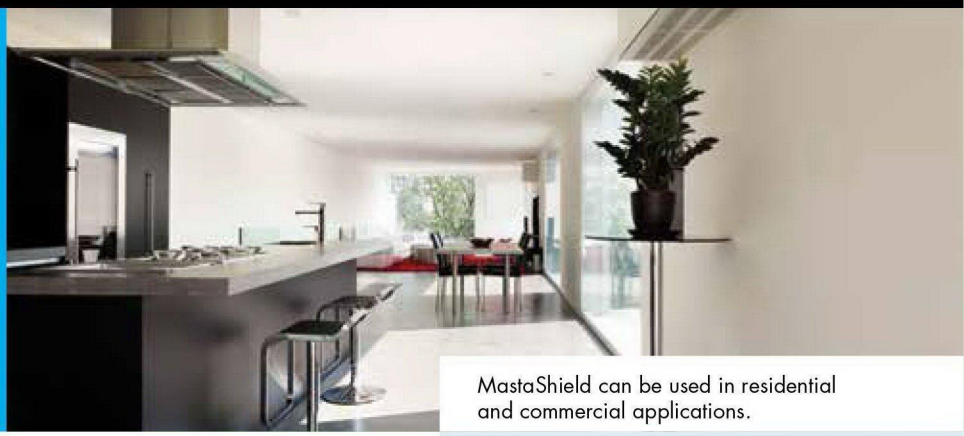
Address: 7/192a Kingsgrove Road, Kingsgrove NSW 2208
Postal: PO Box 261 Kingsgrove, NSW 2208
Phone: (02) 9502 4734
Fax: (02) 9502 4754
Mob: 0433 786 920

MastaShield

TECH DATA

Benefits

- Economical light weight construction
- Easy to install
- Available in a range of sizes including long sheets to minimise joints
- Certified for use in Green Star projects



MastaShield can be used in residential and commercial applications.

MastaShield is standard plasterboard made from a core of gypsum sandwiched between two layers of heavy duty recycled paper. The face paper is coloured ivory ready for paint or wall paper finish.

Application

MastaShield is an internal wall and ceiling lining suitable for residential and commercial applications. MastaShield is usually installed over a timber or steel frame and can also be installed over a masonry wall.

Installation

MastaShield is usually installed using the 'Fastener and Stud Adhesive Method'. It may also be installed using the 'Fastener Only Method' or 'Masonry Adhesive Method'.

Refer to the Knauf Plasterboard Installation guide for complete installation instructions.

Product Information

SHEET SIZE	THICKNESS (mm)	WIDTH (mm)	LENGTH (mm)	WEIGHT* (kg/m²)
	10	1200	2400, 2700, 3000, 3600, 4200, 4800, 5400, 6000	6.5
		1350	2400, 2700, 3000, 3600, 4200, 4800, 5400, 6000	
	13	1200	2400, 2700, 3000, 3600, 4200, 4800, 6000	8.5
		1350	3000, 3600, 4800, 6000	
FIRE HAZARD PROPERTIES	Group 1 material according to the requirements of BCA Section C1.10 Fire Hazard Properties Average Specific Extinction Area of <250 m²/kg as required by BCA Specification C1.10a, Clause 3(c) Group 1S according to NZBC Performance Clause 3.4(a)			
COMBUSTIBILITY	Classified as non-combustible according to the BCA Section C1.12			
VOLATILE ORGANIC COMPOUNDS	Less than 0.5 mg/m³ TVOC			
HAZARDS IDENTIFICATION	Not classified as hazardous according to the criteria of NOHSC Australia			

* Weights indicated are nominal

Certified System Quality ISO 9001 SAI GLOBAL

MastaShield is manufactured in Australia in accordance with quality systems certified as complying with AS/NZS ISO 9001:2008 and meets the requirements of AS/NZS 2588, *Gypsum Plasterboard*.

ecospecifier global GREEN TAG CERTIFIED GreenRate | Level A trust brands

MastaShield has been independently certified by Global GreenTag to GreenRate Level A, recognised by the GBCA for Materials and VOC credits, and by the NZGBC.

Warranty

Knauf's products are guaranteed by a 10 Year Warranty.
For details visit
knaufplasterboard.com.au
knaufplasterboard.co.nz

Technical Advice

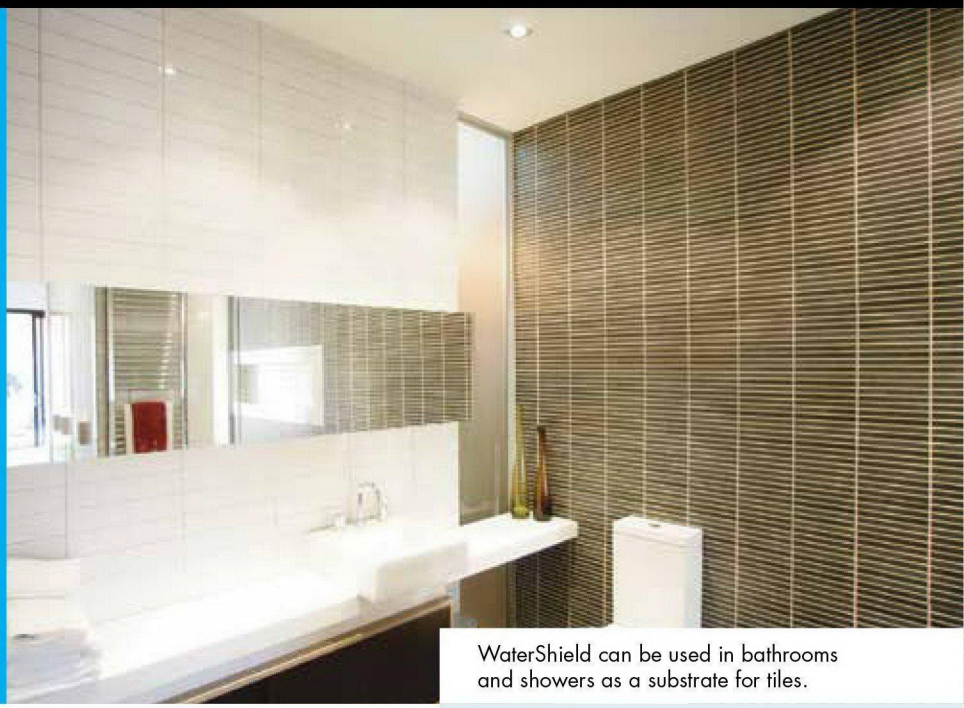
AU **1300 724 505**
NZ **0800 884 326**

WaterShield

TECH DATA

Benefits

- Non-hazardous, water resistant solution and protects framing members against water damage
- Easy to install and repair compared with other water resistant internal lining materials
- Lower risk of cracking and fewer control joints required compared with other water resistant internal lining materials
- Smoother finish and easy to paint
- Certified for use in Green Star projects



WaterShield can be used in bathrooms and showers as a substrate for tiles.

WaterShield is a water resistant plasterboard designed for use in internal wet areas and as a substrate for tiles. WaterShield is lined with recycled blue paper.

Product Information

SHEET SIZE	THICKNESS (mm)	WIDTH (mm)	LENGTH (mm)	WEIGHT* (kg/m²)
	10	1200	2400, 2700, 3000, 3600, 4200	7.6
		1350	3600, 4800	
	13	1200	2700, 3000	9.7
FIRE HAZARD PROPERTIES	Group 1 material according to the requirements of BCA Section C1.10 Fire Hazard Properties Average Specific Extinction Area < 250 m²/kg as required by BCA Specification C1.10a, Clause 3(c) Group 1S according to NZBC Performance Clause 3.4(a)			
COMBUSTIBILITY	Classified as non-combustible according to BCA Section C1.12			
VOLATILE ORGANIC COMPOUNDS	Less than 0.5 mg/m³ TVOC			

* Weights indicated are nominal

Application

WaterShield is used as a water resistant wall and ceiling lining in wet areas such as bathrooms, showers, toilets and laundries.

Other WaterShield applications include garage ceilings and for soil and waste pipe acoustic systems where water resistance is also required.

WaterShield may also be used as the wall lining for indoor swimming pools provided a waterproof membrane is applied over the wall.

WaterShield can be used within systems that require certified plasterboard to achieve 100% points in the relevant categories for Green Star projects.

WaterShield

TECH DATA

Performance

Water

WaterShield is manufactured to high internal standards that meet or exceed the requirements for water resistant gypsum board within AS/NZS 2588, *Gypsum Plasterboard*.

The installation of WaterShield in accordance with Knauf wet area installation instructions complies with the requirements from AS 3740, *Waterproofing of Wet Areas within Residential Buildings* and the Building Code for wet areas.

The Building Code requires wet area construction to protect the occupants from dangerous or unhealthy conditions and to protect the building from damage.

Installation

WaterShield is installed using the 'Fastener Only Method' in tiled areas. Masonry adhesive and stud adhesive is not permitted in tiled areas.

In areas that are not tiled, WaterShield may be installed using the 'Fastener and Stud Adhesive Method'.

For all plasterboard joints, corners and fastener heads use MastaBase or MastaLongset and cover with BindEx Waterproof Membrane dependent on the type of wet area. Refer to Table 1 for the wet area installation requirements. Refer to the latest Knauf Technical Manual on the website for complete installation instructions.

Wet Area Installation Requirements

Table 1.

AREA	LEVEL OF RISK	WALLS	JUNCTIONS	PENETRATIONS +
Shower area	High	Water resistant	Waterproof	Waterproof
Bathrooms	Medium	-	Waterproof ^	-
Areas adjacent to baths and spas	Medium	Water resistant	Waterproof	Waterproof *
Walls adjoining other vessels	Low	Water resistant	Waterproof	Waterproof
Laundries and WCs	Low	-	Waterproof ^	-
Bathrooms and laundries requiring a floor waste	High	-	Waterproof ^	Waterproof

+ Including mechanical fixing or fasteners ^ Applies to wall/floor junctions only
* Horizontal surface waterproof, vertical surface water resistant

Certified System Quality ISO 9001 SAI GLOBAL

WaterShield is manufactured in Australia in accordance with quality systems certified as complying with AS/NZS ISO 9001:2008 and meets the requirements of AS/NZS 2588, *Gypsum Plasterboard*.

WaterShield has been independently certified by Global GreenTag to GreenRate Level A, recognised by the GBCA for Materials and VOC credits, and by the NZGBC.

Warranty

Knauf's products are guaranteed by a 10 Year Warranty.
For details visit
knaufplasterboard.com.au
knaufplasterboard.co.nz

Technical Advice

AU **1300 724 505**
NZ **0800 884 326**

FORCEFIRE
DETECT ▸ SUPPRESS

A.B.N. 51 120 605 290 A.C.N. 120 605290

FINAL/INTERIM FIRE SYSTEMS CERTIFICATE

issued under the Environmental Planning and Assessment Regulations 2000 (Part 9 Division 4)

Type of Certificate See note 1 (over leaf)	✓ interim final
Certificate name contractor See Note 2 (over leaf) assessment requirements See Note 3 (over leaf) relevant fire safety schedule	I, Paul Gatt of Force Fire Pty Ltd certify that: (a) each of the essential fire measures listed below: • has been assessed by a person (chosen by me) who was properly qualified to do so, and • was found, when it was assessed, to have been properly implemented and to be capable of performing to a standard not less than that required by the most recent fire safety schedule for the building for which the certificate is issued. • (b) the information contained in this certificate is, to the best of my knowledge and belief, true and accurate.
Identification of building Location	House/unit no or name 2 Street Daydream City Warriewood Nearest cross street
particulars of building	~~Whole~~/part Description of part (where applicable) Bassike Tenancy & GF Warehouse tenancy 7
Date of assessment	27/10/15
Owner's details name address	_____ _____
Essential fire safety measures See Note 3	Measure — Standard of Performance **Automatic Sprinkler System:** **AS 2118-1999** BCA Spec. E1.5 & AS 2118.1-1999 Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015. **Building Occupant Warning System:** **AS1670.4 -2004, BCA Clause E2.2a** **Automatic Smoke Detection System:** **AS1670.1 -2004, BCA Clause E2.2a** Clause 5 of BCA Specification E2.2a , Fire Engineering Report prepared by Exova Warringtonfire, Report No. 2567602- RPT01-2, Revision 2 dated 22/12/2011 Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.
Date of Certificate	Dated 27.10.15
Signature	

- A copy of this certificate together with the relevant fire safety schedule must be forwarded to the Council and the Commissioner of the New South Wales Fire Brigades.
- A copy of this certificate together with the relevant fire safety schedule must be prominently displayed in the building.

Note 1 An interim fire safety certificate or a final fire safety certificate is required before:

- an interim occupation certificate can be issued to allow a partially completed new building (including an altered portion of, or an extension to, a new building) to be occupied or used, or
- an interim occupation certificate can be issued to allow a change of building use for part of an existing building.

A final fire safety certificate is required:

- before a final occupation certificate can be issued to allow a new building (including an altered portion of, or extension to, a new building) to be occupied or used, or
- before a final occupation certificate can be issued to allow a change of building use for an existing building, or
- in accordance with a fire safety order given by a Council.

An **interim fire safety certificate** is issued for part of the building and may deal only with those essential fire safety measures appearing on the most recent fire safety schedule (see not 3) relevant to the part of the building for which an interim occupation certificate will be sought.

A **final fire safety certificate** must deal with all essential fire safety measures appearing on the most recent fire safety schedule (see note 3), subject to the following.

An **interim fire safety certificate** or a **final fire safety certificate** need not deal with those essential fire safety measures which have been subject of some other final fire safety certificate or annual fire safety statement within the previous 6 months, unless the person or authority responsible for determining the relevant development consent, complying development certificate, construction certificate or fire safety order, has specified otherwise in the Schedule.

See also note 3.

Note 2 The person who carries out the assessment:

- must inspect and verify the performance of each safety measure being assessed: and
- in the case of a (interim or final) fire safety certificate for a new building (not an alteration to, or enlargement or extension of an existing building) must test the operation of each item of fire safety equipment installed in the building.

Note 3 The relevant essential fire safety measures are those specified in the most recent fire safety schedule, attached to one of the following:

- development consent for a change of building use,
- complying development certificate for the erection of a building or a change of building use;
- construction certificate of proposed building work, including building work associated with a change of building use; or
- a fire safety order.
  The fire safety schedule will also identify the required standard of performance for each essential fire safety measure.

FLOORING

INSTALLATION CERTIFICATE

CERTIFICATION AND SCHEDULE OF SLIP RESISTANCE

Site Details:

Project Name.	**Bassike Head Office**				
Level/Unit no.	2	Street no. / Street name:		Daydream Street	
Suburb:	Warriewood	State:	**NSW**	Postcode:	2102

Description of Work: Installation of engineering timber floors

Development Consent:

Consent authority:

DA/CDC No.

Pursuant to the provisions of the Environment Planning and Assessment Regulations 2000 and Clause A2.2 of the Building Code of Australia:

I Jonas Urbonas (name) of JU Flooring (company)

hereby certify:-

the following floor surfaces have been subject to a pendulum test certification to achieve a slip resistance classification under wet & dry conditions to comply with AS/NZS 4586: 2004 'Slip Resistance Classification of New Pedestrian Surface Materials'.

The following schedule comprises all new floor finishes installed.

Item	Finish	Product Name	Location	Data Sheet Reference
1	Engineering timber floor	"Tounge n Groove" Eterno engineering timber floors 189x15mm	Entry area,kitchen,dining area, corridors.	Slipcheck a division of safe environments Pty Ltd Test report # R3542b
2				
3				
4				
5				
6				

JU
FLOORING

a) Other practices or standards relied upon for this certification:

b) This Certificate relates to Whole / Part of the building (*nominate part if applicable*)

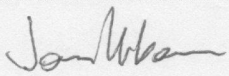
c) Exclusions: **Yes** (exclusions *must be clearly outlined*) or

No *(Certificate will be deemed unconditional & all inclusive)*

Details: _____

(Consultant to disclose any exclusion from specific certification)

Insurance Declaration: I do not possess Indemnity Insurance in relation to this project.

Name:	Jonas Urbonas	*Qualification:*	Builder
Company Name:	JU Flooring	*ABN No:*	22731889566
Company Address:	1/55 Chelmsford road S. Wentworthville	*Tel:*	0421230933
Signature:		*Position Title:*	Owner
		Date:	6/10/2015

Note: Attach all referenced data sheets to this certificate.

Slip Check to AS/NZS 4586 Appendix A - Wet Pendulum European Oak - timber floor board panel with WOCA Diamond Oil application

This document is issued in accordance with NATA's accreditation requirements.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards

Accredited for compliance with ISO/IEC 17025

NATA is a signatory to the APLAC mutual recognition arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports

Safe Environments Pty Ltd
Unit 6 The Hub, 128 Station Road, Seven Hills NSW 2147 Australia
T (+61) (2) 9624 2600 F (+61) (2) 9624 2700

ABN 80 118 534 7688
www.SafeEnvironments.com.au
info@safeenvironments.com.au

SlipCHECK
A division of Safe Environments Pty Ltd
www.SafeEnvironments.com.au

Phone 02 9624 2600
ABN 80 118 534 768
6 / 128 Station Road
Seven Hills NSW 2147

24 May 2012

Test Report No. R3542b

Slip Resistance Classification of New Pedestrian Surface Materials

AS/NZS 4586:2004 Appendix A (Wet Pendulum Test)

The slip resistance Classification have been determined for unused surfaces using specific conditions. Factors such as usage, cleaning systems, applied coatings and patterns of wear may affect the characteristics of the surface after classification. Standards Australia HB 197, *An introductory guide to the slip resistance of pedestrian surface materials*, provides guidelines for the selection of slip resistant pedestrian surfaces classified in accordance with AS/NZS 4586. It is recommended that this test report be read in conjunction with AS/NZS 4586 and HB 197.

Requested by:	Tongue n Groove
Client Address:	188 Charmers Street Surry Hills NSW 2010
Product Manufacturer:	Tongue n Groove
Product Description:	European Oak - timber floor board panel with WOCA Diamond Oil application

Test conducted according to:	AS/NZS 4586:2004 Appendix A
Location:	Slip Check Pty Ltd Test Facilities, Seven Hills NSW
Conducted by:	Geoff Ryder

Date:	22 May 2012	Temperature:	17°C
Sample:	Unfixed	Cleaning:	None
Rubber slider used:	Four S	Conditioned:	Grade P 400 paper dry

	Specimen 1	Specimen 2	Specimen 3	Specimen 4	Specimen 5
Mean BPN of last 3 swings:	32	23	24	28	28

Mean BPN of Sample:	**27**
Class:	**Y**

NATA ACCREDITED FOR TECHNICAL COMPETENCE

Martin Daniel
NATA Signatory / Materials Scientist

AWTA TEXTILE TESTING

Australian Wool Testing Authority Ltd – trading as AWTA Textile Testing
A.B.N. 43 006 014 106
1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O. Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400 Fax (03) 9371 2499

TEST REPORT

CLIENT : GIBBON GROUP PTY LTD
PO BOX 5612
BRENDALE QLD 4500

TEST NUMBER : 7-530721-AQ
DATE : 14/09/2004
ORDER NUMBER : 030904

SAMPLE DESCRIPTION Clients ref: Tretford Cord
Corded carpet with hessian backing
Colour: Dark Brown
Approximate pile height: 7.4mm

Material Specification:
Nominal Composition: 80% goat hair, 15% nylon, 5% viscose
Nominal total Pile Mass: 2518g/m2
Nominal Backing: Primary: PVC
Secondary: Hessian

ASISO 9239.1-2003 Reaction to Fire Tests for Floorings
Part 1 Determination of the Burning Behaviour
using a Radiant Heat Source

Date of sample arrival: 07/09/2004
Date tested: 10/09/2004
Results:

	CHF Value 1	2	3	Mean	
Length	7.1	-	-	-	kW/m2
Width	7.1	7.1	7.2	7.2	kW/m2

	Smoke Value Smoke Value				
Length	97	-	-	-	% min
Width	136	138	112	129	% min

Observations: Transitory flaming
Melting
Blistering

Note: Sample was conditioned in accordance with BSEN 13238-2001 at a temperature of 23+/-2degC and Relative Humidity of 50+/-5% for a minimum of 48 hours prior to testing

Each specimen was adhered to a substrate of 6mm thick fibre reinforced cement board using Gibbons TF 266 adhesive and clamped prior to testing

138329E 1 (CONTINUED NEXT PAGE)

This Laboratory is accredited by the National Association of Testing Authorities, Australia, for:
- Chemical Testing of Textiles & Related Products : Accreditation No. 983
- Mechanical Testing of Textiles & Related Products : Accreditation No. 985
- Heat & Temperature Measurement : Accreditation No. 1356

The tests reported herein have been performed in accordance with its terms of accreditation. Samples, and their identifying descriptions have been provided by the client unless otherwise stated. AWTA Ltd makes no warranty, implied or otherwise, as to the source of the tested samples. The above test results relate only to the sample or samples tested. This document shall not be reproduced except in full and shall be rendered void if amended or altered. This document, the names AWTA Textile Testing and AWTA Ltd may be used in advertising providing the content and format of the advertisement have been approved in advance by the Managing Director of AWTA Ltd.

AWTA LIMITED

0204/7/04

APPROVED SIGNATORY

MICHAEL A. JACKSON B.Sc.(Hons)
MANAGING DIRECTOR

AWTA TEXTILE TESTING

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1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O. Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400 Fax (03) 9371 2499

TEST REPORT

CLIENT : GIBBON GROUP PTY LTD
PO BOX 5612
BRENDALE QLD 4500

TEST NUMBER : 7-530721-AQ
DATE : 14/09/2004
ORDER NUMBER : 030904

The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test, they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use

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Phone (03) 9371 2400 Fax (03) 9371 2499

TEST REPORT

CLIENT : GIBBON GROUP PTY LTD
PO BOX 5612
BRENDALE QLD 4500

TEST NUMBER : 7-533628-AQ
DATE : 19/01/2005

SAMPLE DESCRIPTION Clients Ref: Tretford - Broadloom
Carded Fibres formed into a continuous corrugation
(Loop pile tufted carpet)
Colour: Magenta
Approximate Pile Height: 7.40mm

Material Specification:
Nominal Composition: 80% goat hair, 15% nylon, 5% viscose
Nominal Total Mass: 2.51kg/m2
Nominal Backing: Hessian, PVC bonded

ASISO 9239.1-2003 Reaction to Fire Tests for Floorings
Part 1 Determination of the Burning Behaviour
using a Radiant Heat Source

Date of sample arrival: 24/12/2004
Date tested: 12/01/2005
Results: CHF (Critical Heat Flux / Critical Radiant Flux)

	1	2	3	Mean	
Length	5.7	5.7	5.7	5.7	kW/m2
Width	7.3				kW/m2

Smoke Value

	1	2	3	Mean	
Length	405	434	480	440	% min
Width	434				% min

Observation: Melting
Blistering

Note: Sample was conditioned in accordance with BSEN 13238-2001 at a temperature of 23+/-2degC and Relative Humidity of 50+/-5% for a minimum of 48 hours prior to testing

Each specimen was adhered to "Bridgestone Airstep Slab" underlay of nominal thickness 4.7mm, composed of SBR Latex of Mass 1390+/-50g/m2 using "Gibbons TF266" adhesive and underlay was then adhered using "Gibbons TF266" adhesive to a substrate of 6mm thick fibre reinforced cement board

141076 2 (CONTINUED NEXT PAGE)

This Laboratory is accredited by the National Association of Testing Authorities, Australia, for:
- Chemical Testing of Textiles & Related Products : Accreditation No. 983
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AWTA LIMITED

0204/7/04

APPROVED SIGNATORY

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Phone (03) 9371 2400 Fax (03) 9371 2499

TEST REPORT

CLIENT : GIBBON GROUP PTY LTD
PO BOX 5612
BRENDALE QLD 4500

TEST NUMBER : 7-533628-AQ
DATE : 19/01/2005

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AWTA LIMITED

0204/7/04

APPROVED SIGNATORY

MICHAEL A. JACKSON B.Sc (Hons)
MANAGING DIRECTOR

Certificate of Assessment

NK6500 No. 1618

This is to certify that the specimen described below was tested by the CSIRO Division of Materials Science and Engineering in accordance with Australian/ New Zealand Standard 3837, Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter, 1998, at 50 kW/m², on behalf of:

Forbo Floorcoverings Pty Ltd
23 Ormsby Place
WETHERILL PARK NSW
AUSTRALIA

A full description of the test specimen and the complete test results are detailed in the Division's sponsored investigation report numbered FNK 10278.

SAMPLE IDENTIFICATION: Forbo Surestep

DESCRIPTION OF SAMPLE: The sponsor described the tested specimen as 2-mm thick PVC vinyl resilient floor covering comprising of the following layers:

Layer 1: 0.7-mm thick PVC wear layer (PVC powder & plasticiser);
Layer 2: 0.15-mm printed substrate;
Layer 3: 1.0-mm thick PVC powder and recycled content backing;
Layer 4: 0.15-mm thick non-woven glass-fibre fleece;
Layer 5: 4.5-mm thick fibre-reinforced cement board backing.

A PUR lacquer was applied to the surface with non-slip printed substrate having embedded quartz and carborundum particles design patterns. The floor covering was adhered to the fibre-reinforced cement board backing using Forbo vinyl adhesive 540 at an application rate of 4 m^2/L.

Nominal total thickness: 6.5 mm
Nominal total mass: 9.07 kg/m²
Colours: various colours

SAMPLE CLASSIFICATION: Group Number: Group 3
(In accordance with Specification A2.4 of the Building Code of Australia.)

Average specific extinction area: 227.5 m²/kg
(Refer to Specification C1.10a section 3(c) of the Building Code of Australia.)

Testing Officer: Heherson Alarde Date of Test: 29 September 2011

Issued on the 25th day of October 2011 without alterations or additions.

Garry E Collins
Manager, Fire Testing and Assessments

CSIRO Materials Science and Engineering
14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA
Telephone: 61 2 9490 5444 Facsimile:61 2 9490 5555

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Postal address:
P.O. Box 337
7500 AH Enschede
The Netherlands

Parking and delivery:
Josink Esweg 10
7545 PN Enschede
The Netherlands

www.tuv.com/nl

T +31-88-8887888
F +31-88-8887859

Jan.brinks@ nl.tuv.com
Ilse.pierik@nl.tuv.com

Return address: P.O. box 337, 7500 AH Enschede, The Netherlands

Forbo-Novilon B.V.
Att.: Mr. J. Jeuring
P.O. Box 148
7740 AC Coevorden
The Netherlands

Report

Project number: T10-30350
Report number: T10.30350.01br

Received:
A PVC floor covering, marked as: Surestep/Safestep;
TÜV reference: MT10.30350.01.
Adhesive: Eurocol 540.

Request:
Classification of burning behaviour according to EN 13501:2007.

Test method:

Ignitability (direct impingement of flame)	: EN ISO 11925-2:2010
Reaction to fire (radiant panel)	: EN ISO 9239-1:2010

Results:
See page two up to, and including three.

Date
December 23, 2010

Project number
T10-30350

Report number
T10.30350.01br

Phone number client
+31-52 459 6868

Fax number client
+31-52 459 6888

Your reference

Article
Surestep/Safestep

Appendix
1

Test results :

➢ *Sample description*

Type of manufacture	: heterogeneous PVC floor covering*
Type of secondary backing	: grey coloured compact layer*
Total mass per unit area kg/m^2	: 2.8
Total thickness, mm	: 2

* = manufacturer's declaration

➢ *Ignitability EN-ISO 11925-2*

Conditioning time, climate	: min. 3 days, 23 ± 2 °C and 50 ± 5 %
Description of substrate	: 6 mm. Fibre cement board, 1800 kg/m^3.
Flame application	: Surface.
Application time	: 15 seconds.

Direction:	In production			across production		
Total burning time[1](15 s)	15	15	15	15	15	15
Flame tip reaches 150 mm (s)	no	no	no	no	no	no
Extent of damaged area, length (mm)	75	67	67	72	72	78
Extent of damaged area, width (mm)	11	11	11	11	11	11
Material melts (yes/no)	yes	yes	yes	yes	yes	yes
Shrinks away[2] (yes/no)	no	no	no	no	no	no
Glowing[3](sec)	no	no	no	no	no	no
Flaming debris (yes/no)	no	no	no	no	no	no
Ignition of filter paper (yes/no)	no	no	no	no	no	no

1 Inclusive a flame application time of 15 or 30 seconds with surface or edge impingement
2 Shrinks away from flame without being ignited
3 The time at which it occurs and its duration

➢ *Radiant Panel test EN ISO 9239-1*

Conditioning time, climate : min. 3 days, 23 ± 2 °C and 50 ± 5 %
Description of substrate : Fibre cement board, 6±1 mm ,1800±200 kg/m^3 conforming to EN 13238
Sampling procedure : by contractor.
Description of cleaning used : none.
Fixing method : Eurocol 540

Test specimen	Flame spread (cm)	CRF (kW/m^2)	peak light attenuation (%)	Smoke production (%.min)
1	21,0	9,0	65,8	153
2	21,0	9,0	68,1	179
3	22,0	8,8	67,6	174
4	21,0	9,0	67,3	162
Mean	**21,3**	**8,9**	**67,7**	**172**

Remarks: no flashing, transitory- or sustained flaming,
* specimen extinguished naturally

Conclusion:

According to EN 13501 the tested sample of the aforementioned quality **Surestep/Safestep** meets the requirements of **Class B_{FL} - s1**.

The test results only relate to the behaviour of the test specimens of the examined product under the particular conditions of the test in laboratory conditions; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use. The method might not be suitable if the product is exposed to much larger flames or heat radiant sources.

Author:
Mrs. I. Pierik

Visa:
Mr. J. Brinks

Flooring Radiant Panel Single Specimen Report

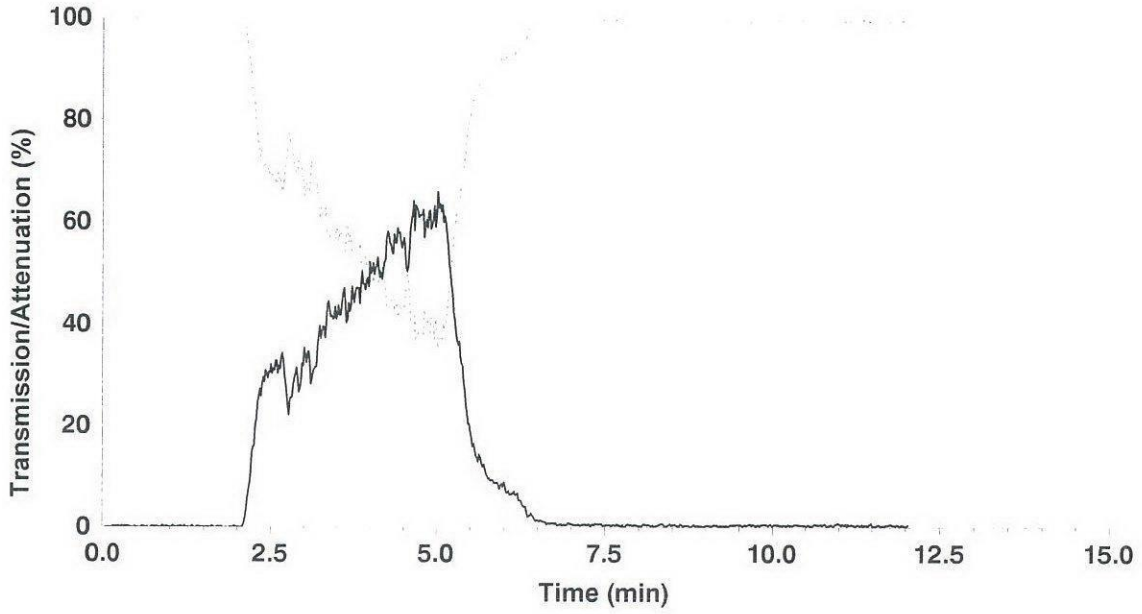
Standard	: EN ISO 9239-1:2002
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: Forbo Novilon - Surestep
Date of test	: Dec. 20 2010
Specimen description	: MT10-30350.01
Test name	: 1 (I)
File name	: D:\FRPFILES\10120022.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT\CALIB\FLX10004.CSV
Thickness (mm)	:
Density (kg/m^3)	:
Test duration	: 12 minutes 02 seconds (722 s)
Substrate used?	: Yes
Substrate	: Calcium silicate
Fixing method	: adhesive
Conditioned?	: Yes
Conditioning temp. (°C)	: 23
Conditioning RH (%)	: 50

Test Results

Time to ignition	: 2 minutes 02 seconds (122 s)
Time to flameout	: 12 minutes (720 s)
Extent of burning (mm)	: 210
Critical flux at extinguishment (kW/m^2)	: 9.01
HF-10 (kW/m^2)	: 9.01
HF-20 (kW/m^2)	: >= 10.9
HF-30 (kW/m^2)	: >= 10.9
Flame spread at 10 minutes (mm)	: 210
Flame spread at 20 minutes (mm)	: -1
Flame spread at 30 minutes (mm)	: -1
Peak light attenuation (%)	: 65.79
Time to peak light attenuation	: 5 minutes 01 seconds (301 s)
Total integrated smoke (%.min)	: 153.24
Potential classification	**: A2(fl)/B(fl)**
Smoke production classification	**: s1**

These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Smoke Graph



Test name : 1 (I)
File name : D:\FRPFILES\10120022.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	196	10.7	1.978	510	-	3.7	-
110	233	10.1	2.240	560	-	3.1	-
160	280	9.6	2.524	610	-	2.6	-
210	366	9.0	2.953	660	-	2.2	-
260	-	8.1	-	710	-	1.9	-
310	-	7.2	-	760	-	1.6	-
360	-	6.1	-	810	-	1.4	-
410	-	5.2	-	860	-	1.3	-
460	-	4.4	-	910	-	1.2	-

Comments

Specimen extinguished naturally.

Flooring Radiant Panel Single Specimen Report

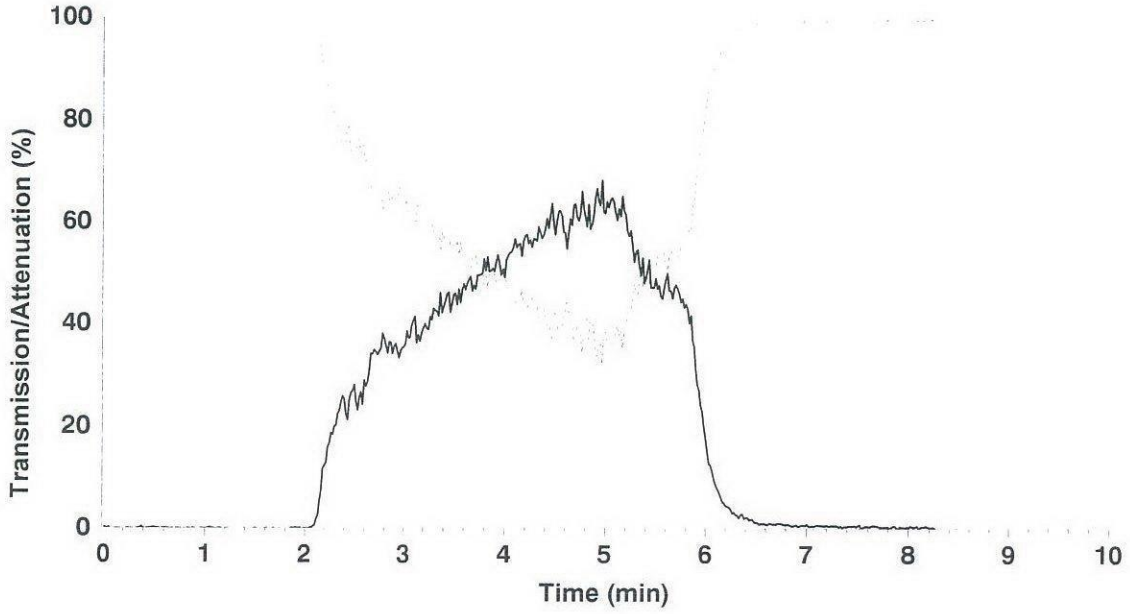
Standard	: EN ISO 9239-1:2002
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: Forbo Novilon - Surestep
Date of test	: Dec. 20 2010
Specimen description	: MT10-30350.01
Test name	: 2(J)
File name	: D:\FRPFILES\10120023.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT\CALIB\FLX10004.CSV
Thickness (mm)	:
Density (kg/m^3)	:
Test duration	: 8 minutes 15 seconds (495 s)
Substrate used?	: Yes
Substrate	: Calcium silicate
Fixing method	: adhesive
Conditioned?	: Yes
Conditioning temp. (°C)	: 23
Conditioning RH (%)	: 50

Test Results

Time to ignition	: 2 minutes 03 seconds (123 s)
Time to flameout	: 8 minutes 13 seconds (493 s)
Extent of burning (mm)	: 210
Critical flux at extinguishment (kW/m^2)	: 9.01
HF-10 (kW/m^2)	: >= 10.9
HF-20 (kW/m^2)	: >= 10.9
HF-30 (kW/m^2)	: >= 10.9
Flame spread at 10 minutes (mm)	: -1
Flame spread at 20 minutes (mm)	: -1
Flame spread at 30 minutes (mm)	: -1
Peak light attenuation (%)	: 68.13
Time to peak light attenuation	: 4 minutes 58 seconds (298 s)
Total integrated smoke (%.min)	: 179.03
Potential classification	**: A2(fl)/B(fl)**
Smoke production classification	**: s1**

These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Smoke Graph



Test name : 2(J)
File name : D:\FRPFILES\10120023.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	195	10.7	1.968	510	-	3.7	-
110	255	10.1	2.451	560	-	3.1	-
160	275	9.6	2.479	610	-	2.6	-
210	343	9.0	2.768	660	-	2.2	-
260	-	8.1	-	710	-	1.9	-
310	-	7.2	-	760	-	1.6	-
360	-	6.1	-	810	-	1.4	-
410	-	5.2	-	860	-	1.3	-
460	-	4.4	-	910	-	1.2	-

Comments

Specimen extinguished naturally.

Flooring Radiant Panel Single Specimen Report

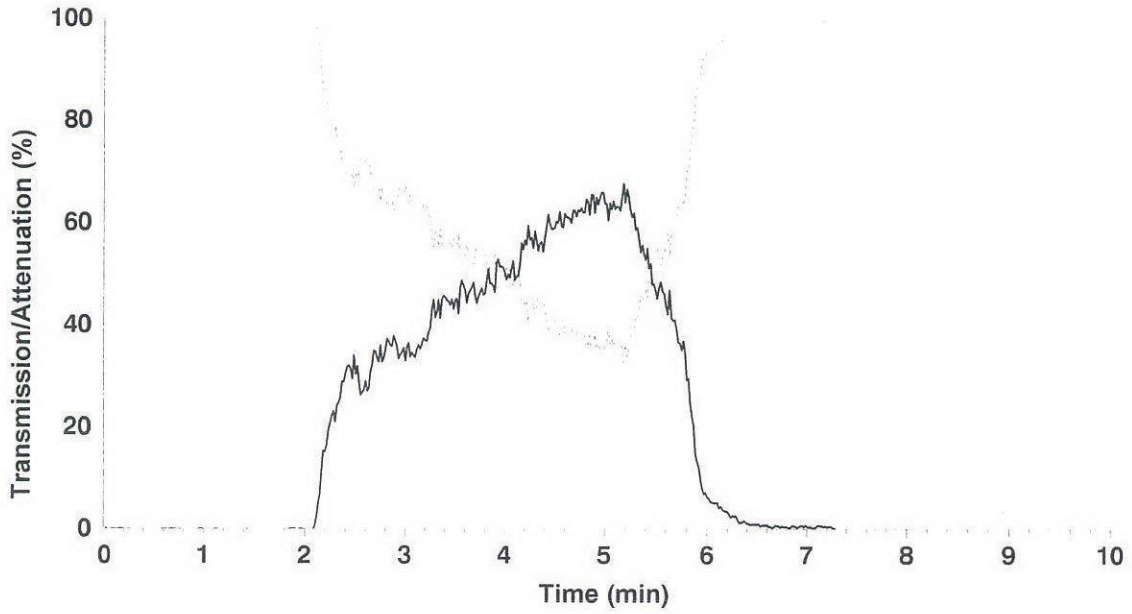
Standard	: EN ISO 9239-1:2002
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: Forbo Novilon - Surestep
Date of test	: Dec. 20 2010
Specimen description	: MT10-30350.01
Test name	: 3(I)
File name	: D:\FRPFILES\10120024.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT\CALIB\FLX10004.CSV
Thickness (mm)	:
Density (kg/m^3)	:
Test duration	: 7 minutes 17 seconds (437 s)
Substrate used?	: Yes
Substrate	: Calcium silicate
Fixing method	: adhesive
Conditioned?	: Yes
Conditioning temp. (°C)	: 23
Conditioning RH (%)	: 50

Test Results

Time to ignition	: 2 minutes 01 seconds (121 s)
Time to flameout	: 7 minutes 16 seconds (436 s)
Extent of burning (mm)	: 220
Critical flux at extinguishment (kW/m^2)	: 8.82
HF-10 (kW/m^2)	: >= 10.9
HF-20 (kW/m^2)	: >= 10.9
HF-30 (kW/m^2)	: >= 10.9
Flame spread at 10 minutes (mm)	: -1
Flame spread at 20 minutes (mm)	: -1
Flame spread at 30 minutes (mm)	: -1
Peak light attenuation (%)	: 67.61
Time to peak light attenuation	: 5 minutes 11 seconds (311 s)
Total integrated smoke (%.min)	: 174.29
Potential classification	**: A2(fl)/B(fl)**
Smoke production classification	**: s1**

These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Smoke Graph



Test name : 3(I)
File name : D:\FRPFILES\10120024.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	176	10.7	1.776	510	-	3.7	-
110	243	10.1	2.336	560	-	3.1	-
160	274	9.6	2.470	610	-	2.6	-
210	341	9.0	2.752	660	-	2.2	-
260	-	8.1	-	710	-	1.9	-
310	-	7.2	-	760	-	1.6	-
360	-	6.1	-	810	-	1.4	-
410	-	5.2	-	860	-	1.3	-
460	-	4.4	-	910	-	1.2	-

Comments

Specimen extinguished naturally.

Flooring Radiant Panel Single Specimen Report

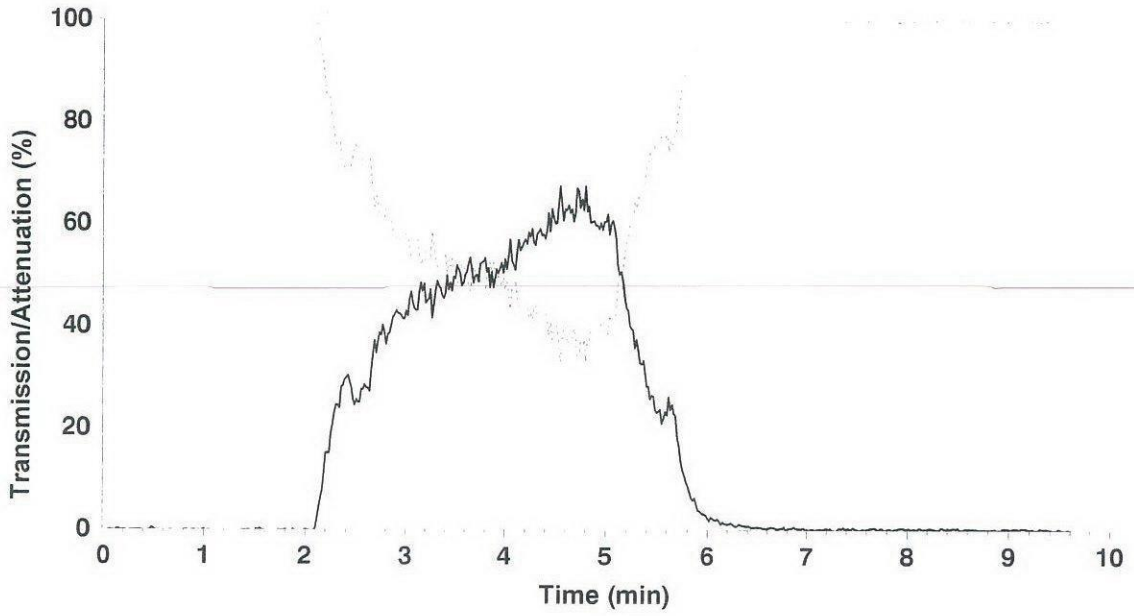
Standard	: EN ISO 9239-1:2002
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: Forbo Novilon - Surestep
Date of test	: Dec. 20 2010
Specimen description	: MT10-30350.01
Test name	: 4(J)
File name	: D:\FRPFILES\10120025.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT\CALIB\FLX10004.CSV
Thickness (mm)	:
Density (kg/m^3)	:
Test duration	: 9 minutes 37 seconds (577 s)
Substrate used?	: Yes
Substrate	: Calcium silicate
Fixing method	: adhesive
Conditioned?	: Yes
Conditioning temp. (°C)	: 23
Conditioning RH (%)	: 50

Test Results

Time to ignition	: 2 minutes 03 seconds (123 s)
Time to flameout	: 9 minutes 36 seconds (576 s)
Extent of burning (mm)	: 210
Critical flux at extinguishment (kW/m^2)	: 9.01
HF-10 (kW/m^2)	: >= 10.9
HF-20 (kW/m^2)	: >= 10.9
HF-30 (kW/m^2)	: >= 10.9
Flame spread at 10 minutes (mm)	: -1
Flame spread at 20 minutes (mm)	: -1
Flame spread at 30 minutes (mm)	: -1
Peak light attenuation (%)	: 67.29
Time to peak light attenuation	: 4 minutes 33 seconds (273 s)
Total integrated smoke (%.min)	: 162.3
Potential classification	**: A2(fl)/B(fl)**
Smoke production classification	**: s1**

These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Smoke Graph



Test name : 4(J)
File name : D:\FRPFILES\10120025.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	188	10.7	1.897	510	-	3.7	-
110	219	10.1	2.105	560	-	3.1	-
160	280	9.6	2.524	610	-	2.6	-
210	340	9.0	2.743	660	-	2.2	-
260	-	8.1	-	710	-	1.9	-
310	-	7.2	-	760	-	1.6	-
360	-	6.1	-	810	-	1.4	-
410	-	5.2	-	860	-	1.3	-
460	-	4.4	-	910	-	1.2	-

Comments

Specimen extinguished naturally.

T.A.G. Cabling Systems
A.B.N. 61 057 430 654
7/276 New Line Rd Dural 2158
Ph: (612) 9653 9695 Fax: (612) 9653 9694

Fire Safety Certificate (Form 15)

Issued under the Environmental Planning and Assessment Regulation 2000, Clauses 170 to 174

Type of Certificate ☐ Interim ☒ Final

Owner / Agent I, Steve Chatman of The Aquarian Group P/L
Trading as T.A.G. Cabling Systems

Address 7 / 276 New Line Road, Dural NSW, 2158

Certify that:

each of the essential fire safety measures specified in the current fire safety schedule for the building to which the certificate relates:

a) has been assessed by a properly qualified person, and

b) was found, when it was assessed, to be capable of performing to at least the standard required by the current fire safety schedule for the building for which the certificate is issued.

Identification of Building

Street	2 Daydream Street, Warriewood NSW
House/Unit No. or Building Name	Level 2
Side of Street	
Nearest Cross Street	Jubilee Avenue

Particulars of Building

Scope	☐ Whole ☒ Part
Description of Part (where applicable)	Level 2 Tenancy & Warehouse
House/Unit No. or Building Name	Level 2, 2 Daydream Street, Warriewood NSW
Date of Assessment	21/09/2015

Owner's Details

Name	Bassike
Address	Level 2, 2 Daydream Street, Warriewood NSW

Essential Fire and Other Safety Measures	Standard of Performance
13 Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS 2293.1 - 2005
13 Emergency Light Fittings	BCA Clauses E4.4 and AS 2293.1-2005

Date of Certificate 22/09/2015

Signature _____

~~Owner~~/agent Steve Chatman

A copy of this certificate together with the relevant fire safety schedule must be forwarded to the Council and the Commissioner of the New South Wales Brigades.

A copy of this certificate together with the relevant fire safety schedule must be prominently displayed in the building.

Notes for completing the Fire Safety Certificate

Note 1

An **interim fire safety certificate or a final fire safety certificate** is required before:

- an interim occupation certificate can be issued to allow a partially completed new building (including and altered portion of, or an extension to, a new building) to be occupied or used, or
- an interim occupation certification can be issued to allow a change of building use for part of an existing building.

A **final fire safety certificate** is required:

- before a final occupation certificate can be issued to allow a new building (including an altered portion of, or extension to, a new building) to be occupied or used, or
- before a final occupation certificate can be issued to allow a change of building use for an existing building, or
- in accordance with a fire safety order given by a council.

An **interim fire safety certificate** is issued for part of the building and may deal only with those essential fire safety measures appearing on the most recent fire safety schedule (see note 3) relevant to the part of the building for which interim occupation certificate will be sought.

A **final fire safety certificate** must deal with all essential fire safety measures appearing on the most recent fire safety schedule (see note 3), subject to the following.

An **interim fire safety certificate or a final fire safety certificate** need not deal with those essential fire safety measures which have been the subject of some other final fire safety certificate or annual fire safety statement within the previous 6 months, unless the person or authority responsible for determining the relevant development consent, complying development certificate, construction certificate or fire safety order, has specified otherwise in the schedule. See also note 3.

Note 2

The person who carries out the assessment:

- must inspect and verify the performance of each fire safety measure being assessed; and
- in the case of a (interim or final) fire safety certificate for a new building (not an alteration to, or enlargement or extension of an existing building) must test the operation of each item of fire safety equipment installed in the building.

Note 3

The relevant essential fire safety measures are those specified in the most recent fire safety schedule, attached to one of the following:

- development consent for a change of building use; or
- complying development certificate for the erection of a building or a change of building use; or
- construction certificate for proposed building work, including building work associated with a change of building use; or
- a fire safety order.

The fire safety schedule will also identify standard of performance for each essential fire safety measure.

ADIS
AUTOMATIC DOORS
ACN 083 274 524 ABN 62 083 274 524

Wednesday, September 09, 2015

Southwest Aluminium

ATTENTION: Joe Fabricato

Re: Peninsula Business Park- 2 Daydream Drive Warriewood

The automatic door equipment supplied by ADIS for the above project conforms to all Australian Building codes **D2.19(B)(111)(1V)** doors will open on power failure with a force of less than 110 newtons.

The ADIS- Automatic Door equipment is guaranteed for 3 years on all parts from date of commissioning and is manufactured and installed in compliance with Australian Standard **AS 5007** for powered doors for pedestrian access and egress.

The labour warranty is 12 months.
For any services to the Automatic Door please call 1800 600 602.

Yours faithfully,

Darren Hancock
Managing Director

Unit 3,413 Victoria Street, Wetherill Park NSW Telephone (02) 97574600 Facsimile (02) 9757 4233
AUSTRALIAN OWNED – AUSTRALIAN MANUFACTURED
info@autodoors.com.au ADIS Automatic Doors is a Trading Mane of Cyberdoor Systems P/L www.autodoors.com.au

FIRE STOPPING
PASSIVE FIRE PROTECTION
ABN 47 064 568 770

NSW Office
PO Box 737
Balgowlah, NSW 2093

Unit 6, 252 Allambie Road,
Allambie Heights, NSW 2100

Phone: (02) 9907 0700
Fax: (02) 9907 0728

QLD Office
PO Box 562
Virginia BC, QLD 4014

Unit 7, 53 Northlink Place
Virginia, QLD 4014

Phone: (07) 3265 7781
Fax: (07) 3265 5976

28 September 2015
Our ref: AJ15-7045
ASJ

Mr. Rhys McInerney
IPG Pty Ltd
Level 5, 845 Pacific Highway
CHATSWOOD NSW 2067

Dear Rhys,

STATEMENT OF INSTALLATION COMPLIANCE RE: 2 DAYDREAM STREET, WARRIEWOOD – BASSIKE PROJECT

This is to verify that the Fire Stopping Materials listed below have been installed to the manufacturer's design & details and tested in accordance with AS1530.4-2005 Fire Resistance Test of Elements of Building Construction, AS4072.1-2005 and BCA Clause C3.15.

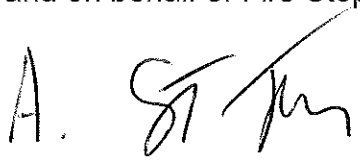
AREAS OF INSTALLATION:

LEVEL/AREA	METHOD USED	FRL	TEST REF.
Level 2 – Fire Wall Between Warehouse and Office Areas			
To fire seal 4 x nominated core hole, wall penetrations containing electrical cables	Thermachek Fire pillows	-/120/120	CSIRO FCO-3031
	Trafalgar Fyreflex Fire Rated Sealant	-/120/120	CSIRO FCO-1579 (Revision)
	Promaseal Grafitex	-/120/120	WFRA No. F91622

An inspection of the above works was carried out on Friday the 25th of September 2015. No responsibility will be taken for alterations, additions and/or damage caused by other persons since the date of inspection.

The information contained in this document is, to the best of my knowledge and belief, true and accurate.

For and on behalf of Fire Stopping Pty Ltd



Andrew St John
SUPERVISOR

FIRE STOPPING
PASSIVE FIRE PROTECTION
ABN 47 064 568 770

NSW Office
PO Box 737
Balgowlah, NSW 2093

Unit 6, 252 Allambie Road,
Allambie Heights, NSW 2100

Phone: (02) 9907 0700
Fax: (02) 9907 0728

QLD Office
PO Box 562
Virginia BC, QLD 4014

Unit 7, 53 Northlink Place
Virginia, QLD 4014

Phone: (07) 3265 7781
Fax: (07) 3265 5976

INSTALLATION CERTIFICATE

CERTIFICATION & SCHEDULE OF SERVICES PENETRATIONS TO FIRE RATED BUILDING ELEMENTS

Site Details:

Project Name. Bassike

Level/Unit no. Level 2 | Street no. / Street name: 2 Daydream Street

Suburb: Warriewood | State: **NSW** | Postcode: 2102

Description of Work:

Fire sealing of service penetrations

Development Consent:

DA/CDC No. | Consent authority:

Pursuant to the provisions of the Environment Planning and Assessment Regulations 2000 and Clause A2.2 of the Building Code of Australia:

I ANDREW ST JOHN (name) of FIRE STOPPING PTY LTD (company)

hereby certify:-

that the following services penetrations, together with the relevant data sheet as list below, have been installed in accordance with BCA Specification C3.15 and manufacturers specifications.

The following schedule comprises all services penetrations through fire rated building elements.

tem	Description of service penetration	Locations	Photo Reference No.	Method of protection and Product Name	Manufacturers Spec. / Data Sheet Reference (attach copy of data sheet)
lectrical					
	1 X 100mm core hole containing electrical cables	*L2 fire wall to small warehouse*	*N/A*	*Thermacheck fire pillows & Trafalgar Fyreflex mastic*	
	3 x 25mm electrical conduits	*L2 fire wall to small warehouse*	N/A	Promaseal Grafitex	
lydraulic					

Mechanical					
0					

a) Other practices or standards relied upon for this certification: .....

b) This Certificate relates to Whole / Part of the building (*nominate part if applicable*)

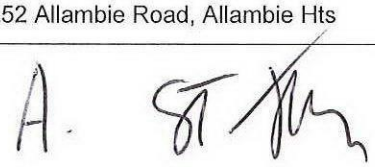
c) Exclusions: **Yes** (exclusions *must be clearly outlined*) or

No *(Certificate will be deemed unconditional & all inclusive)*

Details: .....

(Consultant to disclose any exclusion from specific certification)

Insurance Declaration: I *do / do not* possess Indemnity Insurance in relation to this project.

Name:	Andrew St John	*Qualification:*	
Company Name:	Fire Stopping Pty Ltd	*ABN No:*	47064568770
Company Address:	6/252 Allambie Road, Allambie Hts	*Tel:*	99070700
Signature:		*Position Title:*	Supervisor
		Date:	9/10/2015

Note: Attach all referenced data sheets, photos and supporting information to this certificate.

FIRE STOPPING
PASSIVE FIRE PROTECTION
ABN 47 064 568 770

PO Box 737
Balgowlah, NSW 2093

Unit 6, 252 Allambie Road,
Allambie Heights, NSW 2100

Phone: (02) 9907 0700
Fax: (02) 9907 0728

INSTALLATION CERTIFICATE

CERTIFICATION & SCHEDULE OF SERVICES PENETRATIONS TO FIRE RATED BUILDING ELEMENTS

Site Details:

Project Name.	Bassike				
Level/Unit no.	L2	Street no. / Street name:	2 Daydream St		
Suburb:	Warriewood	State:	NSW	Postcode:	2102

Description of Work: Fire sealing of service penetrations

Development Consent:

DA/CDC No. Consent authority:

Pursuant to the provisions of the Environment Planning and Assessment Regulations 2000 and Clause A2.2 of the Building Code of Australia:

I ANDREW ST JOHN (name) of FIRE STOPPING PTY LTD (company)

hereby certify:-

that the following services penetrations, together with the relevant data sheet as list below, have been installed in accordance with BCA Specification C3.15 and manufacturers specifications.

The following schedule comprises all services penetrations through fire rated building elements.

em	Description of service penetration	Locations	Photo Reference No.	Method of protection and Product Name	Manufacturers Spec. / Data Sheet Reference (attach copy of data sheet)
lectrical					
	L2 Part tenancy		0699	Trafalgar Fyreflex Mastic	
	to design room/		0701	Trafalgar Fyreplug Pillows	
	* adjoining warehouse				

a) Other practices or standards relied upon for this certification: .....

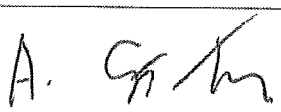
b) This Certificate relates to Whole / Part of the building (*nominate part if applicable*)

c) Exclusions: **Yes** (exclusions *must be clearly outlined*) or

No *(Certificate will be deemed unconditional & all inclusive)*

Details: .....

Insurance Declaration: I do not possess Indemnity Insurance in relation to this project.

Name:	Andrew St John	*Qualification:*	
Company Name:	Fire Stopping Pty Ltd	*ABN No:*	47064568770
Company Address:	6/252 Allambie Rd, Allambie Hts	*Tel:*	99070700
Signature:		*Position Title:*	Supervisor
		Date:	9/10/2015

Note: Attach all referenced data sheets, photos and supporting information to this certificate.

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Certificate No : P-02

SYSTEM CERTIFICATE

This is to certify that

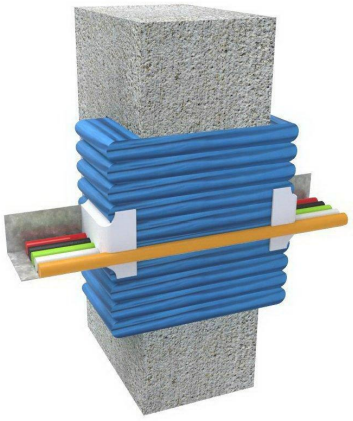
FYREPLUG PILLOWS IN WALLS

have been tested/approved in accordance with
AS1530 Part 4 and AS4072 Part 1

FRL: Up to -/240/240

Trafalgar Fyreplug pillows in walls can be installed as a temporary or permanent fire barrier, and have been tested with the following services:

- Blank penetration
- Cable trays
- Cable bundles
- Copper pipes
- Steel pipes
- Bus Bars



Required FRL	Maximum Opening Size
-/240/240	1800mmW x 400mmH
-/120/120	2000mmW x 400mmH
-/120/120	3000mmW x 800mmH (wall must be minimum 230mm masonry)

For full insulation on ductile services, Fyrewrap will be required. See FW-01

APPROVAL NO: FCO 1775

This System Certificate is not a substitute for a test certificate - For further technical or installation information please contact Trafalgar
This document is subject to change without notice

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Certificate No : S-01

SYSTEM CERTIFICATE

This is to certify that

FYREFLEX FOR PENETRATIONS IN WALLS

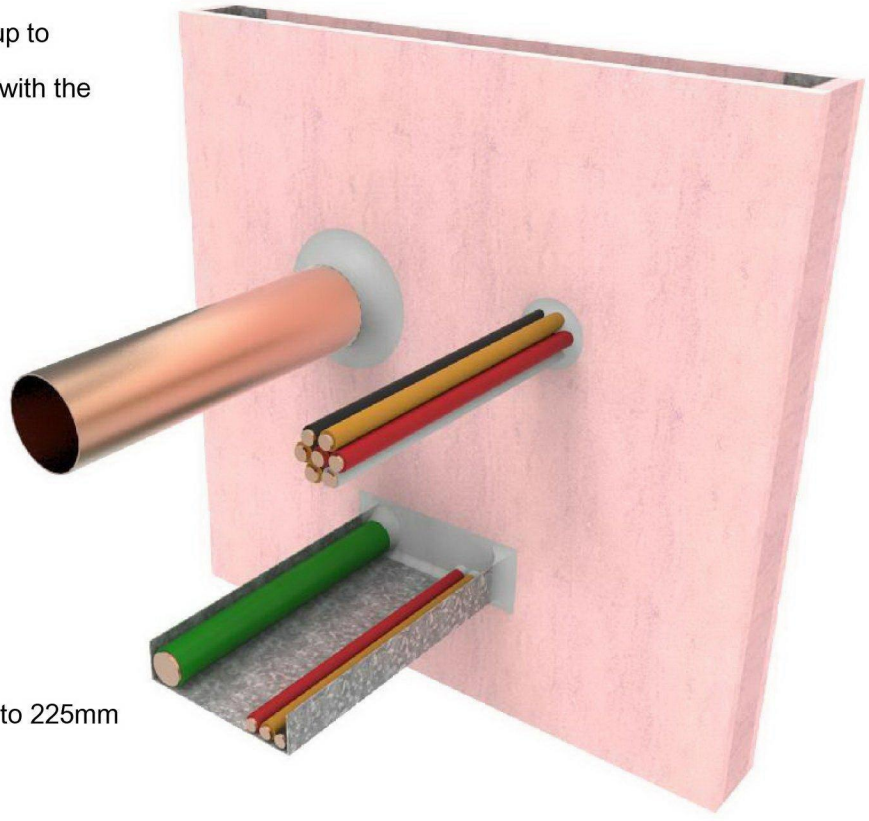
has been tested/approved in accordance with

AS1530 Part 4 and AS4072 Part 1

FRL: Up to -/240/240

Trafalgar Fyreflex Sealant can achieve up to -/240/240 FRL, and has been approved with the following services:

- Blank up to 56mm diameter
- Cable trays
- Cable bundles up to 24 cables
- Bus bars up to 10mm x 200mm
- Copper pipes up to 225mm
- Steel Pipes up to 225mm
- Brass pipes up to 102mm
- Fibre-reinforced cement pipes up to 225mm



For full insulation on ductile services, Fyrewrap will be required. See FW-01

APPROVAL NO: FCO 1579

This System Certificate is not a substitute for a test certificate - For further technical or installation information please contact Trafalgar
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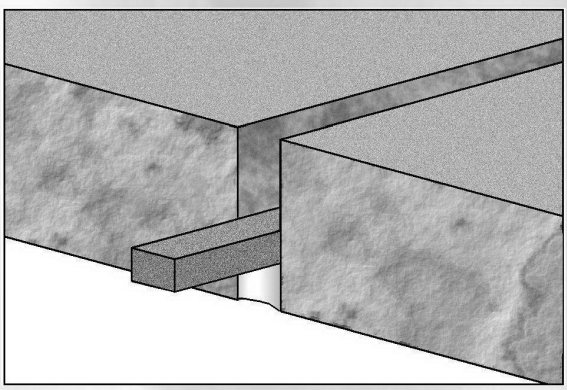
PAS 5.01
April 2009

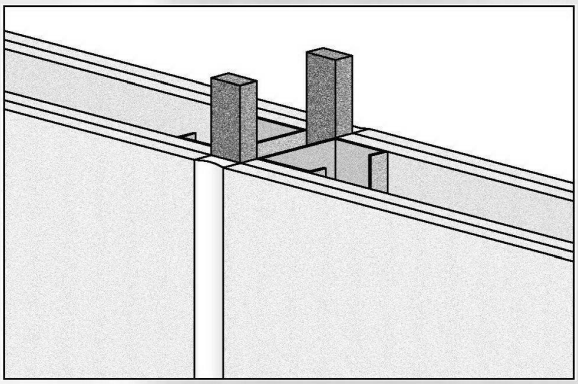
Fyreflex

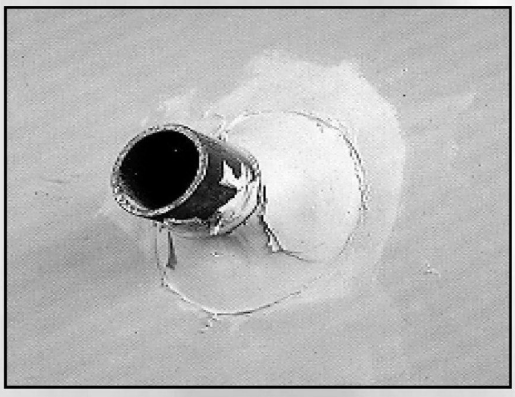
Fire Rated Sealant

Up To 4 Hours Fire Protection

(to AS 1530.4 - 1997)







Fyreflex Sealant

Description

Fyreflex is an acrylic (water based) gun grade mastic with limited (±5%) joint movement capability. Supplied in 10 litre buckets, 600ml sausage style sachets and 300ml cartridges with nozzle.

Fyreflex is available in off-white to suit plasterboard and grey to suit masonry applications.

Applications

Fyreflex is designed for sealing internal joints and wall penetrations subject to low movement and requiring up to 4 hours fire rating compliance.

- Insitu internal jointing of concrete, precast panels, block and brick work and drywall systems.
- Sealing of electrical cables and pipe penetrations.
- Acoustic gap filling combined with fire rating requirement.
- May be used in conjunction with other systems such as fire collars, pillows, board systems and fire rated mortar.

Advantages

- Water based (easy clean up)
- Smooth gunnability and tool off finish
- Excellent adhesion to metal, wood, plasterboard and all masonry
- Paintable
- Water resistant once cured
- Excellent acoustic properties with ratings up to 45 STC in joints

Method of Application

Install back-up material or joint filler as specified. Apply Fyreflex sealant in a continuous operation using a positive pressure adequate to properly fill and seal the joint or penetration. Tool Fyreflex with sufficient pressure to spread the sealant against the back-up material and onto the joint surfaces. A tool with a concave profile is recommended to achieve the correct shape.

Joint And Penetration Design

Fyreflex is gunned into and around the service penetrations and into any clearance holes through the fire separating element. Depth fill into cavities is controlled by pre-packing with foamed plastic backing rod.

Application Limitations

a) Fyreflex is not recommended for water immersion, exposed external joint sealing or areas subject to heavy traffic.
b) Fyreflex has a ±5% joint movement capability.
c) Fyreflex should not be applied with wet tooling techniques - using solvents, water or detergent/ soap solution is not recommended.
d) Fyreflex should not be applied to surfaces with special protective or cosmetic coatings without prior consultation with the manufacturer. Such surfaces include, but are not limited to, mirrors, reflective glass, or surfaces coated with Teflon, polyethylene or polypropylene.
e) Fyreflex can be affected by water before or during cure. The sealant should not be stored, applied or cured in areas where unusually high humidity or free water are pressent during the application or intial cure.
f) Fyreflex should be allowed to cure for 7 days prior to subjecting to any intermittent water exposure.
g) Temperature range during application +5°C to +35°C

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Specification And Standards

Testing
Fire tests have been conducted to AS 1530.4, in accordance with AS4072.1, on concrete floors, brick, masonry, tilt-up panels, block, and plasterboard walls.

Construction and Expansion Joints:
Construction and expansion joints to be fire stopped to maintain the required FRL of the wall or floor element by treatment with Fyreflex fire resistant sealant in accordance with Trafalgar Building Products instructions.

Service Penetrations:
Service penetrations to be fire stopped to maintain the required FRL of the penetrated wall or floor element by treatment with Fyreflex fire resistant sealant in accordance with Trafalgar Building Products instructions.

NOT TO BE TAKEN
KEEP OUT OF REACH OF CHILDREN

Avoid contact with skin and eyes and avoid breathing vapours. If poisoning occurs contact a doctor or poisons information centre. If skin contact occurs remove contaminated clothing and wash skin thoroughly. Refer to Material Safety Data Sheet for further information.

Storage & Handling

All materials shall be stored under cover in a manner that will prevent damage preferably on pallets and protected from moisture.

Do not freeze. Store in temperatures 5°C - 30°C.

Warranty

Limited Warranty:

Your purchase and use of this product is subject to Trafalgar's standard terms and conditions of sale. Trafalgar's sole liability in the event of a product defect is, at our option, to replace this product or return its purchase price.

All other warranties whether express or implied, including without limitations, any warranty of merchantability or fitness of purpose are expressly disclaimed unless prohibited by law or given in writing by Trafalgar for a specific project.

Fyreflex Usage Rate (ml/m)

DEPTH OF JOINT (mm)	WIDTH OF JOINT(mm)						
	10	**15**	**20**	**25**	**30**	**40**	**50**
10	100	150	200	250	300	400	500
12	120	180	240	300	360	480	600
15	150	225	300	375	450	600	750
20	200	300	400	500	600	800	1000

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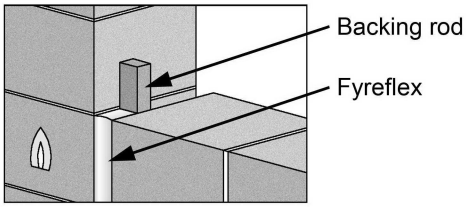
Fyreflex Grey

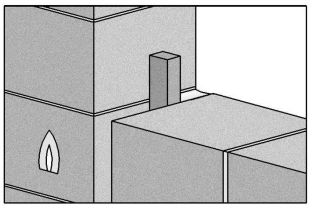
Masonry Construction and Expansion Joints

Concrete, Brick and Block Walls

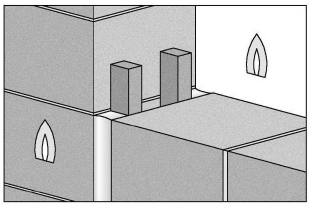
A) JOINT PROTECTED FROM EXPOSED SIDE



B) JOINT PROTECTED FROM UNEXPOSED SIDE



C) JOINT PROTECTED FROM BOTH SIDES

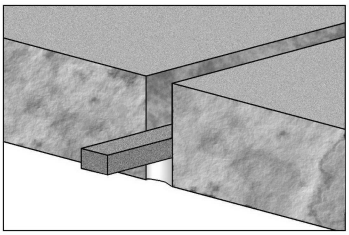


Fill Depths of Fyreflex (mm)

JOINT WIDTH (mm)	10			20			25		30		40		50	
JOINT FILL TYPE	A	B	C	A	B	C	A	C	A	C	A	C	A	C
RATING (hrs)														
-/120/120	10	15	10	10	30	10	12	12	15	15	20	20	25	20
-/180/180	10	15	10	10	30	10	12	12	15	15	20	20	25	20
-/240/240	15	15	10	30	35	15	30	20	30	20	40	20	40	20

NOTE: Joint may be filled on one side if direction of fire is known. If direction of fire is not known, sealant must be applied from both sides.

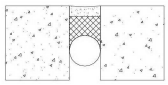
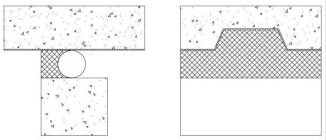
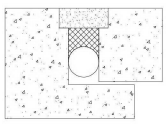
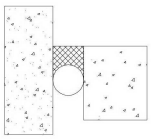
Internal Concrete and Pre-Cast Slabs



Fill Depths of Fyreflex (mm)

	JOINT WIDTH (mm)					
RATING (hrs)	10	20	25	30	40	50
-/120/120	10	10	12	15	20	25
-/180/180	10	10	12	15	20	25
-/240/240	15	30	30	30	40	40

Special Applications

System Description	System Diagram	System Description	System Diagram
• External applications • Up to 4 hours • With non-rated external grade sealant		• Steel decking • Upto 4 hours	
• Slab-on-slab • Up to 4 hours • With non-rated external or internal grade sealant		• Joint between wall and floor slab • Upto 4 hours	

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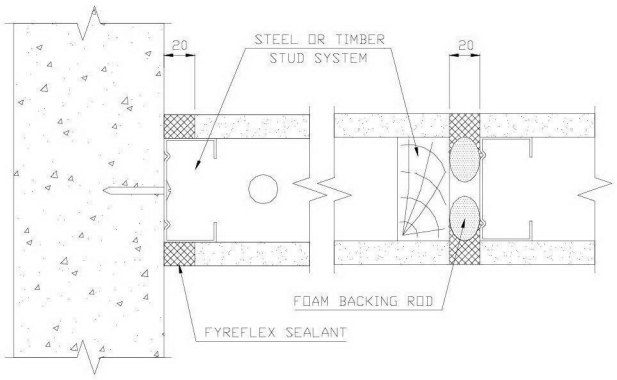
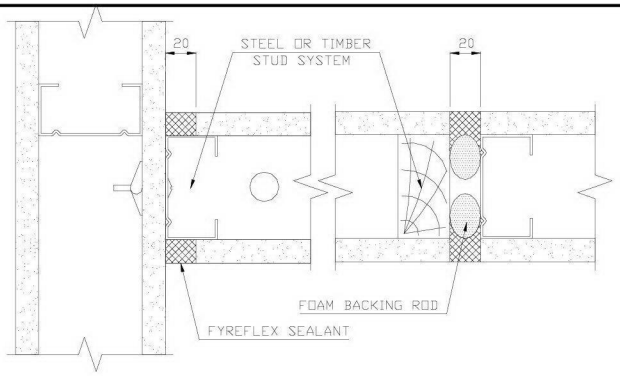
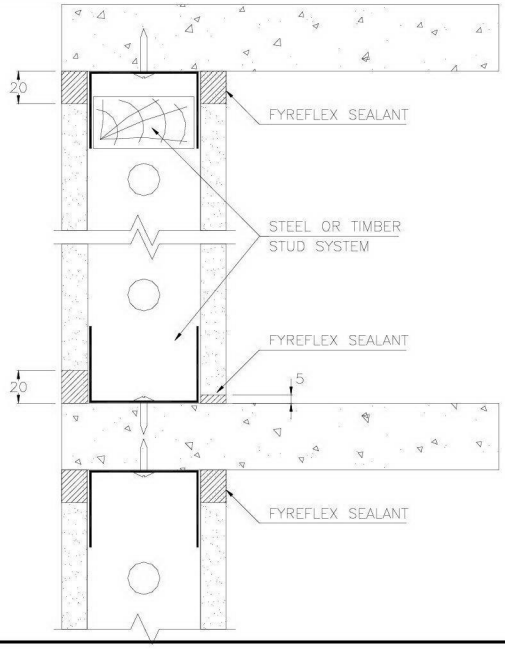
Fyreflex White

Drywall Construction and Expansion Joints

1 Hour Plasterboard Systems

SYSTEM	SYSTEM DIAGRAM
• T-Junction between concrete wall and plasterboard wall • Typical control joint in plasterboard wall	
• T-junction between two plasterboard walls • Typical control joint in plasterboard wall	
• Deflection head and base between concrete slabs and plasterboard wall ***NOTE:*** • *Fire Rated Plasterboard Systems must be installed according to manufacturers instructions.* • *Fyreflex is filled to depth of plasterboard sheet.*	

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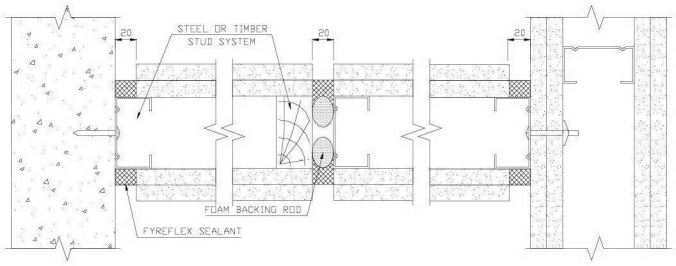
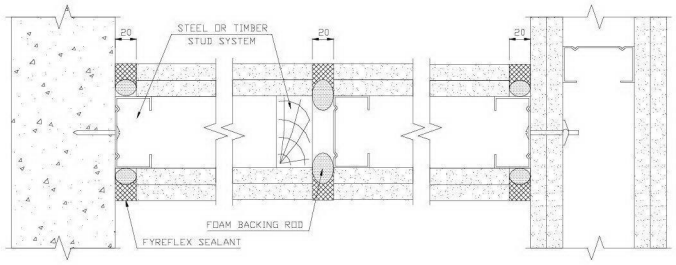
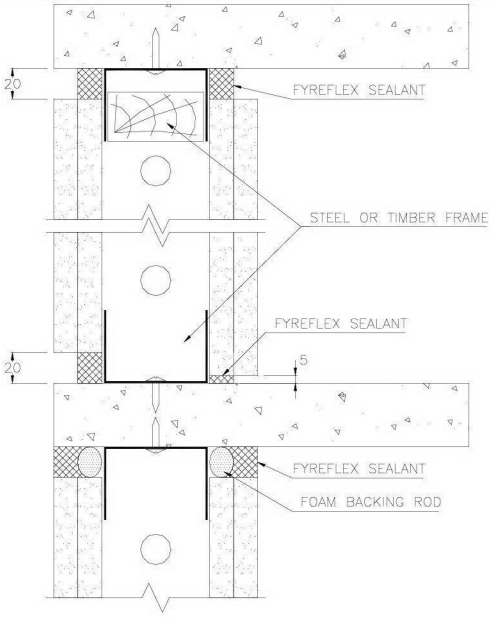
Fyreflex White

Drywall Construction and Expansion Joints

2 Hour Plasterboard Systems

SYSTEM	SYSTEM DIAGRAM
• T-Junction between concrete wall and plasterboard wall • Typical control joint in plasterboard wall • T-junction between two plasterboard walls	
• T-Junction between concrete wall and plasterboard wall • Typical control joint in plasterboard wall • T-junction between two plasterboard walls	
• Deflection head and base between concrete slabs and plasterboard wall ***NOTE:*** • *Fire Rated Plasterboard Systems must be installed according to manufacturers instructions.* • *Fyreflex is filled to depth of plasterboard sheet.*	

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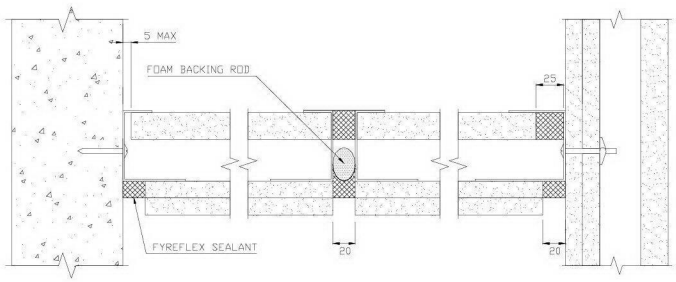
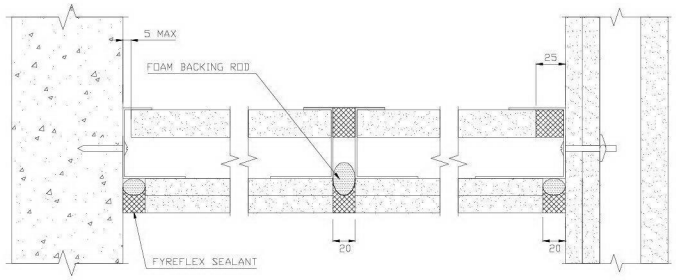
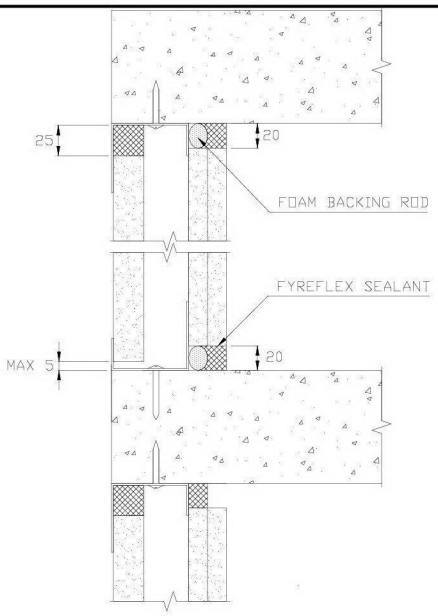
Fyreflex White

Drywall Construction and Expansion Joints

2 Hour Shaft Wall Systems

SYSTEM	SYSTEM DIAGRAM
• T-Junction between concrete wall and shaft wall • Typical control joint in shaft wall • T-junction between two shaft walls	
• T-Junction between concrete wall and shaft wall • Typical control joint in shaft wall • T-junction between two shaft walls	
• Deflection head and base between concrete slabs and plasterboard wall ***NOTE:*** • *Fire Rated Plasterboard Systems must be installed according to manufacturers instructions.* • *Fyreflex is filled to depth of plasterboard sheet.*	

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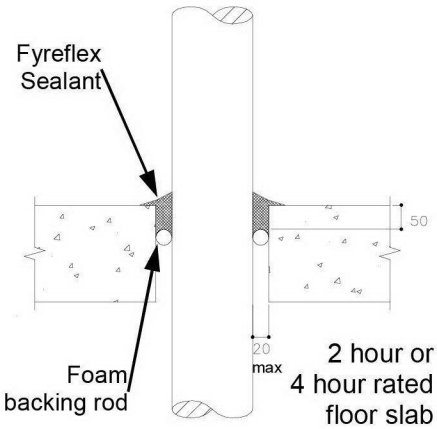
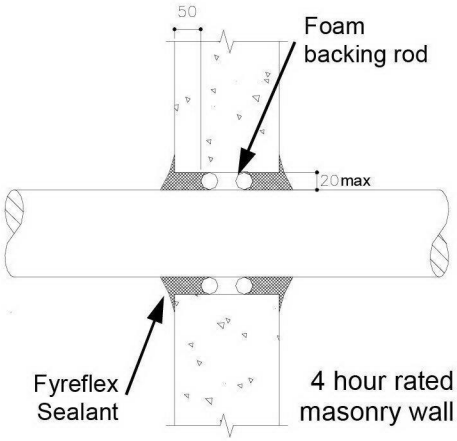
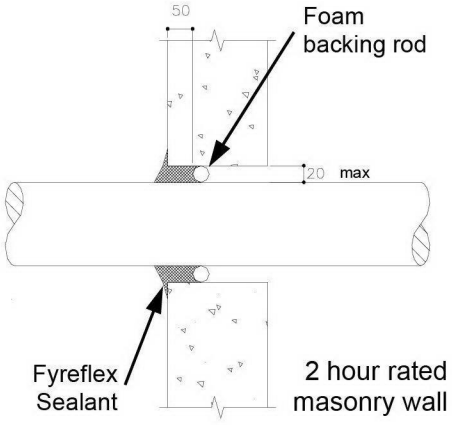
Fyreflex Sealant

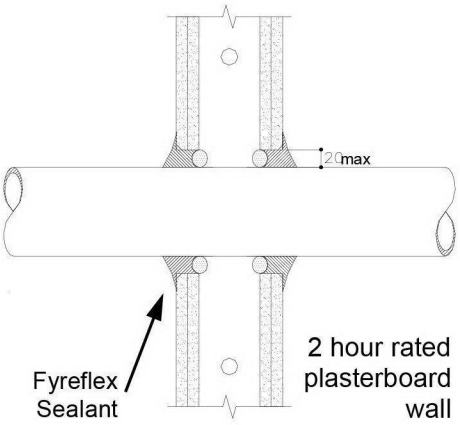
Miscellaneous Penetrations

Pipe Penetrations









PIPE TYPE	WALL OR FLOOR	PIPE SIZES	FRL
STEEL			
⇒ Non insulated	Walls and floors	Up to 225mm diam.	240/240/-
⇒ With 25mm rockwool insulation	Floors only	Up to 200mm diam.	180/180/-
CAST IRON			
⇒ Non insulated	Walls and floors	Up to 225mm diam.	240/240/-
⇒ With 25mm rockwool insulation	Floors only	Up to 200mm diam.	180/180/-
BRASS			
⇒ Non insulated	Walls and floors	Up to 102mm diam.	240/240/-
COPPER			
⇒ Non insulated	Walls and floors	Up to 225mm diam.	240/240/-
⇒ With 25mm rockwool insulation	Floors only	Up to 19mm diam.	120/120/-
FIBRE RE-INFORCED CEMENT PIPES AND COLUMNS	Walls and floors	Up to 225mm diam.	120/120/120

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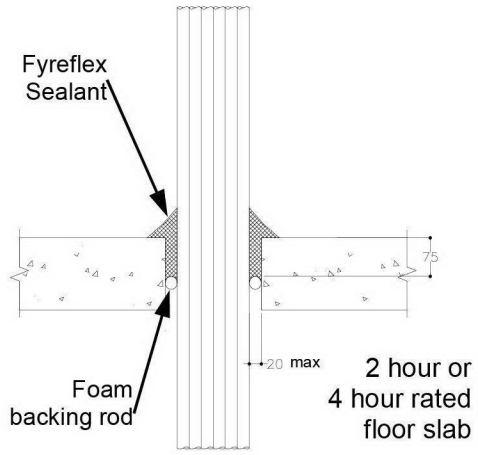
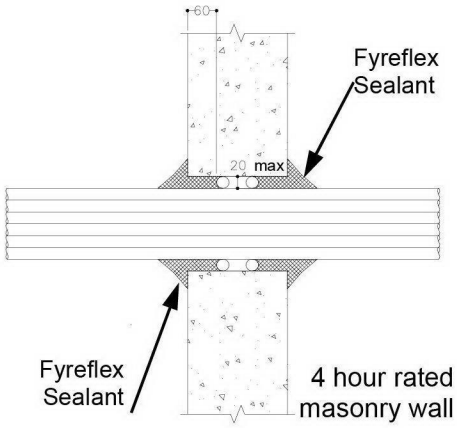
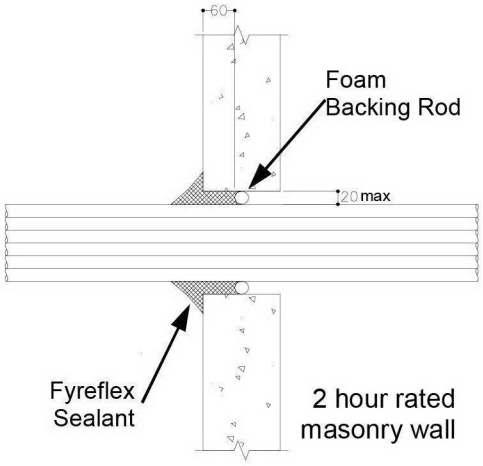
Fyreflex Sealant

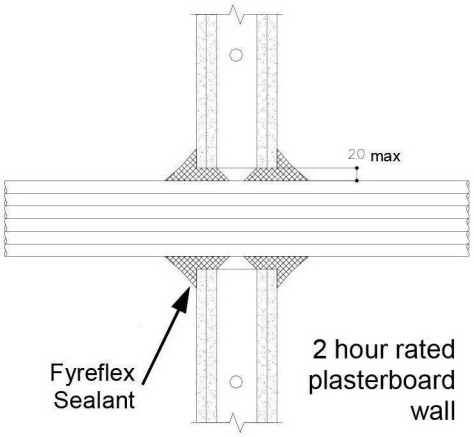
Miscellaneous Penetrations

Electrical Cable Penetrations









PENETRATION TYPE	WALL OR FLOOR	PENETRATION SIZES	FRL
SINGLE CABLE	Walls and floors	Up to 54mm diam.	240/240/110
CABLE BUNDLE	Walls and floors	Bundle of up to 24 cables.	240/240/95
STEEL CABLE TRAY	Walls and floors	Up to 380mm wide with assorted cables	240/240/110
BUS BARS	Walls and floors	50 x 10mm copper bus bars	120/120/-

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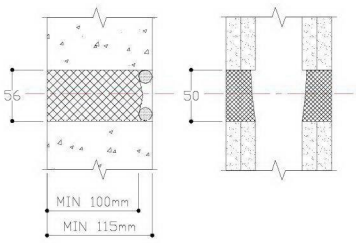
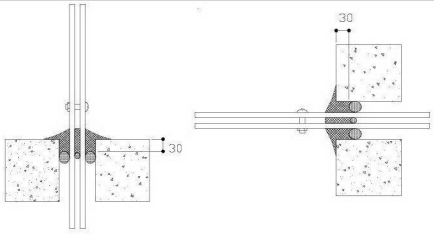
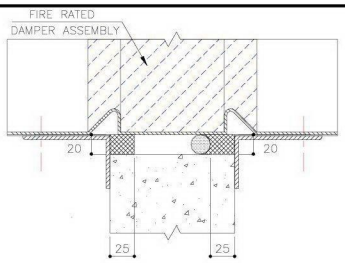
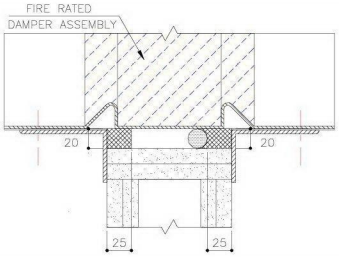
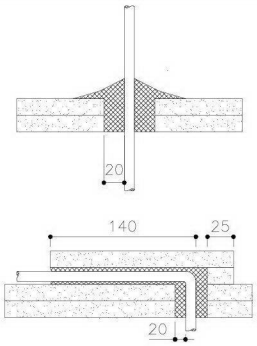
Miscellaneous Penetrations

Special Applications

SYSTEM	SYSTEM DIAGRAM	FIRE RESISTANCE
• Blank penetration. walls and floors. Max 56mm diameter.		120/120/120
• Copper and aluminium bus bars. Walls and floors. Max size 10 x 200mm.		120/120/-
• Perimeter seal for steel duct and damper used in masonry walls and floors.		120/120/-
• Perimeter seal for steel duct and damper used in drywalls.		120/120/-
• Cable penetrations through plasterboard ceiling		60/60/- ***NOTE:*** • *Fire Rated Plasterboard Systems must be installed according to manufacturers instructions.* • *Fyreflex is filled to depth of plasterboard sheet.*

TRAFALGAR

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Fyreflex Sealant

Joint Sealant Quantity Estimation Table

Note: All quantities estimated for 100 lineal metre requirement

Joint Size WIDTH	DEPTH	LITRES	300 ml Cartridge	600 ml SAUSAGES	10 LITRE PAIL
5	10	5	17	9	-
6	10	6	20	10	-
8	10	8	27	14	-
10	10	10	34	17	1
15	10	15	50	25	2
15	15	22.5	75	38	3
20	10	20	67	34	2
20	15	30	100	50	3
20	20	40	134	67	4
25	15	37.5	125	63	4
25	20	50	167	84	5
30	15	45	150	75	5
30	20	60	200	100	6
40	20	80	266	134	8
50	20	100	334	167	10
60	20	120	400	200	12

FORMULA FOR ESTIMATING QUANTITY OF JOINT SEALANT REQUIREMENTS
(Use whole numbers for millimetres and for metres)

L = Length of joint in metres	D = Depth of joint in millimetres
W = Width of joint in millimetres	Q = Quantity in Litres required
$Q = \frac{L \times W \times D}{1000}$	eg $Q = \frac{100m \times 15mm \times 10mm}{1000}$ = 15 litres required

Notes:

1. Sealant depth in joints between 10mm & 40mm wide should never be less than half the width
2. It is not recommended for any sealant depth to be less than 10mm or greater than 20mm
3. To estimate the quantity of a triangular fillet, the amount of sealant required would be half that required for a rectangular joint of the same dimensions

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TRAFALGAR

FyrePLUG™

Miscellaneous Service Penetrations

Up to 4 Hours Fire Protection
(to AS 1530.4-2014)

1800 888 714
www.tfire.com.au

Revision 1.1

FyrePLUG™

FIRE RATED PILLOWS

Trafalgar FyrePlug fire rated pillows consist of a high temperature resistant and granulated fire stopping material enclosed in a durable and fire resistant covering.

FyrePlug pillows were the first product of its kind developed in Australia in the early 1970's. Originally designed as a temporary means of providing fire protection to openings for electrical service penetrations in telephone exchanges.

FyrePlug pillows are ideal for small penetrations typically where temporary fire protection is required, but if left undisturbed, do provide a permanent form of fire protection as required by the Building Code of Australia.

Fire testing has been conducted for both wall and floor openings in conjunction with other Trafalgar fire stopping products and with a myriad of service penetration types.

APPLICATION

FyrePlug Pillows are designed to be used as a means to fire stop openings in wall and floor slabs which incorporate penetrations for services including metal pipes, electrical cables and bus bars.

- Sealing of electrical cables and pipe penetrations
- May be used in conjunction with other systems such as Maxilite board, FyreSet mortar and FyreFlex sealant.

KEY FEATURES AND BENEFITS

- Known and trusted brand - Benchmark Quality
- Proudly Australian made
- Up to 4 hours fire ratings. (For full FRL, FyreWrap insulation will be required for some services)
- Removable & reusable
- Available in a range of sizes to suit different applications
- Quick & easy installation
- Effective in difficult to access locations
- For use in floors and walls
- For further information on these products, contact Trafalgar

IMPORTANT NOTES

1. Trafalgar FyreFlex sealant to be used around openings.

2. If full insulation rating (temperature rise) is required for the FRL, FyreWrap will need to be wrapped on ductile services such as cable trays and steel and copper pipes for example.

3. Not suitable for use around plastic pipe and plastic conduits (Trafalgar Maxilite Board and FyreChoke Collars are recommended in this case).

COPPER PIPES
*FRL -/120/120 with FyreWrap Insulation System **

Technical Guide

FYREPLUG

Trafalgar is the well respected brand, synonymous with the supply of engineered solutions for the containment of fire, smoke and sound.
As the foremost Australian owned supplier of passive fire protection systems, Trafalgar's products have been specified and installed into Australian buildings for over 70 years.

Trafalgar Since 1945
CONTAINMENT & ACCESS SOLUTIONS
WHOLLY AUSTRALIAN OWNED

FYREPLUG FIRE RATED PILLOWS

Product	Code	Size (mm)	Box Qty	Pallet Qty
FyrePlug Pillow Small	Fyreplug - S	100 x 250	30	1200
FyrePlug Pillow Medium	Fyreplug - M	200 x 250	20	800
FyrePlug Pillow Large	Fyreplug - L	300 x 250	15	600

PRODUCT DESCRIPTION

COLOUR - FyrePlug pillows are a distinctive and easily identifiable blue colour with an identification label.

INSTALLATION - A fast, easy to install form of fire stopping of service penetrations. Simple compression fit and used in conjunction with FyreFlex sealant.

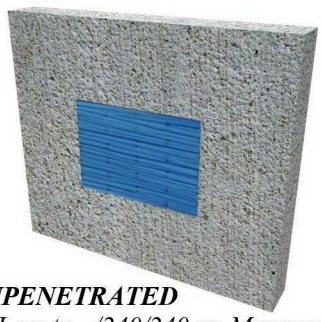
PACKING DENSITY - **Small** 600 Pillows per square metre
- Medium 190 Pillows per square metre
- Large 125 Pillows per square metre

TESTING - Tested to AS1530.4 and AS4072.1 standards.

ENVIRONMENT - Easy clean-up, low Volatile Organic Compounds (VOC) and Ozone Depleting Potential (ODP) formula.

SAFETY - FyrePlug pillows are a non hazardous substance, safe for general use. Please refer to product MSDS for full safety information.

ALSO AVAILABLE - Trafalgar offers a complete range of other fire stopping and fireproofing products.



UNPENETRATED
*FRL up to -/240/240 on Masonry walls **

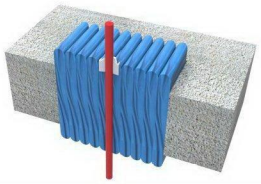
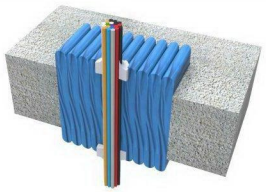
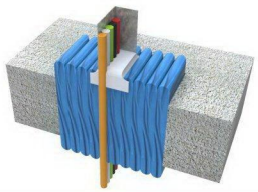
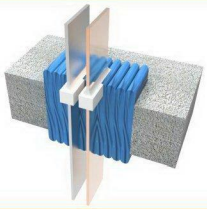
CABLE BUNDLES
*FRL -/180/120 with FyreWrap Insulation System **

SPECIFICATION

All openings are to be sealed, so as to maintain the FRL of the element (floor or wall) in accordance with AS1530.4 using Trafalgar FyrepPug pillow systems as detailed in Trafalgar's installation instructions. When full insulation rating (temperature rise) is required for the FRL, FyreWrap will be needed to be wrapped on ductile services such as cable trays and steel and copper pipes for example.

*** Refer to Trafalgar's installation instructions.**

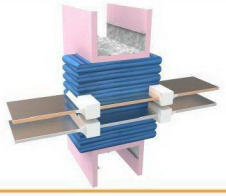
Floor Penetrations

SERVICES	SYSTEM DESCRIPTION	FRL	DIAGRAM
UNPENETRATED	Pillows tightly packed into opening Maximum size of opening • 700mm x unlimited in modules of 200mm • 600mm x 600mm or equal total area 0.36m^2	-/240/240 -/120/120	
SINGLE CABLES	Up to 70mm diameter cables Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/180/- **-/180/120**	
CABLE BUNDLES	Bundle of up to 150mm x 150mm cables. Cables 28mm diameter used. Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/180/- **-/180/120**	
MULTIPLE CABLE PENETRATIONS	Metal cable trays up to 600mm wide supporting assorted cables. Individual cable size up to 70mm. Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/120/- **-/120/120**	
STEEL PIPES	Steel pipes up to 100mm diameter. Pillows packed tightly around penetration. Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/120/- **-/120/120**	
BRASS AND COPPER PIPES	Brass and copper pipes up to 100mm nominal diameter. Annular gaps sealed with Fyreflex to minimum depth of 30mm **With Fyrewrap Insulation system**	-/120/- **-/120/120**	
COPPER AND ALUMINIUM BUS BARS	Copper and aluminium bus bars up to 200mm x 10mm. Pillows packed around and between bus bars. **With Fyrewrap Insulation system**	-/240/- **-/240/120**	

Note:

For penetrations requiring FRLs of up to -/240/240, please contact Trafalgar's Technical Department on 1800 888 714

Wall Penetrations

SERVICES	SYSTEM DESCRIPTION	FRL	DIAGRAM
UNPENETRATED	Pillows tightly packed into opening Maximum size of opening • 1800mm x 400mm • 2000mm x 400mm • 3000mm x 800mm with Maxilite fillets to locally thicken wall to 230mm. (Masonry walls only)	-/240/240 -/120/120 -/120/120	
SINGLE CABLES	Up to 80mm diameter cables **With Fyrewrap Insulation System** Up to 20mm diameter cables **With Fyrewrap Insulation system** Seal annular gaps with Fyreflex	-/60/- **-/60/60** -/120/- **-/120/120**	
CABLE BUNDLES	Bundles of upto 150mm x 150mm cables 25mm cables may be used. Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/180/- **-/180/120**	
MULTIPLE CABLE PENETRATIONS	Metal cable trays up to 600mm wide supporting assorted cables. Individual cable size up to 80mm. Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/120/- **-/120/120**	
STEEL PIPES	Steel pipes up to 90mm diameter. Pillows packed tightly around penetration. Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/120/- **-/120/120**	
BRASS AND COPPER PIPES	Brass and copper pipes up to 90mm nominal diameter. Annular gaps sealed with Fyreflex to minimum depth of 30mm **With Fyrewrap Insulation system**	-/120/- **-/120/120**	
COPPER AND ALUMINIUM BUS BARS	Copper and aluminium bus bars up to 200mm x 10mm. Pillows packed around and between bus bars. **With Fyrewrap Insulation system**	-/240/- **-/240/120**	

Note:

For penetrations requiring FRLs of up to -/240/240, please contact Trafalgar's Technical Department on 1800 888 714

3002 10 27

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Warrington FIRE research
CONSULTANCY • TESTING

CONFIDENTIAL REPORT

FIRE RESISTANCE TEST IN ACCORDANCE WITH AS1530.4-1990 AND AS4072.1-1992 AS APPROPRIATE ON SERVICE PENETRATIONS THROUGH A PLASTERBOARD PARTITION

Report for

Fyreguard Pty. Ltd.
10-12 Rosslyn Street
Mile End
S.A. 5031

Report	Name	Signature/* Authorisation	Date
Prepared by:	M.C. Hui	M.C. Hui	2.1.96
Reviewed by:	J.P. England	J.P. England	4/1/96

* For and on behalf of Warrington Fire Research Group.

TEST REPORT

Fire resistance test in accordance with AS1530.4-1990 and AS4072.1-1992 as appropriate on service penetrations through a plasterboard partition

TEST SPONSOR: Fyreguard Pty. Ltd., 10-12 Rosslyn Street, Mile End, S.A. 5031.

TEST SUMMARY:

A fire test has been performed in accordance with AS1530.4-1990 sections 2, 3 and 10 as appropriate on a test assembly comprising various services penetrating a nominally 128mm thick plasterboard partition. The procedures of AS4072.1-1992 were followed as appropriate.

The results presented in this report are related to services identified as A, B, C and E only. The results related to other services are retained in a file related to this test.

The specimens were subjected to the furnace heating conditions from one side only and satisfied the performance requirements specified in AS1530.4-1990 for the following periods in the orientation tested:

Serv. Ref.	Service Description	Structural Adequacy	Integrity (minutes)	Insulation (minutes)
A	43mm O.D. SWV uPVC pipe protected with an internally mounted Fyreguard wall collar	Not Applicable	121	121
B	69mm O.D. SWV uPVC pipe protected with an internally mounted Fyreguard wall collar	Not Applicable	121	121
C	83mm O.D. SWV uPVC pipe protected with an internally mounted Fyreguard wall collar	Not Applicable	121	121
E	25mm O.D. uPVC electrical conduit protected with Grafitex paste applied to the full depth of the facings on both faces of the partition	Not Applicable	121	121

The test was terminated after a period of 121 minutes at the request of the sponsor.

Test date: 18 October 1995

Report dated: 22 December 1995

CONTENTS **PAGE**

1 PURPOSE OF THE INVESTIGATION

1.1 To ascertain the fire resistance performance of various service penetrations, when tested in accordance with the requirements of AS1530.4-1990 "Fire resistance tests of elements of building construction" and of AS4072.1-1992 "Components for the protection of openings in fire-resistance separating elements Part 1: Service penetrations and control joints" as appropriate.

2 INTRODUCTION

2.1 The investigation was conducted in accordance with Sections 2, 3 and 10 of AS1530.4-1990 and with AS4072.1-1992 as appropriate. This report should be read in conjunction with the above Standards.

2.2 The test assembly comprised a nominally 128mm thick plasterboard partition penetrated by various services. The service penetrations were protected by Grafitex paste, or internally mounted Fyreguard Insert wall collars and Fyreseal Mastic.

2.3 The investigation was conducted on 18 October 1995 at the request of Fyreguard Pty. Ltd. the test sponsor.

2.4 This test was conducted at the Melbourne Laboratories of BHP Research.

3 TEST CONSTRUCTION

3.1 Details of the test construction are shown on Drawing Nos. F91622/1 to F91622/4 and described in Appendix 1. This information is based upon a detailed survey of the test specimen and information supplied by the sponsor.

3.2 The specimen comprised a nominally 1.1m high x 1.1m wide x 128mm thick plasterboard partition with 2 layers of 16mm Gyprock Fyrchek plasterboard faced on both sides of 64mm steel studs.

3.3 The plasterboard partition contained five circular openings penetrated by various services. Three services were identified as A, B and C which were protected by internally mounted Fyreguard Insert wall collars in conjunction with Fyreseal Mastic fire stopping system. Service E was protected by Grafitex paste applied to the full depth of the facings on both sides of the partition.

3.4 Service D was incorporated in the same test, the test result of which is retained on a file related to this test.

3.5 Details of the penetrations considered in this report are summarised below:

Serv Ref.	Service description	Nominal pipe wall thickness (mm)	Approx. aperture size (mm)	Main fire stopping system	Supplementary fire stopping system	Nominal Extension from furnace partition interface	
						Non-fire side	Fire side
A	43mm O.D. SWV uPVC pipe protected with an internally mounted Fyreguard wall collar	2.6	90 dia.	Fyreguard Insert wall collar	Fyreseal Mastic	2m	130mm
B	69mm O.D. SWV uPVC pipe protected with an internally mounted Fyreguard wall collar	2.9	115 dia.	Fyreguard Insert wall collar	Fyreseal Mastic	2m	130mm
C	83mm O.D. SWV uPVC pipe protected with an internally mounted Fyreguard wall collar	3.4	145 dia.	Fyreguard Insert wall collar	Fyreseal Mastic	2m	130mm
E	25mm O.D. uPVC electrical conduit protected with Grafitex paste applied to the full depth of the facings on both faces of the partition	2.9	50 dia.	Grafitex 32mm thick on both sides	N/A	2m	120mm

3.6 The information given in the drawings and Appendix 1 is based upon a detailed survey of the test specimen and information supplied by the test sponsor.

3.7 The fire stopping systems were supplied and installed by Fyreguard Pty. Ltd.

4 INSTRUMENTATION

4.1 The instrumentation was provided generally in accordance with AS1530.4-1990 and AS4072.1-1992 as appropriate.

4.2 The furnace temperature was measured using four Type K thermocouple elements uniformly distributed in a plane approximately 100mm from the exposed face of the plasterboard partition.

4.3 The unexposed face temperatures were measured using Type K thermocouples soldered to copper disks and covered with insulating pads, as prescribed in AS1530.4, at the following positions:

a) on the service approximately 25mm from the partition and 400mm from the partition
b) on the partition at 25mm from the edge of the opening

The positions of the thermocouples are summarised in Table 1.

4.4 A roving thermocouple was available to measure the temperatures at other points if 'hot' spots became evident during the test.

4.5 The furnace and ambient temperatures were measured and recorded on a Yew Multi-range 12 point recorder at 60 second intervals. The temperatures recorded

on the Yew recorder were also recorded on a computer based data logging system scanning at 60 second intervals from which the graphs in this report were produced.

4.6 The furnace pressure was measured by a probe located level with the underside of the lowest penetration seal and monitored on an ESM 84 Digital micromanometer.

4.7 Cotton pads and gap gauges complying with BS476:Part 20:1987 were available to obtain additional information during the test.

5 TEST PROCEDURES

5.1 The test was carried out using BHP's 1m x 1m test furnace following the procedures specified in AS1530.4-1990 and AS4072.1-1992 as appropriate. The specimens were subjected to heating from one side only.

5.2 Control of the furnace temperature was maintained within the prescribed limits of variance from the time/temperature curve specified in clauses 2.9.1 and 2.9.2 of AS1530.4-1990. The furnace pressure measured at approximately level with the underside of the lowest penetration seal was maintained at approximately 8Pa above that of the laboratory after the first 5 minutes of the test.

5.3 Throughout the test the temperatures indicated by all the thermocouples provided to monitor the furnace and the specimen were recorded at sixty second intervals.

5.4 Observations were made on the general behaviour of the specimen during the test. Any flaming on the unexposed surface of the specimen was recorded.

5.5 A roving thermocouple was used when considered appropriate.

5.6 For additional information, cotton pads and gap gauges complying with BS476: Part 20:1987 were available if appropriate.

6 TEST RESULTS

6.1 The mean furnace temperature is compared with the specified temperature/time relationship in Graph 1.

6.2 The temperatures of the various thermocouples fixed on or adjacent to the services considered in this report are given in Graphs 2 to 5.

6.3 Observations made on the general behaviour of the specimen are detailed in Appendix 2.

6.4 Photographs taken of the specimen before the test are listed in Appendix 3 and included as Plates 1 - 2.

6.5 The ambient air temperature in the vicinity of the test construction was 15°C at the start of the test, with no significant variations during the test.

7 EVALUATION AGAINST THE PERFORMANCE CRITERIA

7.1 The performance of the specimen was judged against the following criteria specified in AS1530.4-1990.

7.1.1 **Structural Adequacy.** The structural adequacy criterion is not applicable to service penetrations.

7.1.2 **Integrity.** The penetration system shall be deemed to have failed the integrity criterion when flames or hot gases can pass to the unexposed side of the penetrated element. Failure is interpreted to have occurred if a gap forms of any size which permits an uninterrupted view to the furnace from the non-fire side or flaming on the non-fire side is sustained for longer than 10 seconds.

Failure of services A, B, C and E under this criterion did not occur during the 121 minute test.

7.1.3 **Insulation.** The penetration systems shall be deemed to have failed the insulation criterion when any of the temperatures measured by thermocouples B1 through B6 (Service A), B7 through B12 (Service B), C1 through C6 (Service C), D1 through D6 (Service E), or by a roving thermocouple exceeds 180 K temperature rise above the initial temperature at the start of the test.

Failure of services A, B, C and E under this criterion did not occur during the 121 minute test.

8 CONCLUSIONS

8.1 A test assembly comprising a nominally 128mm thick Gyprock Fyrchek plasterboard partition penetrated by various services which were protected with Grafitex paste or with Fyreguard Insert wall collar and Fyreseal Mastic as described in this report has been subjected to a fire resistance test in accordance with sections 2, 3 and 10 of AS1530.4 and with AS4072.1 as appropriate with one side exposed to the furnace heating conditions.

8.2 The specimen satisfied the performance requirements of AS1530.4-1990 for the following periods in the orientation tested:

Serv. Ref.	Service Description	Structural Adequacy	Integrity (minutes)	Insulation (minutes)
A	43mm O.D. SWV uPVC pipe protected with an internally mounted Fyreguard Insert wall collar	Not Applicable	121	121
B	69mm O.D. SWV uPVC pipe protected with an internally mounted Fyreguard Insert wall collar	Not Applicable	121	121
C	83mm O.D. SWV uPVC pipe protected with an internally mounted Fyreguard Insert wall collar	Not Applicable	121	121
E	25mm O.D. uPVC electrical conduit protected with Grafitex applied to the full depth of the facings on both faces of the partition	Not Applicable	121	121

Therefore for the purposes of the Building Regulations in Australia the specimen may be regarded as having achieved the following fire resistance levels:

Serv. Ref.	Service Description	FRL (mins.) Structural Adequacy*/Integrity/Insulation
A	43mm O.D. SWV uPVC pipe protected with an internally mounted Fyreguard Insert wall collar	- /120 / 120
B	69mm O.D. SWV uPVC pipe protected with an internally mounted Fyreguard Insert wall collar	- /120 / 120
C	83mm O.D. SWV uPVC pipe protected with an internally mounted Fyreguard Insert wall collar	- /120 / 120
E	25mm O.D. uPVC electrical conduit protected with Grafitex applied to the full depth of the facings on both faces of the partition	- /120 / 120

Note: The criterion of structural adequacy is not applicable to service penetration systems.

9 LIMIT OF APPLICATION

9.1 The results of this fire test may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.

WFRA
22 December 1995

TEST NO. F91622

SCHEDULE OF COMPONENTS

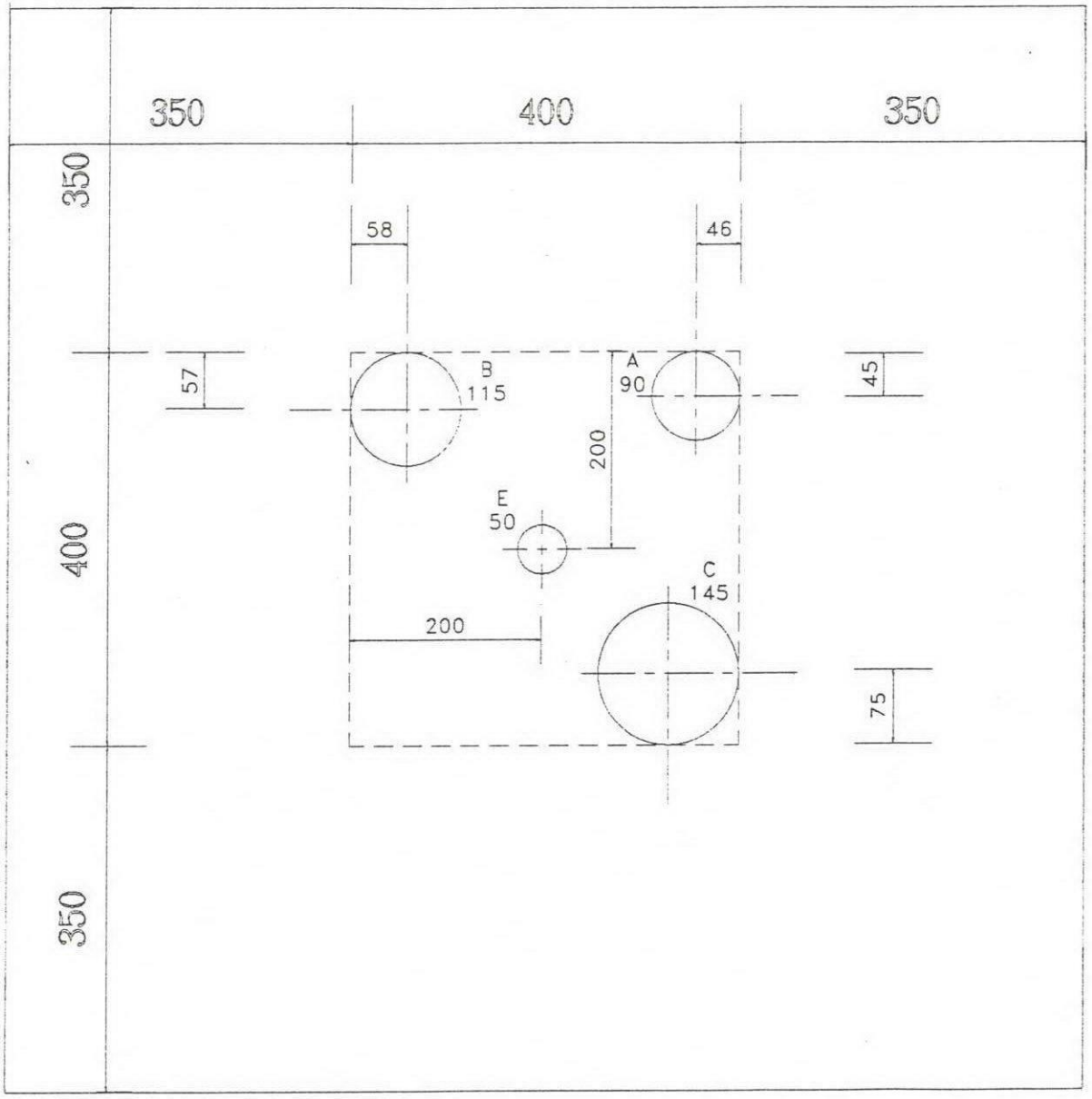
1. Gyprock Fyrechek plasterboard partition, 16mm per layer.

2. Fyreseal Mastic.

3. Fyreguard Insert Wall Collar.

4. Fibrefrax wool (Services A, B & C) or uPVC cap (Service E).

5. Grafitex paste.



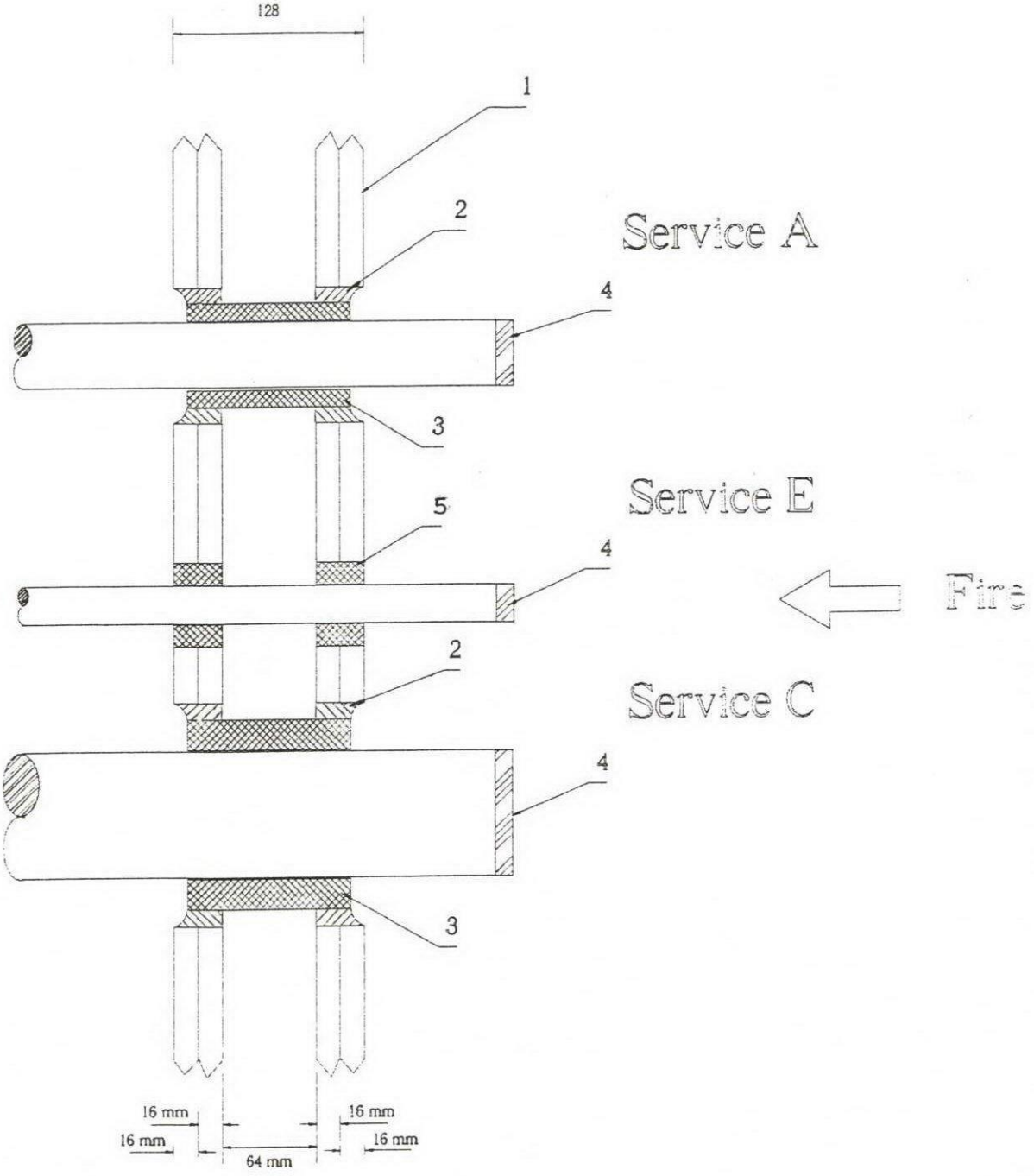
Description

Two 16 mm "Fyrchek" boards each side of 64 mm steel stud.

A 40 mm I.D. uPVC pipe "Wall Collar" no spring
B 65 mm I.D. uPVC pipe "Wall Collar" no spring
C 80 mm I.D. uPVC pipe "Wall Collar" with spring
E 25 mm conduit "Grafitex" to depth of 2 x 16 mm "Fyrchek" boards on both faces

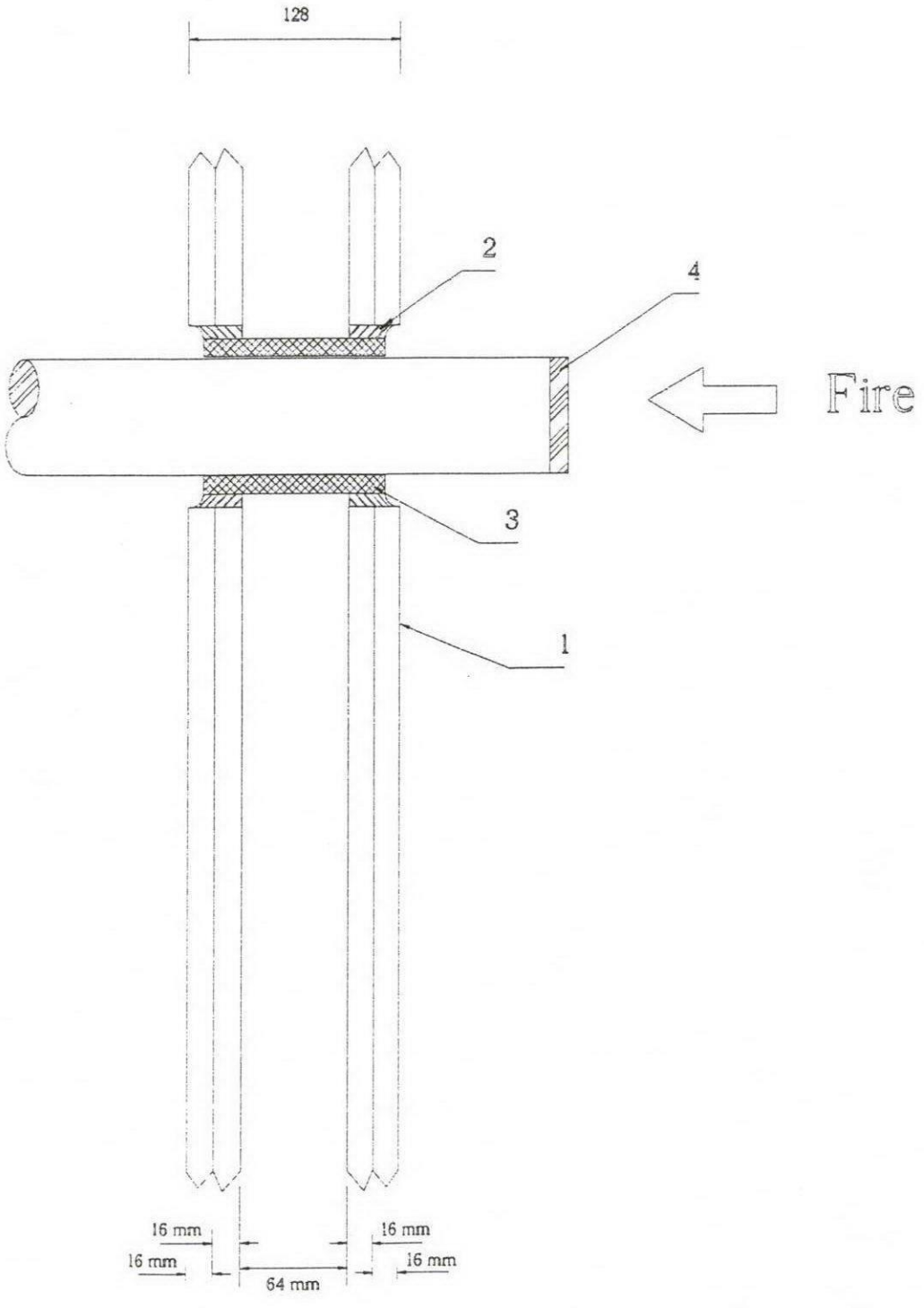
All dimensions in mm.
Scale: Not To Scale

TITLE	DATE	
Test Assembly General Arrangement	20.12.95	**WARRINGTON**
	DRWG. No. F91622/1	**FIRE RESEARCH**



All dimensions in mm.
Scale: Not To Scale

TITLE	DATE	
Details of Service Penetrations Sheet 1	20.12.95	**WARRINGTON FIRE RESEARCH**
	DRWG. No. F91622/2	

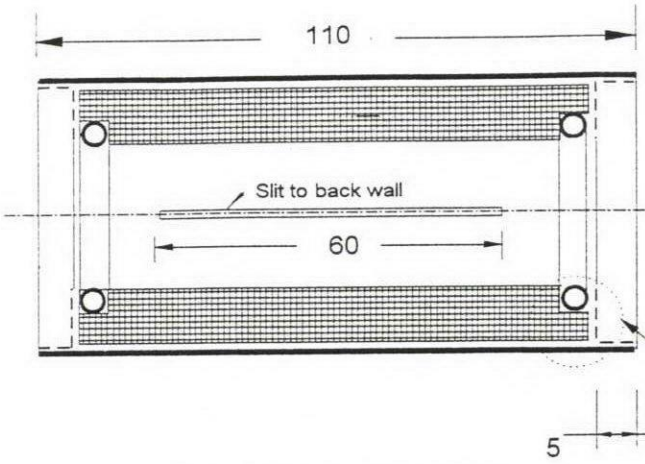


Service B

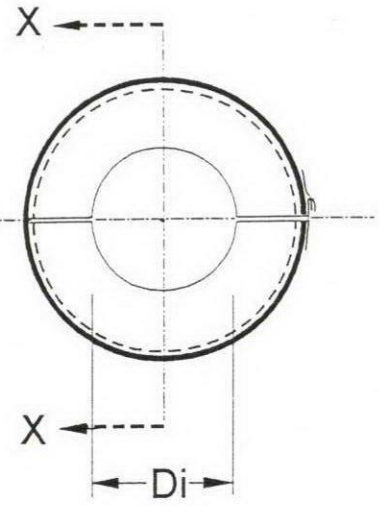
All dimensions in mm.
Scale: Not To Scale

TITLE	DATE	
Details of Service Penetrations Sheet 2	20.12.95	WARRINGTON FIRE RESEARCH
	DRWG. No. F91622/3	

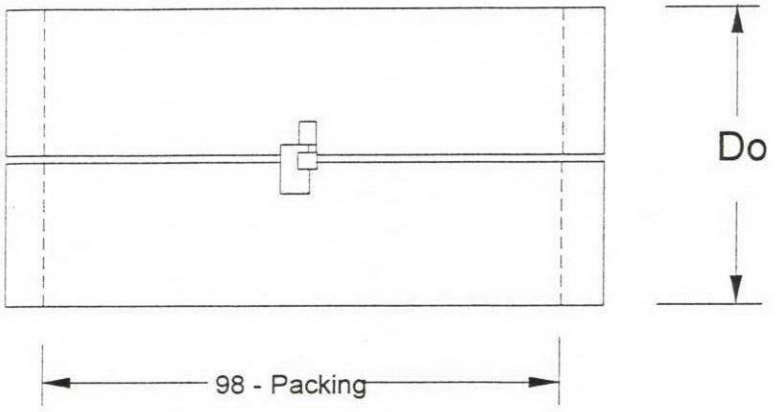
SECTION X-X



END VIEW



ELEVATION X-X



Grafitex cut out 9 x 9 mm
to accomodate springs

MATERIAL:

Body 0.8 mm Zincseal
End Caps 0.8 mm do. Perf Lockers No. P181

Springs fitted to sizes 150, 100 and 80 only

Springs from 0.036" (0.91mm) SS wire, Coil O.D 6.5 mm.
End loops full turn bent out 90 deg. parallel to body
Stretch formers from 3.2 mm dia PVC welding rod

Pipe Size	Body Length	Stretched length
150	270	540
100	190	380
80	145	290

CANISTER DIMENSIONS

Size	Di	Do	Graf
40	45	70	12
50	58	84	12
65	71	97	12
80	85	110	18
100	113	150	18
150	163	200	18

All dimensions in mm.
Scale: Not To Scale

TITLE	DATE	
Fyreguard Insert Wall Collar Details	20.12.95	WARRINGTON FIRE RESEARCH
	DRWG. No. F91622/4	

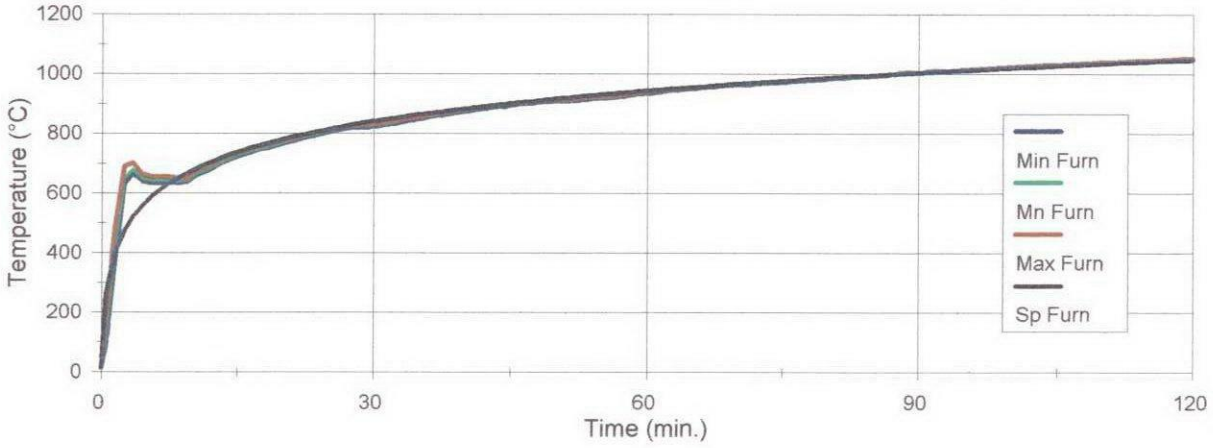
TABLE 1 - SPECIMEN TEMPERATURES

SER-VICE	T/C No.	SURFACE	DESCRIPTION	TEMP (°C) at t (min.)			LIMIT TIME* (min.)
				Initial t = 0	After t = 60	After t = 120	
A	B1	PIPE	25mm from plasterboard 12 o'clock	17	57	47	-
	B2	PIPE	400mm from plasterboard 12 o'clock	16	18	18	-
	B3	PLASTERBOARD	25mm from edge of opening 12 o'clock	17	57	69	-
	B4	PIPE	25mm from plasterboard 3 o'clock	16	37	45	-
	B5	PIPE	400mm from plasterboard 3 o'clock	16	18	19	-
	B6	PLASTERBOARD	25mm from edge of opening 3 o'clock	16	55	70	-
B	B7	PIPE	25mm from plasterboard 12 o'clock	17	44	52	-
	B8	PIPE	400mm from plasterboard 12 o'clock	16	22	31	-
	B9	PLASTERBOARD	25mm from edge of opening 12 o'clock	16	59	70	-
	B10	PIPE	25mm from plasterboard 9 o'clock	17	35	40	-
	B11	PIPE	400mm from plasterboard 9 o'clock	16	21	26	-
	B12	PLASTERBOARD	25mm from edge of opening 9 o'clock	16	55	67	-
C	C1	PIPE	25mm from plasterboard 12 o'clock	17	55	59	-
	C2	PIPE	400mm from plasterboard 12 o'clock	16	20	19	-
	C3	PLASTERBOARD	25mm from edge of opening 12 o'clock	17	66	88	-
	C4	PIPE	25mm from plasterboard 9 o'clock	16	49	50	-
	C5	PIPE	400mm from plasterboard 9 o'clock	16	19	20	-
	C6	PLASTERBOARD	25mm from edge of opening 9 o'clock	16	54	69	-
E	D1	PIPE	25mm from plasterboard 3 o'clock	16	79	93	-
	D2	PIPE	400mm from plasterboard 3 o'clock	16	18	19	-
	D3	PLASTERBOARD	25mm from edge of opening 3 o'clock	17	56	71	-
	D4	PIPE	25mm from plasterboard 12 o'clock	16	57	86	-
	D5	PIPE	400mm from plasterboard 12 o'clock	16	18	18	-
	D6	PLASTERBOARD	25mm from edge of opening 12 o'clock	16	53	69	-

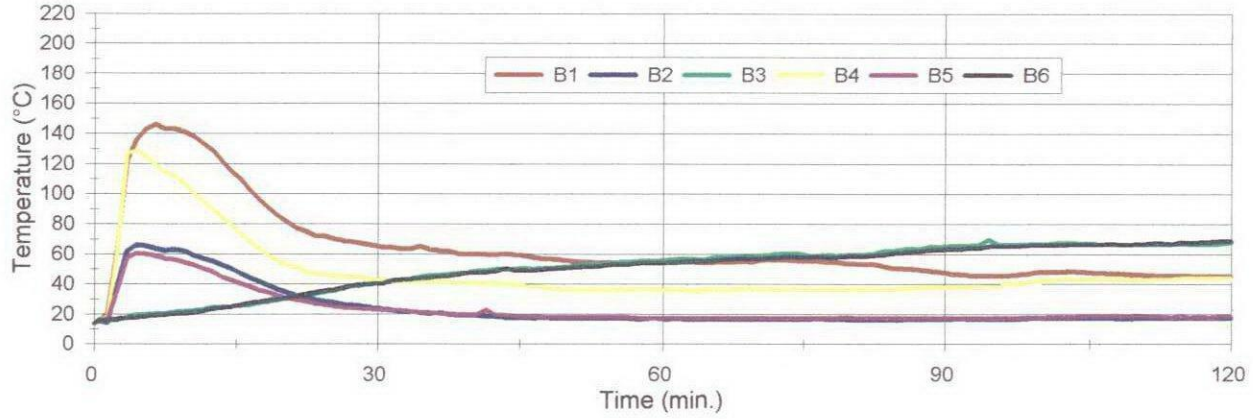
Notes: * Limit time is the time to the nearest whole minute at which the temperature recorded by the thermocouple does not rise by more than 180 K above the initial temperature.

'-' indicates the temperature limit was not exceeded during the test period.

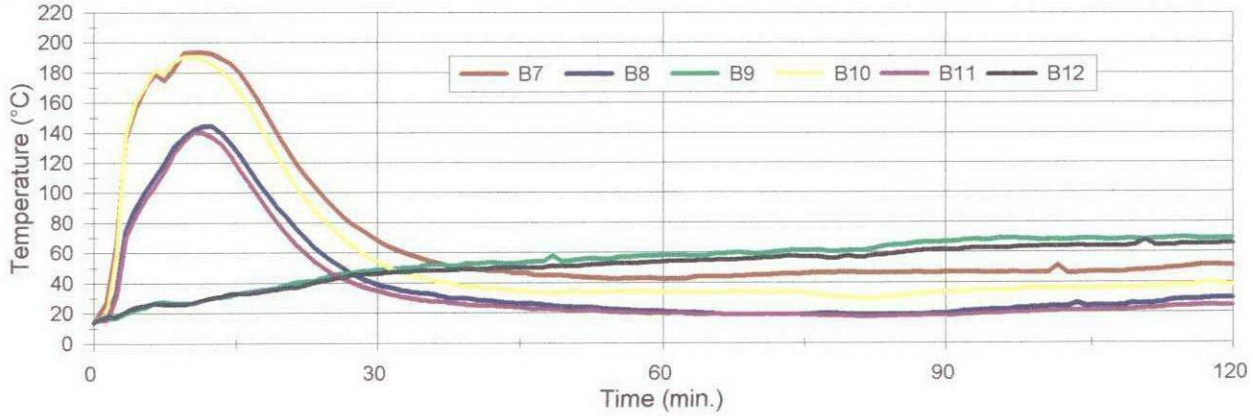
Graph 1: Furnace temperatures



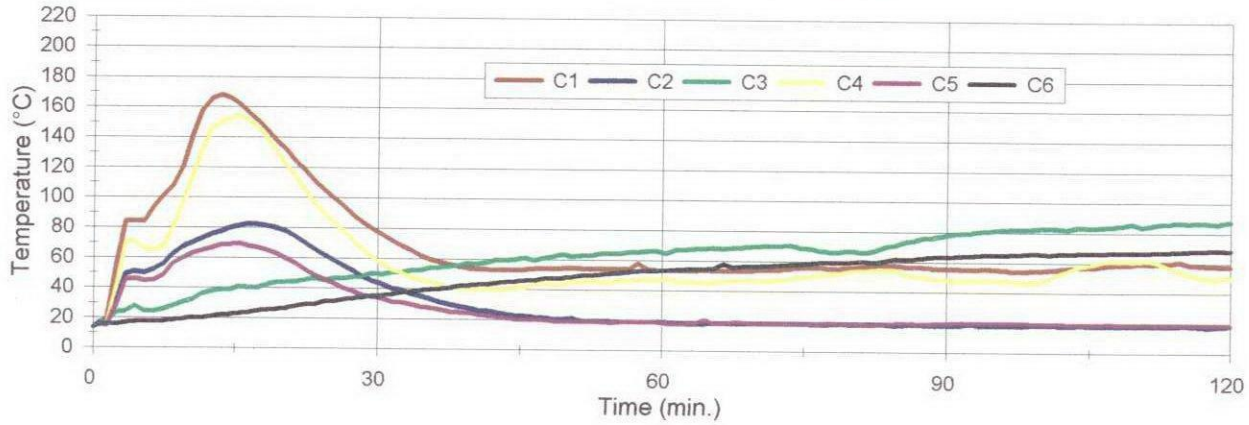
Graph 2: Service A temperatures



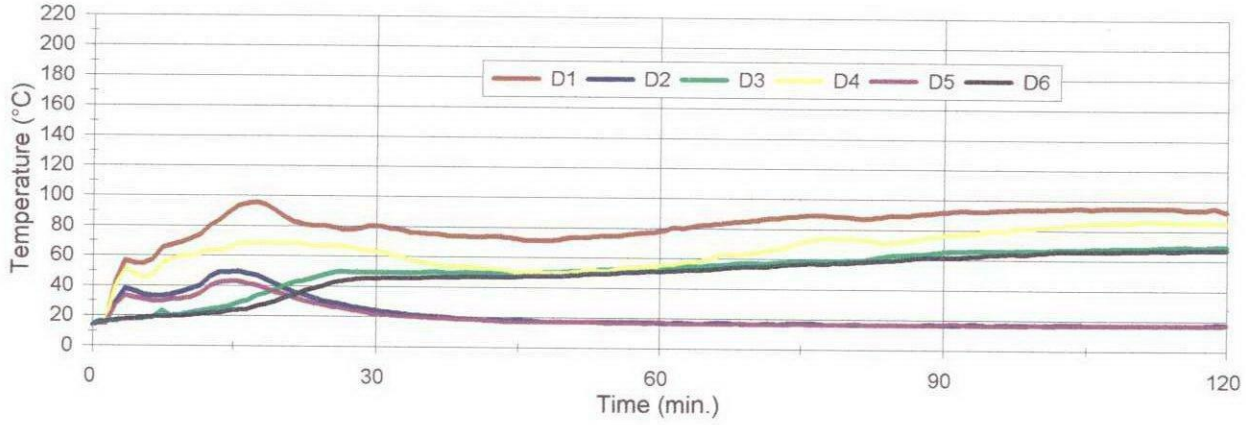
Graph 3: Service B temperatures



Graph 4: Service C temperatures



Graph 5: Service E temperatures



APPENDIX 1

DESCRIPTION OF THE SPECIMEN

1 GENERAL DESCRIPTION

1.1 The specimen comprised a plasterboard partition, penetrated by various services protected with Grafitex paste, or with Fyreguard internally mounted Insert wall collars and Fyreseal Mastic system.

1.2 This report considers the penetrations by services identified as A, B, C and E only.

1.3 Details of the test arrangement are shown on Drawing Nos. F91622/1 through F91622/4.

1.4 The whole test specimen was installed and supplied by Fyreguard Pty. Ltd, the test sponsor.

2 PLASTERBOARD PARTITION

2.1 The separating element comprised a nominally 1100mm high x 1100mm wide section of a plasterboard partition similar in construction to Gyprock System FS6.

2.2 The partition comprised 64mm steel studs, faced on both sides with two layers of 16mm thick Gyprock Fyrchek plasterboard, screw-fixed to the studs.

2.3 Circular openings of various sizes were cut in the plasterboard partition to accommodate penetrating services.

2.4 The general partition layout is shown on Drawings No. F91622/1).

3 PENETRATING SERVICES

3.1 The openings in the partition were penetrated by a number of services. The services considered in this report are summarised below and detailed on Drawings No. F91622/2 and F91622/3.

Service A A 43mm O.D. uPVC SWV pipe with nominal wall thickness 2.6mm.

Service B A 69mm O.D. uPVC SWV pipe with nominal wall thickness 2.9mm.

Service C A 83mm O.D. uPVC SWV pipe with nominal wall thickness 3.4mm.

Service E A 25mm O.D. uPVC electrical conduit with nominal wall thickness 2.9mm.

3.2 Details of the penetrations are summarised below:

Service Ref.	Approx. aperture size(mm)	Nominal Extension from furnace partition interface	
		Non-fire side	Fire side
A	90 dia.	2m	130mm
B	115 dia.	2m	130mm
C	145 dia.	2m	130mm
E	50 dia.	2m	120mm

3.3 The pipe ends of services A, B, and C within the furnace were closed off with Fibrefrax wool 30mm thick, sealed over with silicate cement and pierced diametrically with 1.6mm steel wires extending through adjacent pipe walls, with the wires bent over to retain position. The conduit end of service E within the furnace was sealed with a uPVC cap glued onto the conduit. The pipe ends on the non-fire side were vented.

4 METHOD OF SUPPORT

4.1 All the pipes and the conduit considered in this report were supported at nominal distances of 290mm and 1440mm from the non-fire side of the partition.

5 PENETRATION PROTECTION SYSTEM

5.1 The services were positioned within respective openings as shown on drawing No. F91622/1 and were protected by the following:

Services A, B and C:
Fyreguard Insert wall collars were fitted around Services A, B and C as shown on Drawings No. F91622/2 and F91622/3. Each collar was mounted centrally within the partition thickness with the ends recessed approximately 14mm from each plasterboard face. The collar bodies were sealed into openings with approximately 15mm wide x 32mm deep fillets of Fyreseal Mastic sealant applied to both exposed and unexposed faces filling the gaps between the collar bodies and the openings.

Service E:
A nominal 32mm depth of Grafitex compound was applied to the full depth of the facings on both faces of the partition as shown on Drawing No. F91622/2.

6 FIRE STOPPING MATERIALS

6.1 Grafitex

Grafitex is a water based graphite intumescent sealant.

6.2 Fyreguard Insert wall collar

Fyreguard Insert wall collars comprise an outer casing of 1.0mm zinc steel with a Grafitex intumescent liner as shown in Drawing No. F91622/4. The 80mm collar for Service C was provided with springs which were hooked around the anchor screws and allowed to sit in double form across the collar diameter at both ends of the collar, opening apart with the collar and stretching around the pipe as the collar was closed up. The 40mm collar for Service A and 65mm collar for Service B were not provided with springs.

6.3 Fyreseal Mastic

Fyreseal Mastic is a water based flexible sealant consisting of selected refractory fillers and a latex resin binder.

6.4 Further details of the above fire stopping materials have been supplied in a confidential disclosure which is held on the file relating to this fire test.

APPENDIX 2

OBSERVATIONS

Time		U/E	Observations
Min	Sec		
0	0	U	Test started.
1	0	U	Smoke released from perforated mesh of wall collars for Services A, B and C.
2	0	U	Smoke released from vented ends of Services B, C and E.
2	30	U	Smoke released from vented end of Service A.
4	0	U	Service C partially collapsed but no through gaps were observed.
7	0	U	Smoke release from vented ends of Services A, B, C and E continued.
10	0	U	Service B sagged. Service C softened and was compressed by the intumescent.
11	0	U	Smoke release from the vented ends of Services A, B, C and E reduced.
15	0	U	Smoke release from the vented ends of Services A, B, C and E reduced further.
30	0	U	Smoke release from vented ends of Services A, B, C and E practically stopped.
45	0	U	No significant changes to the specimens.
60	0	U	No significant changes to the specimens.
75	0	U	Slight traces of smoke released from the vented end of Service C.
120	0	U	No significant changes to the specimens.
121	0	U	Test terminated at the request of the sponsor.

U = Unexposed face
E = Exposed face

APPENDIX 3

PHOTOGRAPHS

PLATE 1: Test assembly before test
(Neg. No. 12/37/2)

PLATE 2: Fire exposed face of test assembly before test
(Neg. No. 5/37/2)

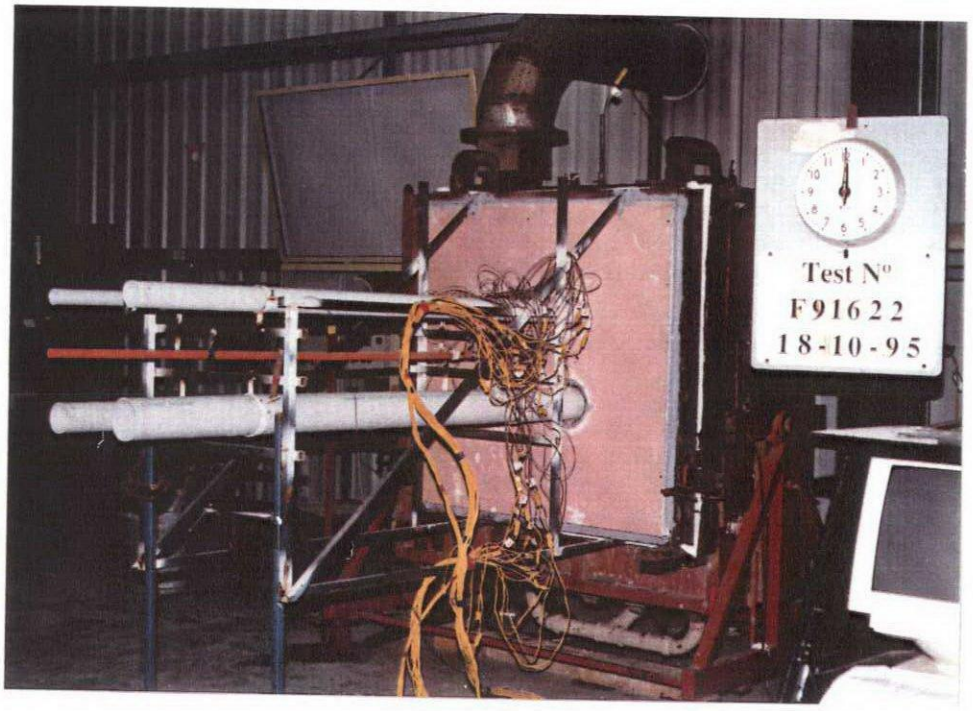


PLATE 1

PLATE 2

FIRE STOPPING
PASSIVE FIRE PROTECTION
ABN 47 064 568 770

PO Box 737
Balgowlah, NSW 2093

Unit 6, 252 Allambie Road,
Allambie Heights, NSW 2100

Phone: (02) 9907 0700
Fax: (02) 9907 0728

INSTALLATION CERTIFICATE

CERTIFICATION & SCHEDULE OF SERVICES PENETRATIONS TO FIRE RATED BUILDING ELEMENTS

Site Details:

Project Name.	Bassike				
Level/Unit no.	L2	Street no. / Street name:	2 Daydream St		
Suburb:	Warriewood	State:	NSW	Postcode:	2102

Description of Work: Fire sealing of service penetrations

Development Consent:

DA/CDC No. Consent authority:

Pursuant to the provisions of the Environment Planning and Assessment Regulations 2000 and Clause A2.2 of the Building Code of Australia:

I ANDREW ST JOHN (name) of FIRE STOPPING PTY LTD (company)

hereby certify:-

that the following services penetrations, together with the relevant data sheet as list below, have been installed in accordance with BCA Specification C3.15 and manufacturers specifications.

The following schedule comprises all services penetrations through fire rated building elements.

em	Description of service penetration	Locations	Photo Reference No.	Method of protection and Product Name	Manufacturers Spec. / Data Sheet Reference (attach copy of data sheet)
lectrical					
	L2 Part tenancy		0699	Trafalgar Fyreflex Mastic	
	to design room/		0701	Trafalgar Fyreplug Pillows	
	* adjoining warehouse				

a) Other practices or standards relied upon for this certification: .....

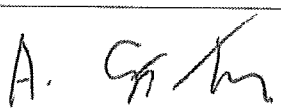
b) This Certificate relates to Whole / Part of the building (*nominate part if applicable*)

c) Exclusions: **Yes** (exclusions *must be clearly outlined*) or

No *(Certificate will be deemed unconditional & all inclusive)*

Details: .....

Insurance Declaration: I do not possess Indemnity Insurance in relation to this project.

Name:	Andrew St John	*Qualification:*	
Company Name:	Fire Stopping Pty Ltd	*ABN No:*	47064568770
Company Address:	6/252 Allambie Rd, Allambie Hts	*Tel:*	99070700
Signature:		*Position Title:*	Supervisor
		Date:	9/10/2015

Note: Attach all referenced data sheets, photos and supporting information to this certificate.

TRAFALGAR

Certificate No : P-02

SYSTEM CERTIFICATE

This is to certify that

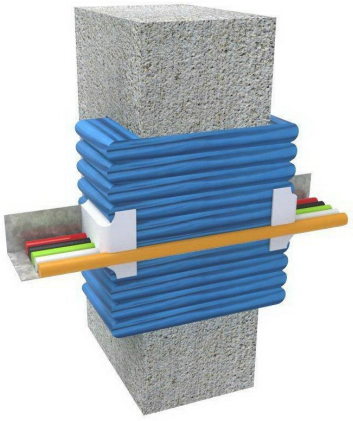
FYREPLUG PILLOWS IN WALLS

have been tested/approved in accordance with
AS1530 Part 4 and AS4072 Part 1

FRL: Up to -/240/240

Trafalgar Fyreplug pillows in walls can be installed as a temporary or permanent fire barrier, and have been tested with the following services:

- Blank penetration
- Cable trays
- Cable bundles
- Copper pipes
- Steel pipes
- Bus Bars



Required FRL	Maximum Opening Size
-/240/240	1800mmW x 400mmH
-/120/120	2000mmW x 400mmH
-/120/120	3000mmW x 800mmH (wall must be minimum 230mm masonry)

For full insulation on ductile services, Fyrewrap will be required. See FW-01

APPROVAL NO: FCO 1775

This System Certificate is not a substitute for a test certificate - For further technical or installation information please contact Trafalgar
This document is subject to change without notice

T: 1800 888 714 | E: info@tfire.com.au | W: www.tfire.com.au

TRAFALGAR

Certificate No : S-01

SYSTEM CERTIFICATE

This is to certify that

FYREFLEX FOR PENETRATIONS IN WALLS

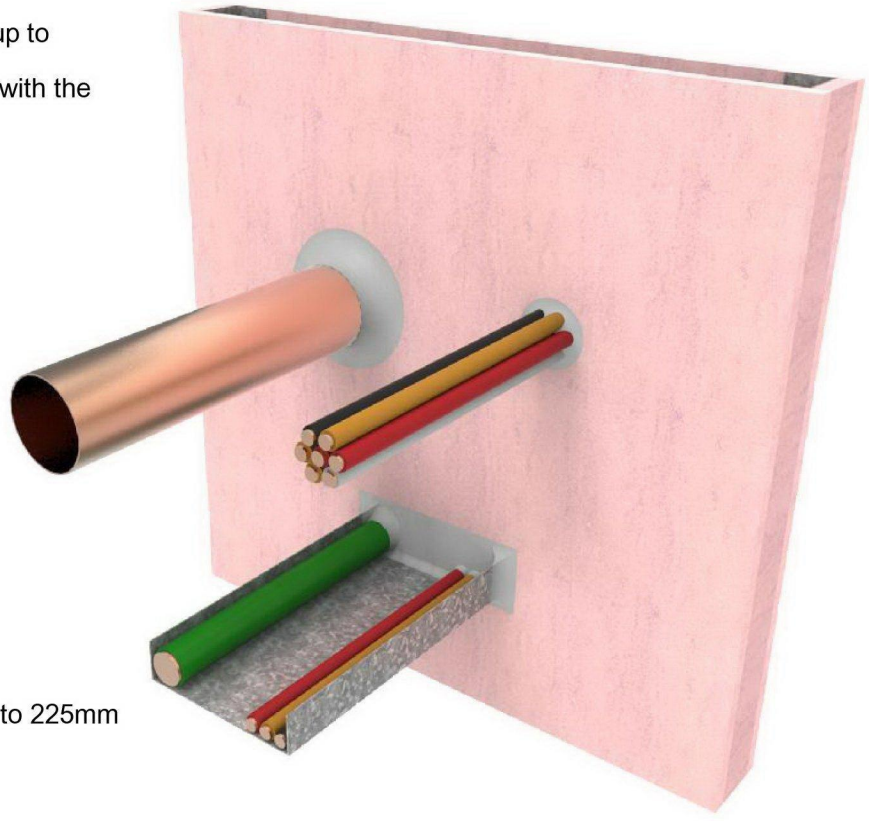
has been tested/approved in accordance with

AS1530 Part 4 and AS4072 Part 1

FRL: Up to -/240/240

Trafalgar Fyreflex Sealant can achieve up to -/240/240 FRL, and has been approved with the following services:

- Blank up to 56mm diameter
- Cable trays
- Cable bundles up to 24 cables
- Bus bars up to 10mm x 200mm
- Copper pipes up to 225mm
- Steel Pipes up to 225mm
- Brass pipes up to 102mm
- Fibre-reinforced cement pipes up to 225mm



For full insulation on ductile services, Fyrewrap will be required. See FW-01

APPROVAL NO: FCO 1579

This System Certificate is not a substitute for a test certificate - For further technical or installation information please contact Trafalgar
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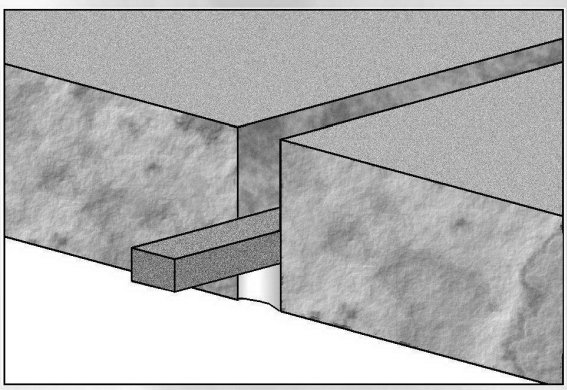
PAS 5.01
April 2009

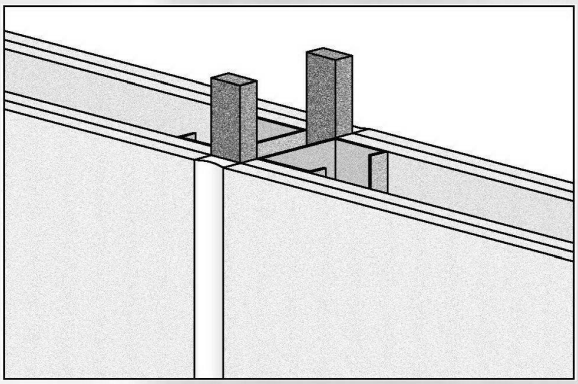
Fyreflex

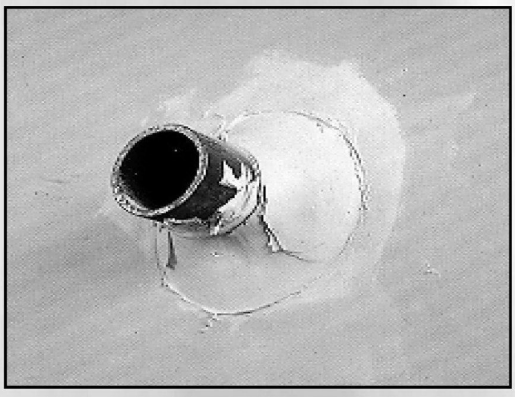
Fire Rated Sealant

Up To 4 Hours Fire Protection

(to AS 1530.4 - 1997)







Fyreflex Sealant

Description

Fyreflex is an acrylic (water based) gun grade mastic with limited (±5%) joint movement capability. Supplied in 10 litre buckets, 600ml sausage style sachets and 300ml cartridges with nozzle.

Fyreflex is available in off-white to suit plasterboard and grey to suit masonry applications.

Applications

Fyreflex is designed for sealing internal joints and wall penetrations subject to low movement and requiring up to 4 hours fire rating compliance.

- Insitu internal jointing of concrete, precast panels, block and brick work and drywall systems.
- Sealing of electrical cables and pipe penetrations.
- Acoustic gap filling combined with fire rating requirement.
- May be used in conjunction with other systems such as fire collars, pillows, board systems and fire rated mortar.

Advantages

- Water based (easy clean up)
- Smooth gunnability and tool off finish
- Excellent adhesion to metal, wood, plasterboard and all masonry
- Paintable
- Water resistant once cured
- Excellent acoustic properties with ratings up to 45 STC in joints

Method of Application

Install back-up material or joint filler as specified. Apply Fyreflex sealant in a continuous operation using a positive pressure adequate to properly fill and seal the joint or penetration. Tool Fyreflex with sufficient pressure to spread the sealant against the back-up material and onto the joint surfaces. A tool with a concave profile is recommended to achieve the correct shape.

Joint And Penetration Design

Fyreflex is gunned into and around the service penetrations and into any clearance holes through the fire separating element. Depth fill into cavities is controlled by pre-packing with foamed plastic backing rod.

Application Limitations

a) Fyreflex is not recommended for water immersion, exposed external joint sealing or areas subject to heavy traffic.
b) Fyreflex has a ±5% joint movement capability.
c) Fyreflex should not be applied with wet tooling techniques - using solvents, water or detergent/ soap solution is not recommended.
d) Fyreflex should not be applied to surfaces with special protective or cosmetic coatings without prior consultation with the manufacturer. Such surfaces include, but are not limited to, mirrors, reflective glass, or surfaces coated with Teflon, polyethylene or polypropylene.
e) Fyreflex can be affected by water before or during cure. The sealant should not be stored, applied or cured in areas where unusually high humidity or free water are pressent during the application or intial cure.
f) Fyreflex should be allowed to cure for 7 days prior to subjecting to any intermittent water exposure.
g) Temperature range during application +5°C to +35°C

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Specification And Standards

Testing
Fire tests have been conducted to AS 1530.4, in accordance with AS4072.1, on concrete floors, brick, masonry, tilt-up panels, block, and plasterboard walls.

Construction and Expansion Joints:
Construction and expansion joints to be fire stopped to maintain the required FRL of the wall or floor element by treatment with Fyreflex fire resistant sealant in accordance with Trafalgar Building Products instructions.

Service Penetrations:
Service penetrations to be fire stopped to maintain the required FRL of the penetrated wall or floor element by treatment with Fyreflex fire resistant sealant in accordance with Trafalgar Building Products instructions.

NOT TO BE TAKEN
KEEP OUT OF REACH OF CHILDREN

Avoid contact with skin and eyes and avoid breathing vapours. If poisoning occurs contact a doctor or poisons information centre. If skin contact occurs remove contaminated clothing and wash skin thoroughly. Refer to Material Safety Data Sheet for further information.

Storage & Handling

All materials shall be stored under cover in a manner that will prevent damage preferably on pallets and protected from moisture.

Do not freeze. Store in temperatures 5°C - 30°C.

Warranty

Limited Warranty:

Your purchase and use of this product is subject to Trafalgar's standard terms and conditions of sale. Trafalgar's sole liability in the event of a product defect is, at our option, to replace this product or return its purchase price.

All other warranties whether express or implied, including without limitations, any warranty of merchantability or fitness of purpose are expressly disclaimed unless prohibited by law or given in writing by Trafalgar for a specific project.

Fyreflex Usage Rate (ml/m)

DEPTH OF JOINT (mm)	WIDTH OF JOINT(mm)						
	10	**15**	**20**	**25**	**30**	**40**	**50**
10	100	150	200	250	300	400	500
12	120	180	240	300	360	480	600
15	150	225	300	375	450	600	750
20	200	300	400	500	600	800	1000

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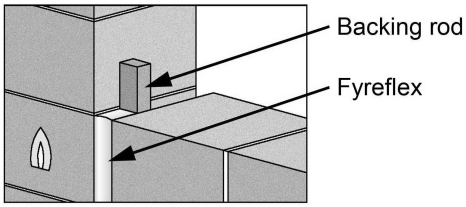
Fyreflex Grey

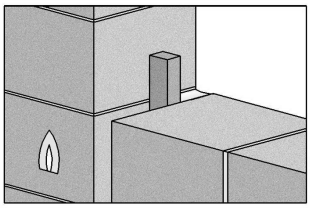
Masonry Construction and Expansion Joints

Concrete, Brick and Block Walls

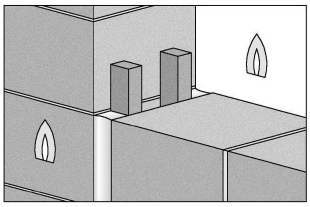
A) JOINT PROTECTED FROM EXPOSED SIDE



B) JOINT PROTECTED FROM UNEXPOSED SIDE



C) JOINT PROTECTED FROM BOTH SIDES

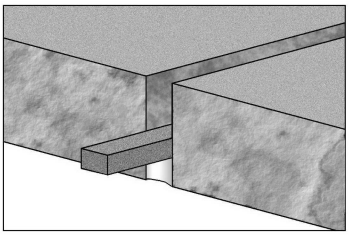


Fill Depths of Fyreflex (mm)

JOINT WIDTH (mm)	10			20			25		30		40		50	
JOINT FILL TYPE	A	B	C	A	B	C	A	C	A	C	A	C	A	C
RATING (hrs)														
-/120/120	10	15	10	10	30	10	12	12	15	15	20	20	25	20
-/180/180	10	15	10	10	30	10	12	12	15	15	20	20	25	20
-/240/240	15	15	10	30	35	15	30	20	30	20	40	20	40	20

NOTE: Joint may be filled on one side if direction of fire is known. If direction of fire is not known, sealant must be applied from both sides.

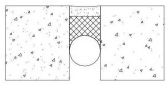
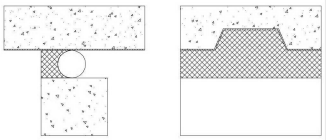
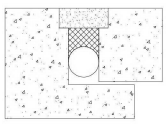
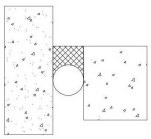
Internal Concrete and Pre-Cast Slabs



Fill Depths of Fyreflex (mm)

	JOINT WIDTH (mm)					
RATING (hrs)	10	20	25	30	40	50
-/120/120	10	10	12	15	20	25
-/180/180	10	10	12	15	20	25
-/240/240	15	30	30	30	40	40

Special Applications

System Description	System Diagram	System Description	System Diagram
• External applications • Up to 4 hours • With non-rated external grade sealant		• Steel decking • Upto 4 hours	
• Slab-on-slab • Up to 4 hours • With non-rated external or internal grade sealant		• Joint between wall and floor slab • Upto 4 hours	

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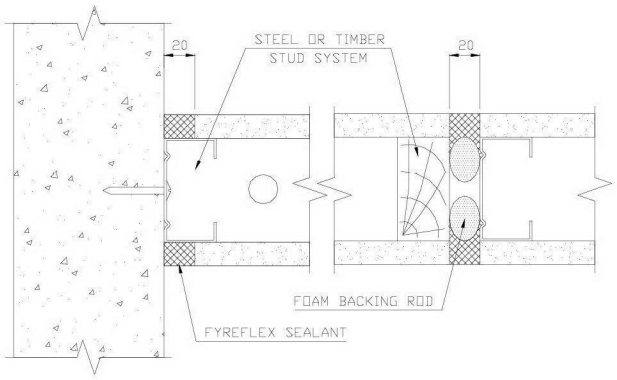
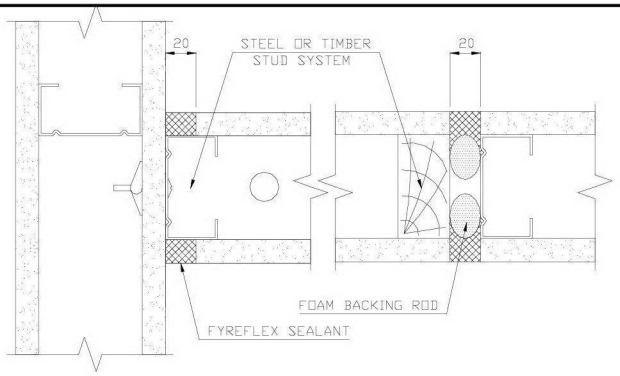
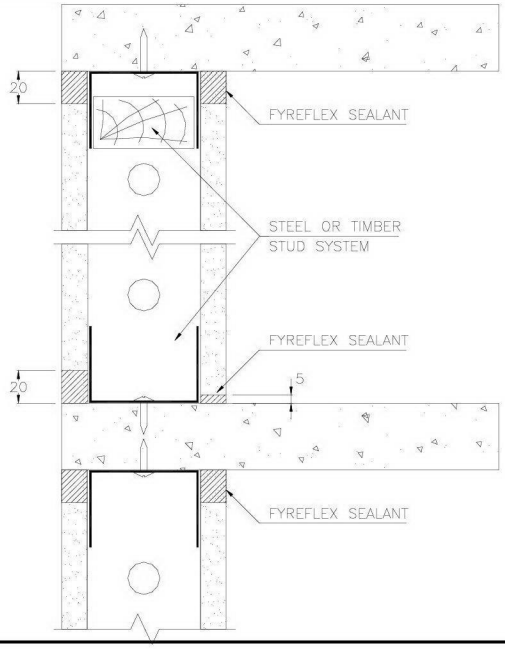
Fyreflex White

Drywall Construction and Expansion Joints

1 Hour Plasterboard Systems

SYSTEM	SYSTEM DIAGRAM
• T-Junction between concrete wall and plasterboard wall • Typical control joint in plasterboard wall	
• T-junction between two plasterboard walls • Typical control joint in plasterboard wall	
• Deflection head and base between concrete slabs and plasterboard wall ***NOTE:*** • *Fire Rated Plasterboard Systems must be installed according to manufacturers instructions.* • *Fyreflex is filled to depth of plasterboard sheet.*	

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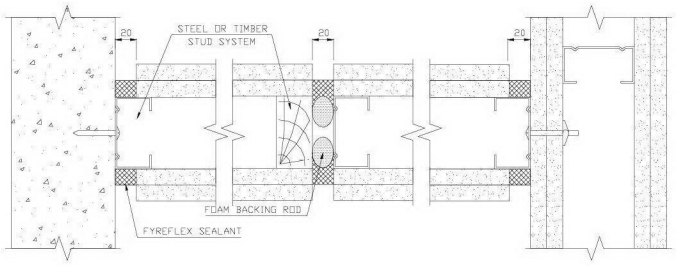
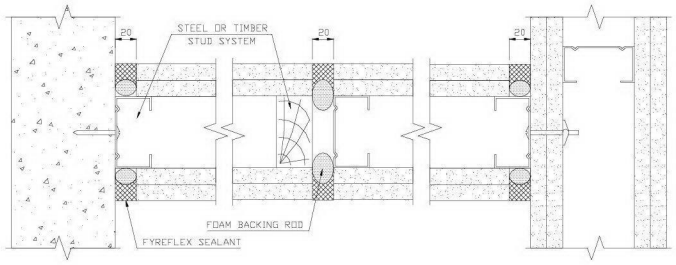
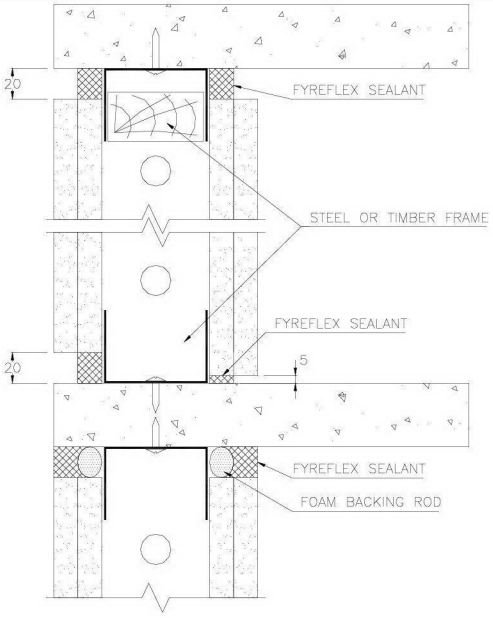
Drywall Construction and Expansion Joints

2 Hour Plasterboard Systems

SYSTEM	SYSTEM DIAGRAM
• T-Junction between concrete wall and plasterboard wall • Typical control joint in plasterboard wall • T-junction between two plasterboard walls	
• T-Junction between concrete wall and plasterboard wall • Typical control joint in plasterboard wall • T-junction between two plasterboard walls	
• Deflection head and base between concrete slabs and plasterboard wall ***NOTE:*** • *Fire Rated Plasterboard Systems must be installed according to manufacturers instructions.* • *Fyreflex is filled to depth of plasterboard sheet.*	

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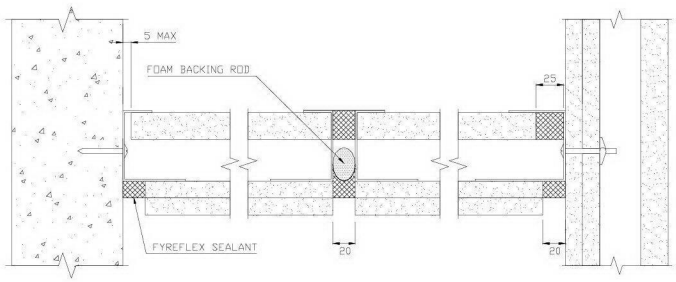
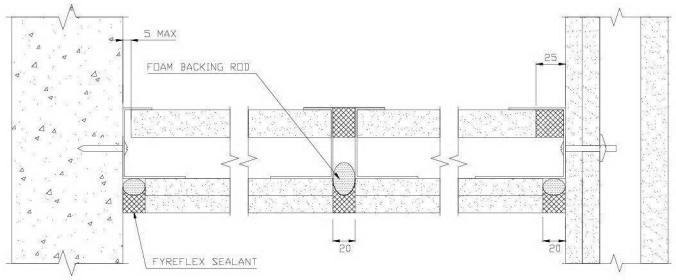
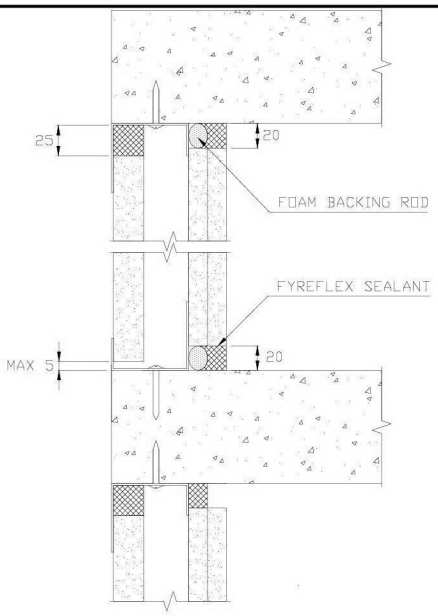
Fyreflex White

Drywall Construction and Expansion Joints

2 Hour Shaft Wall Systems

SYSTEM	SYSTEM DIAGRAM
• T-Junction between concrete wall and shaft wall • Typical control joint in shaft wall • T-junction between two shaft walls	
• T-Junction between concrete wall and shaft wall • Typical control joint in shaft wall • T-junction between two shaft walls	
• Deflection head and base between concrete slabs and plasterboard wall ***NOTE:*** • *Fire Rated Plasterboard Systems must be installed according to manufacturers instructions.* • *Fyreflex is filled to depth of plasterboard sheet.*	

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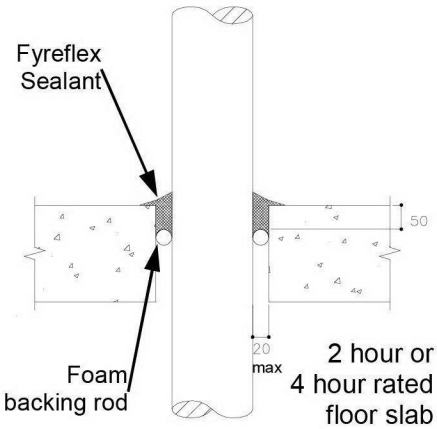
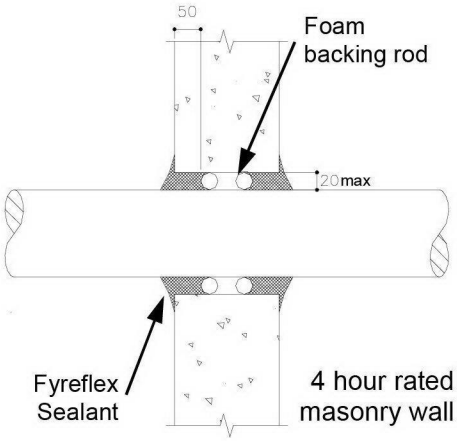
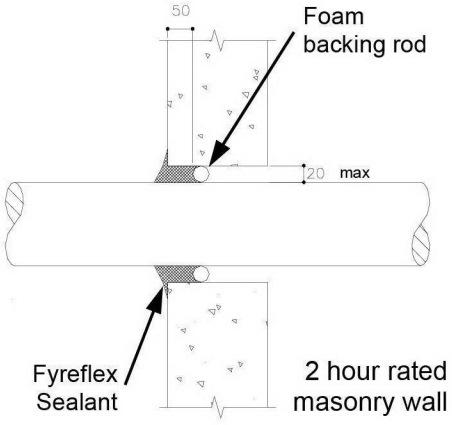
Fyreflex Sealant

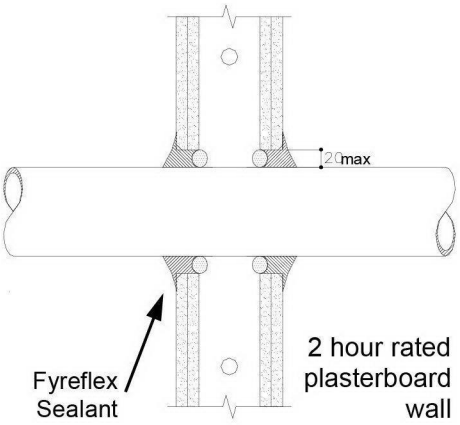
Miscellaneous Penetrations

Pipe Penetrations









PIPE TYPE	WALL OR FLOOR	PIPE SIZES	FRL
STEEL			
⇒ Non insulated	Walls and floors	Up to 225mm diam.	240/240/-
⇒ With 25mm rockwool insulation	Floors only	Up to 200mm diam.	180/180/-
CAST IRON			
⇒ Non insulated	Walls and floors	Up to 225mm diam.	240/240/-
⇒ With 25mm rockwool insulation	Floors only	Up to 200mm diam.	180/180/-
BRASS			
⇒ Non insulated	Walls and floors	Up to 102mm diam.	240/240/-
COPPER			
⇒ Non insulated	Walls and floors	Up to 225mm diam.	240/240/-
⇒ With 25mm rockwool insulation	Floors only	Up to 19mm diam.	120/120/-
FIBRE RE-INFORCED CEMENT PIPES AND COLUMNS	Walls and floors	Up to 225mm diam.	120/120/120

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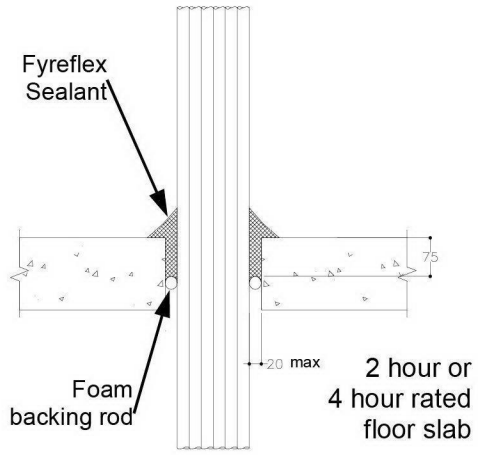
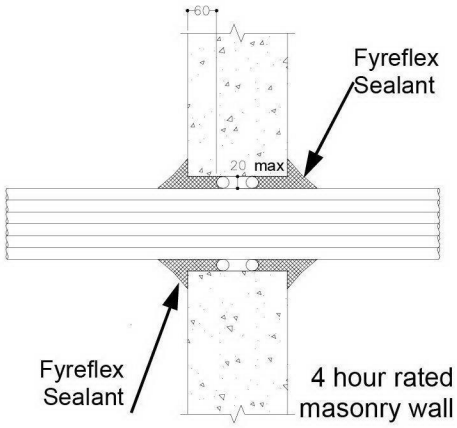
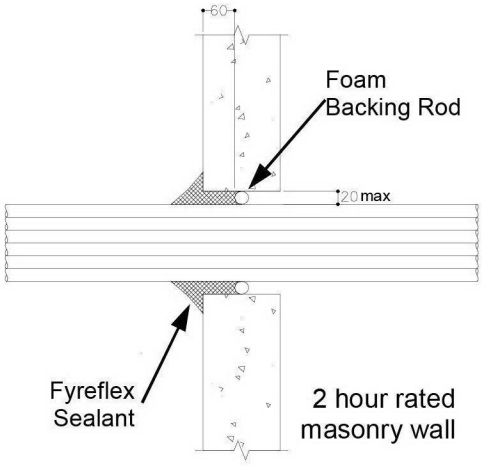
Fyreflex Sealant

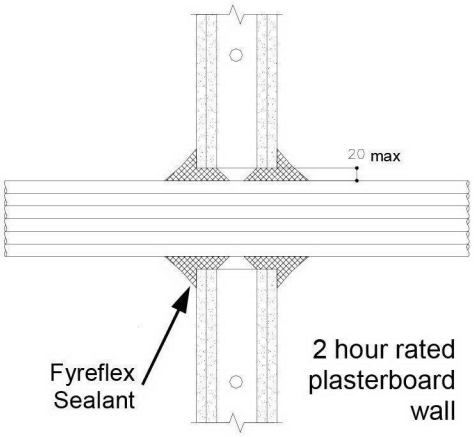
Miscellaneous Penetrations

Electrical Cable Penetrations









PENETRATION TYPE	WALL OR FLOOR	PENETRATION SIZES	FRL
SINGLE CABLE	Walls and floors	Up to 54mm diam.	240/240/110
CABLE BUNDLE	Walls and floors	Bundle of up to 24 cables.	240/240/95
STEEL CABLE TRAY	Walls and floors	Up to 380mm wide with assorted cables	240/240/110
BUS BARS	Walls and floors	50 x 10mm copper bus bars	120/120/-

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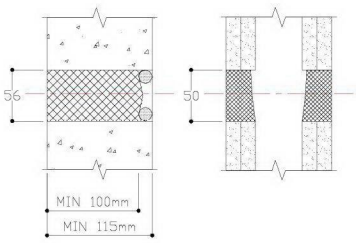
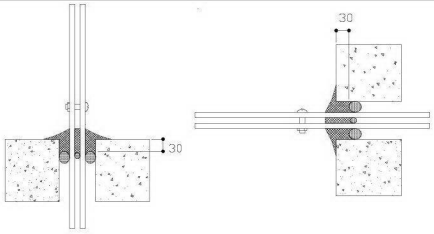
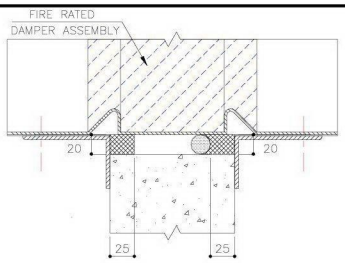
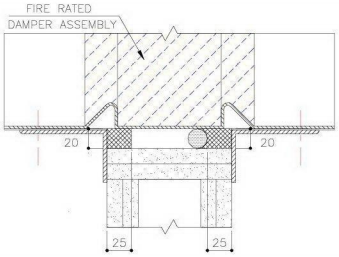
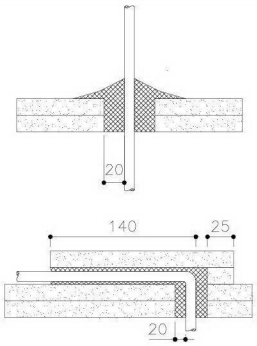
Miscellaneous Penetrations

Special Applications

SYSTEM	SYSTEM DIAGRAM	FIRE RESISTANCE
• Blank penetration. walls and floors. Max 56mm diameter.		120/120/120
• Copper and aluminium bus bars. Walls and floors. Max size 10 x 200mm.		120/120/-
• Perimeter seal for steel duct and damper used in masonry walls and floors.		120/120/-
• Perimeter seal for steel duct and damper used in drywalls.		120/120/-
• Cable penetrations through plasterboard ceiling		60/60/- ***NOTE:*** • *Fire Rated Plasterboard Systems must be installed according to manufacturers instructions.* • *Fyreflex is filled to depth of plasterboard sheet.*

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Fyreflex Sealant

Joint Sealant Quantity Estimation Table

Note: All quantities estimated for 100 lineal metre requirement

Joint Size WIDTH	DEPTH	LITRES	300 ml Cartridge	600 ml SAUSAGES	10 LITRE PAIL
5	10	5	17	9	-
6	10	6	20	10	-
8	10	8	27	14	-
10	10	10	34	17	1
15	10	15	50	25	2
15	15	22.5	75	38	3
20	10	20	67	34	2
20	15	30	100	50	3
20	20	40	134	67	4
25	15	37.5	125	63	4
25	20	50	167	84	5
30	15	45	150	75	5
30	20	60	200	100	6
40	20	80	266	134	8
50	20	100	334	167	10
60	20	120	400	200	12

FORMULA FOR ESTIMATING QUANTITY OF JOINT SEALANT REQUIREMENTS
(Use whole numbers for millimetres and for metres)

L = Length of joint in metres	D = Depth of joint in millimetres
W = Width of joint in millimetres	Q = Quantity in Litres required
$Q = \frac{L \times W \times D}{1000}$	eg $Q = \frac{100m \times 15mm \times 10mm}{1000}$ = 15 litres required

Notes:

1. Sealant depth in joints between 10mm & 40mm wide should never be less than half the width
2. It is not recommended for any sealant depth to be less than 10mm or greater than 20mm
3. To estimate the quantity of a triangular fillet, the amount of sealant required would be half that required for a rectangular joint of the same dimensions

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TRAFALGAR

FyrePLUG™

Miscellaneous Service Penetrations

Up to 4 Hours Fire Protection
(to AS 1530.4-2014)

1800 888 714
www.tfire.com.au

Revision 1.1

FyrePLUG™

FIRE RATED PILLOWS

Trafalgar FyrePlug fire rated pillows consist of a high temperature resistant and granulated fire stopping material enclosed in a durable and fire resistant covering.

FyrePlug pillows were the first product of its kind developed in Australia in the early 1970's. Originally designed as a temporary means of providing fire protection to openings for electrical service penetrations in telephone exchanges.

FyrePlug pillows are ideal for small penetrations typically where temporary fire protection is required, but if left undisturbed, do provide a permanent form of fire protection as required by the Building Code of Australia.

Fire testing has been conducted for both wall and floor openings in conjunction with other Trafalgar fire stopping products and with a myriad of service penetration types.

APPLICATION

FyrePlug Pillows are designed to be used as a means to fire stop openings in wall and floor slabs which incorporate penetrations for services including metal pipes, electrical cables and bus bars.

- Sealing of electrical cables and pipe penetrations
- May be used in conjunction with other systems such as Maxilite board, FyreSet mortar and FyreFlex sealant.

KEY FEATURES AND BENEFITS

- Known and trusted brand - Benchmark Quality
- Proudly Australian made
- Up to 4 hours fire ratings. (For full FRL, FyreWrap insulation will be required for some services)
- Removable & reusable
- Available in a range of sizes to suit different applications
- Quick & easy installation
- Effective in difficult to access locations
- For use in floors and walls
- For further information on these products, contact Trafalgar

IMPORTANT NOTES

1. Trafalgar FyreFlex sealant to be used around openings.

2. If full insulation rating (temperature rise) is required for the FRL, FyreWrap will need to be wrapped on ductile services such as cable trays and steel and copper pipes for example.

3. Not suitable for use around plastic pipe and plastic conduits (Trafalgar Maxilite Board and FyreChoke Collars are recommended in this case).

COPPER PIPES
*FRL -/120/120 with FyreWrap Insulation System **

Technical Guide

FYREPLUG

Trafalgar is the well respected brand, synonymous with the supply of engineered solutions for the containment of fire, smoke and sound.
As the foremost Australian owned supplier of passive fire protection systems, Trafalgar's products have been specified and installed into Australian buildings for over 70 years.

Trafalgar Since 1945
CONTAINMENT & ACCESS SOLUTIONS
WHOLLY AUSTRALIAN OWNED

FYREPLUG FIRE RATED PILLOWS

Product	Code	Size (mm)	Box Qty	Pallet Qty
FyrePlug Pillow Small	Fyreplug - S	100 x 250	30	1200
FyrePlug Pillow Medium	Fyreplug - M	200 x 250	20	800
FyrePlug Pillow Large	Fyreplug - L	300 x 250	15	600

PRODUCT DESCRIPTION

COLOUR - FyrePlug pillows are a distinctive and easily identifiable blue colour with an identification label.

INSTALLATION - A fast, easy to install form of fire stopping of service penetrations. Simple compression fit and used in conjunction with FyreFlex sealant.

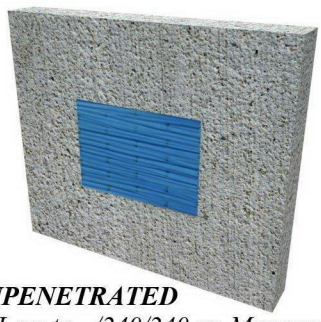
PACKING DENSITY - **Small** 600 Pillows per square metre
- Medium 190 Pillows per square metre
- Large 125 Pillows per square metre

TESTING - Tested to AS1530.4 and AS4072.1 standards.

ENVIRONMENT - Easy clean-up, low Volatile Organic Compounds (VOC) and Ozone Depleting Potential (ODP) formula.

SAFETY - FyrePlug pillows are a non hazardous substance, safe for general use. Please refer to product MSDS for full safety information.

ALSO AVAILABLE - Trafalgar offers a complete range of other fire stopping and fireproofing products.



UNPENETRATED
*FRL up to -/240/240 on Masonry walls **

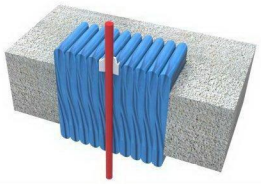
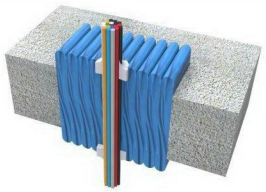
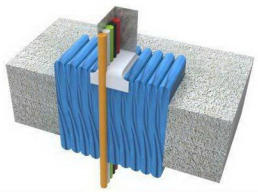
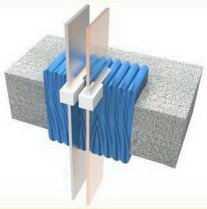
CABLE BUNDLES
*FRL -/180/120 with FyreWrap Insulation System **

SPECIFICATION

All openings are to be sealed, so as to maintain the FRL of the element (floor or wall) in accordance with AS1530.4 using Trafalgar FyrepPug pillow systems as detailed in Trafalgar's installation instructions. When full insulation rating (temperature rise) is required for the FRL, FyreWrap will be needed to be wrapped on ductile services such as cable trays and steel and copper pipes for example.

*** Refer to Trafalgar's installation instructions.**

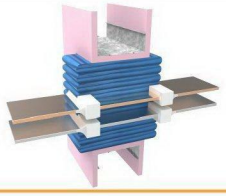
Floor Penetrations

SERVICES	SYSTEM DESCRIPTION	FRL	DIAGRAM
UNPENETRATED	Pillows tightly packed into opening Maximum size of opening • 700mm x unlimited in modules of 200mm • 600mm x 600mm or equal total area 0.36m^2	-/240/240 -/120/120	
SINGLE CABLES	Up to 70mm diameter cables Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/180/- **-/180/120**	
CABLE BUNDLES	Bundle of up to 150mm x 150mm cables. Cables 28mm diameter used. Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/180/- **-/180/120**	
MULTIPLE CABLE PENETRATIONS	Metal cable trays up to 600mm wide supporting assorted cables. Individual cable size up to 70mm. Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/120/- **-/120/120**	
STEEL PIPES	Steel pipes up to 100mm diameter. Pillows packed tightly around penetration. Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/120/- **-/120/120**	
BRASS AND COPPER PIPES	Brass and copper pipes up to 100mm nominal diameter. Annular gaps sealed with Fyreflex to minimum depth of 30mm **With Fyrewrap Insulation system**	-/120/- **-/120/120**	
COPPER AND ALUMINIUM BUS BARS	Copper and aluminium bus bars up to 200mm x 10mm. Pillows packed around and between bus bars. **With Fyrewrap Insulation system**	-/240/- **-/240/120**	

Note:

For penetrations requiring FRLs of up to -/240/240, please contact Trafalgar's Technical Department on 1800 888 714

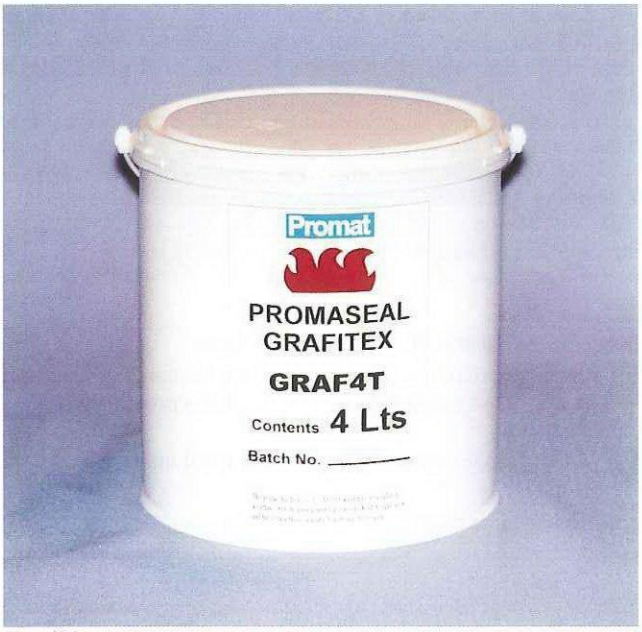
Wall Penetrations

SERVICES	SYSTEM DESCRIPTION	FRL	DIAGRAM
UNPENETRATED	Pillows tightly packed into opening Maximum size of opening • 1800mm x 400mm • 2000mm x 400mm • 3000mm x 800mm with Maxilite fillets to locally thicken wall to 230mm. (Masonry walls only)	-/240/240 -/120/120 -/120/120	
SINGLE CABLES	Up to 80mm diameter cables **With Fyrewrap Insulation System** Up to 20mm diameter cables **With Fyrewrap Insulation system** Seal annular gaps with Fyreflex	-/60/- **-/60/60** -/120/- **-/120/120**	
CABLE BUNDLES	Bundles of upto 150mm x 150mm cables 25mm cables may be used. Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/180/- **-/180/120**	
MULTIPLE CABLE PENETRATIONS	Metal cable trays up to 600mm wide supporting assorted cables. Individual cable size up to 80mm. Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/120/- **-/120/120**	
STEEL PIPES	Steel pipes up to 90mm diameter. Pillows packed tightly around penetration. Seal annular gaps with Fyreflex **With Fyrewrap Insulation system**	-/120/- **-/120/120**	
BRASS AND COPPER PIPES	Brass and copper pipes up to 90mm nominal diameter. Annular gaps sealed with Fyreflex to minimum depth of 30mm **With Fyrewrap Insulation system**	-/120/- **-/120/120**	
COPPER AND ALUMINIUM BUS BARS	Copper and aluminium bus bars up to 200mm x 10mm. Pillows packed around and between bus bars. **With Fyrewrap Insulation system**	-/240/- **-/240/120**	

Note:

For penetrations requiring FRLs of up to -/240/240, please contact Trafalgar's Technical Department on 1800 888 714

PROMASEAL® Grafitex



DESCRIPTION

PROMASEAL® Grafitex is an intumescent compound which is unaffected by water and moisture when cured and is designed to expand under fire conditions to fill any gaps around services that penetrate fire barriers.

PROMASEAL® Grafitex comes as a trowelable paste ready for use.

PACKAGING

PROMASEAL® Grafitex is packed in 4 and 10 litre pails.

USES

PROMASEAL® Grafitex will seal openings where combustible materials are used to insulate pipes that burn or melt in a fire, leaving openings which allow the passage of smoke and fire into the next compartment.

PROMASEAL® Grafitex can also be used to close off small uPVC conduits passing through fire walls and floors.

ADVANTAGES

- Fire protection for up to 4 hours
- Simple installation
- Water and moisture resistant
- Suitable for use around conduits
- Suitable for use around plasterboard, calcium silicate or masonry walls
- Seals multiple uPVC pipes in simple openings

FIRE PERFORMANCE

PROMASEAL® Grafitex has been successfully tested and assessed by independent laboratories to meet the requirements of AS1530: part 4, and AS4072.

In floors it has been tested for periods of 4 hours with 25mm conduits and 2 hours up to 45mm conduits. In walls it has been tested for 2 hours around 25mm uPVC conduits, 32mm XLPE Rehau pipe and closed cell thermal insulation.

SPECIFICATION

"PROMASEAL® Grafitex paste is to be installed around combustible services and insulation that pass through fire rated floors and walls. PROMASEAL® Grafitex is to be installed in accordance with the manufacturers instructions. All installations to be certified by the installer in an approved manner."

INSTALLATION

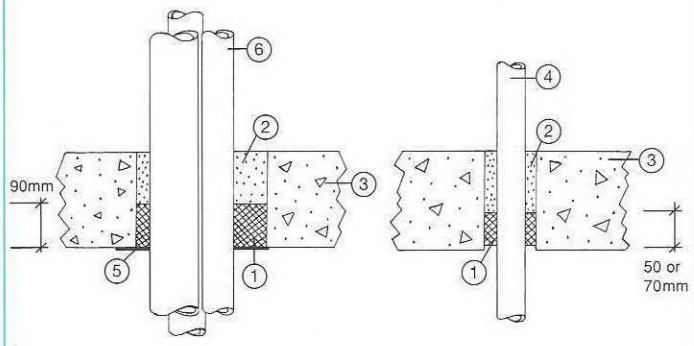
Trowelable grade PROMASEAL® Grafitex should be placed in the gap around the combustible insulation or uPVC conduit to a depth of 32mm in masonry, calcium silicate and plasterboard walls.

The gap should be 20mm wide and the face of the PROMASEAL® Grafitex must not be shielded from the fire source.

In floor slabs, the PROMASEAL® Grafitex should be flush or raised no more than 10mm up from the soffit of the floor slab. The gap around the service should be approximately 10mm.

For conduits of up to 25mm the PROMASEAL® Grafitex should be to a depth of 50mm and for conduits between 25mm and 45mm should be 70mm deep.The opening should then be filled with PROMASEAL® Fire Mortar or commercial grade mortar mix.

PROMASEAL® Grafitex SG80



Multiple Pipes

Electrical Conduits & Combustible Insulation

Table of Areas

Areas in mm²

Pipes ø	x1	x2	x3	Holes	ø	Square
40mm	1257	2514	3771	100	7854	10000
50mm	1964	3928	5892	150	17672	22500
65mm	3319	6638	9957	200	31416	40000
80mm	5027	10054	15081	250	49088	62500
100mm	7854	15708	N/A	300	70686	90000

Technical Data:

Up to 4 hours fire rating acc. to AS1530/4 and AS4072.

1. PROMASEAL® Grafitex
2. PROMASEAL® Fire Mortar
3. Concrete floor
4. Electrical conduit
5. Perforated steel retainer
6. Multiple uPVC pipes

Multiple Pipes - 2 hour fire rating

Fix (5) to the slab soffit to retain the PROMASEAL® Grafitex filler. The total sectional surface area of the penetrating pipes must be no greater than half the sectional surface area of the hole. The maximum surface area of pipes in any hole is 17,500mm². Fill the Grafitex to 90mm depth from soffit. Fill the remaining opening to the top of the slab with PROMASEAL® Fire Mortar or commercial grade mortar. For calculation of surface areas see table of areas.

Electrical Conduits & Combustible Insulation

Trowellable PROMASEAL® Grafitex should be placed in the gap around the combustible insulation or uPVC conduit, facing the fire source, to a depth of 32mm in masonry, calcium silicate or plasterboard walls. The gap should be 20mm wide and the face of the PROMASEAL® Grafitex must not be shielded from the fire source.

In floor slabs, the Grafitex should be flush or raised no more than 10mm up from the soffit of the slab. The gap around the service should be approximately 10mm. For conduits between 25mm and 45mm the PROMASEAL® Grafitex depth should be 70mm. The opening should then be filled to the top of the slab with PROMASEAL® Fire Mortar or commercial grade mortar.

IMPORTANT NOTES

- Promat product data sheets and health and safety data sheets are regularly reviewed and are available on request.
- The successful use of this product is dependent on a number of factors. As the information contained in this leaflet can only be of a general nature, it is advisable to consult our technical department if there is any doubt about the correct use of this product in a particular application.
- PROMASEAL® Grafitex is part of the PROMASEAL® range of penetration and linear gap seals available from Promat International (Asia Pacific) Ltd, through their regional distributors.
- Our technical representatives and advisors are available to provide further technical and commercial assistance.

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Tel : 603 4417955
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Philippines
Tel : 63 27516981
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Tel : 65 2949689
Fax : 65 2949783

TRAFALGAR

Certificate No : S-01

SYSTEM CERTIFICATE

This is to certify that

FYREFLEX FOR PENETRATIONS IN WALLS

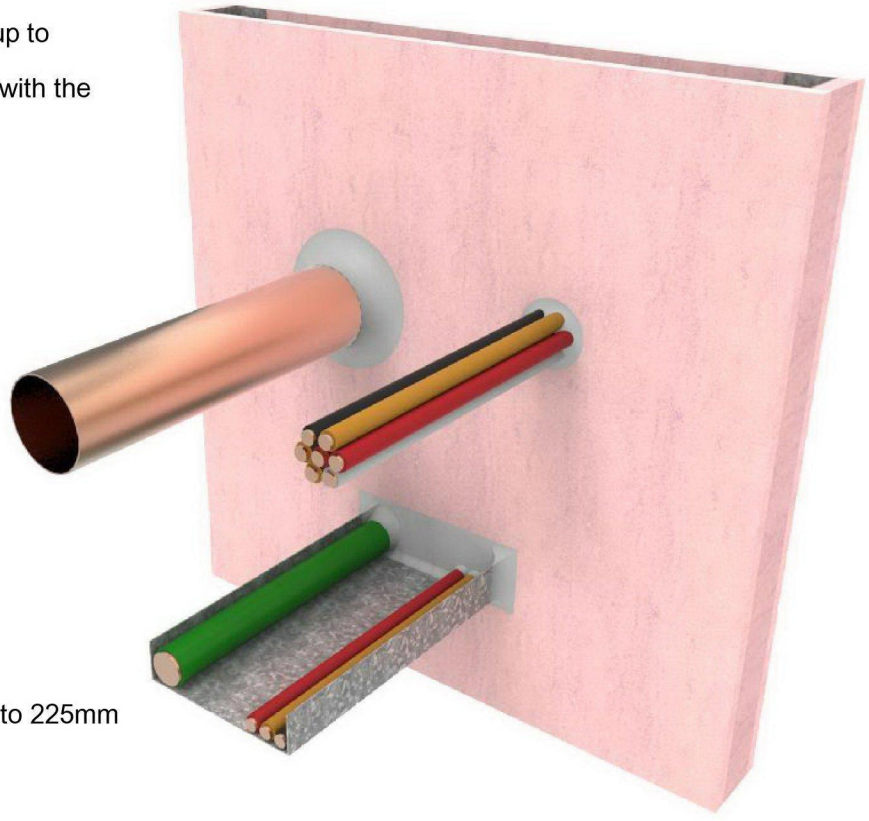
has been tested/approved in accordance with

AS1530 Part 4 and AS4072 Part 1

FRL: Up to -/240/240

Trafalgar Fyreflex Sealant can achieve up to -/240/240 FRL, and has been approved with the following services:

- Blank up to 56mm diameter
- Cable trays
- Cable bundles up to 24 cables
- Bus bars up to 10mm x 200mm
- Copper pipes up to 225mm
- Steel Pipes up to 225mm
- Brass pipes up to 102mm
- Fibre-reinforced cement pipes up to 225mm



For full insulation on ductile services, Fyrewrap will be required. See FW-01

APPROVAL NO: FCO 1579

This System Certificate is not a substitute for a test certificate - For further technical or installation information please contact Trafalgar
This document is subject to change without notice

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INFRASTRUCTURE TECHNOLOGIES
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Likely performance of Thermachek fire pillows protecting service penetrations

Assessment Report

Author: Russell Collins
Report number: FCO-3031

Date: 20 November 2013

Client: Melbourne Fire Doors Pty Ltd

Inquiries should be address to:

Fire Testing and Assessments	Author	The Client
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Report Details:

Report CSIRO Reference number: FCO-3031/4356

Report Status and Revision History:

VERSION	STATUS	DATE	DISTRIBUTION
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Revision B	Final for issue	29/11/2013	CSIRO

Report Authorization:

AUTHOR	REVIEWED BY	AUTHORISED BY
Russell Collins	Brett Roddy	Brett Roddy
		
29 November 2013	29 November 2013	29 November 2013

Copyright and disclaimer

Important disclaimer

This assessment report will lapse on 30 November 2018. Should you wish us to re-examine this report with a view to the possible extension of its term of validity, would you please apply to us three to four months before the date of expiry. This Division reserves the right at any time to amend or withdraw this assessment in the light of new knowledge.

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Contents

Executive summary

This Division has examined the information referenced by you with regard to the performance of your Thermacheck fire pillows.

The proposal involved:-

- Increasing the width of the aperture - extended sideways to any practical length and installed as tested and described in Warrington Fire Research (Aust) Pty Ltd reports numbered WFRA No. F91876 and WFRA No. F91879. The pillows must be laid horizontally across the width of the aperture and fully restrained on all sides.

- use of alternative material to encase the core insulating material of the Thermachek Fire Pillows. The original material used in the tested prototypes was plain calico or unbleached cotton. The alternative materials are 100% cotton drill and PVC coated polyester material.

- use of the Thermachek pillows to protect penetrations in conjunction with other pre-existing pillow systems.

- use of the Thermachek pillows to protect penetrations in plasterboard-lined framed wall systems as an alternative to the tested systems in concrete and masonry.

Likely performance of Thermachek fire pillows protecting service penetrations

1 Introduction

This report provides the analysis of this Division of the likely performance of your Thermacheck fire pillows.

2 Supporting Data

2.1 Warrington Fire Research (Aust) Pty Ltd report numbered F91876

On 24 April 2001, Warrington Fire Research (Aust) Pty Ltd conducted a fire-resistance test in accordance with AS1530.4-1997 and AS4072-1992 on a number of penetrations through an aperture nominally 600-mm wide x 400-mm high in a concrete block wall. A variety of sizes of Thermachek fire pillows were packed around the penetrations filling in the remainder of the aperture. Along the perimeter between the wall and pillows Tyco FS33 fire rated sealant was applied to a depth of nominally 25 mm. Any gaps were also filled with the fire rated sealant. The pillows and penetrations achieved an FRL of -/180/180.

2.2 Warrington Fire Research (Aust) Pty Ltd report numbered F91879

On the 25 May 2001, Warrington Fire Research (Aust) Pty Ltd conducted a fire-resistance test in accordance with AS 1530.4-1997 and AS 4072-1992 on a number of penetrations through an aperture nominally 600-mm wide x 400-mm high in a concrete floor slab. A variety of sizes of Thermachek fire pillows were packed around the penetrations filling in the remainder of the aperture. Along the perimeter between the wall and pillows Tyco FS33 fire rated sealant was applied to a depth of nominally 25 mm. Any gaps were also filled with the fire rated sealant. The pillows and penetrations achieved an FRL of -/180/180.

2.3 CSIRO Letter Of Assessment numbered FCO-2263

On 18 September 2008, CSIRO issued Letter of Assessment No. FCO-2263. It was the opinion of this Division that Thermachek fire pillows installed in an aperture of any practical width would achieve an FRL of at least -/180/180 if tested in accordance with AS 1530.4-1997 and constructed as tested and described in Warrington Fire Research (Aust) Pty Ltd reports numbered F91876 and F91879. The pillows must be laid horizontally across the width of the aperture and fully restrained on all sides.

2.4 CSIRO Letter Of Assessment numbered FCO-2409

On 26 July 2005, CSIRO issued Letter of Assessment numbered FCO-2409. It was the opinion of this Division that the Thermachek fire pillow penetration systems, constructed as tested in Warrington test reports F91876 and F91879, would achieved an FRL of at least -/180/180 if tested in accordance with AS1530.4-1997 when encapsulated in the original plain calico or with the 100% cotton drill or the PVC coated polyester base material.

2.5 CSIRO Letter Of Assessment numbered FCO-2721

On 9 April 2009, CSIRO issued Letter of Assessment numbered FCO-2721. It was the opinion of this Division that the Thermachek fire pillow penetration systems, constructed as tested in Warrington test reports F91876 and F91879, would achieved fire-resistance levels (FRL) of at least -/120/120 if tested in accordance with AS1530.4-1997 when installed into a plasterboard-lined framed wall system provided that

a) the maximum width is 600-mm or the distance between adjoining studs, whichever is the lesser:
b) the penetration is framed with noggins above and below the opening;
c) the pillows are compressed to the same level as the tested systems;
d) the wall system has an established FRL of 120/120/120 or -/120/120.

Similarly for plasterboard-lined framed wall systems of lesser FRL the installation of Thermachek pillows in the manner detailed above would not detrimentally affect the established FRLs of the wall system

2.6 CSIRO Letter Of Assessment numbered FCO-2723

On 14 April 2009, CSIRO issued Letter of Assessment numbered FCO-2723. It was the opinion of this Division that the Thermachek fire pillows can be used to in conjunction with existing pillow systems in order to repair a penetration system up to fire-resistance levels of -/180/180 provided that

a) all pillows in the composite system are compressed to the highest level specified for any of the component pillow systems; and
b) the sealant around the pillows is installed as specified in Warrington Fire Research (Aust) Pty Ltd reports F91876 or F91879, tested 24 April 2001 and 25 May 2001 respectively.

3 Analysis

The proposal involved:-

- if the width of the aperture was extended sideways to any practical length it would not prejudice the fire performance of the fire pillow system on the condition that they are installed as tested and described in Warrington Fire Research (Aust) Pty Ltd reports numbered WFRA No. F91876 and WFRA No. F91879. The pillows must be laid horizontally across the width of the aperture and fully restrained on all sides.

  Tyco FS33 fire rated sealant was used to fill any openings and along the perimeter between the element and pillows in the systems tested and described in Warrington Fire Research (Aust) Pty Ltd reports numbered WFRA No. F91876 and WFRA No. F91879. It is considered that any fire rated mastic which has been tested in a similar situation would be suitable to replace the Tyco FS33 sealant.

- use of alternative material to encase the core insulating material of the Thermachek Fire Pillows without detrimentally affecting the fire performance. The original material used in the tested prototypes was plain calico or unbleached cotton. The alternative materials are 100% cotton drill and PVC coated polyester material. Irrespective of the material the exposed surfaces are burned off during the initial stages of the test while at the interface between the pillows the material is sealed by compression and the use of sealant such that little oxygen is provided for combustion. Provided that the same compression and the same infill material is used then the interchange of the encapsulating material would have little effect on the overall fire performance of the penetration system.

- use of the Thermachek pillows to protect penetrations in conjunction with other pre-existing pillow systems. The tests referenced above have demonstrated the stability of the pillows and their ability to maintain integrity and insulation up to 180 minutes. Situations arise whereby existing penetrations have been modified such that some of the pillows have been removed or the penetration has been enlarged such that the existing number of pillows can no longer provide the required protection. In these instances it is required to reinstate the penetration system using pillows from a different manufacturer. The performance of this composite system will primarily depend on sufficient compression for all materials being used and as over compression is not a problem then the compression to be provided to the composite system must equal the highest compression specified for any of the component systems.

- use of the Thermachek pillows to protect penetrations in plasterboard-lined framed wall systems as an alternative to the tested systems in concrete and masonry. The tests referenced above have demonstrated the stability of the pillows and their ability to maintain integrity and insulation up to 180 minutes. Framed wall systems, particularly those incorporating steel studs will exhibit greater deflection than the tested concrete and masonry elements but in the relatively small area of the proposed penetration systems this additional deflection would small. Provided that the same compression and the same infill material is used then the installation into the framed wall would have little affect on the overall fire performance of the penetration system.

4 Conclusion

Based on the factors detailed above it is the assessment of the Division that the Thermachek fire pillows would achieve fire-resistance levels (FRL) of at least -/180/180 if tested in accordance with AS1530.4-1997 and constructed as tested and described in Warrington Fire Research (Aust) Pty Ltd reports numbered F91876 and F91879 when

- installed in aperture of any practical width (the pillows must be laid horizontally across the width of the aperture and fully restrained on all sides)
- encapsulated in the original plain calico or with the 100% cotton drill or the PVC coated polyester base material
- used in conjunction with existing pillow systems in order to repair a penetration system
  - (a) all pillows in the composite system are compressed to the highest level specified for any of the component pillow systems; and
  - (b) the sealant around the pillows is installed as specified in the test report referenced above.

It is also the assessment of this Division that the Thermachek fire pillow penetration systems, constructed as tested in Warrington test reports F91876 and F91879, would achieve fire-resistance levels (FRL) of at least -/120/120 if tested in accordance with AS 1530.4-1997 when installed into a plasterboard-lined framed wall system provided that

(i) the maximum width is 600-mm or the distance between adjoining studs, whichever is the lesser:
(ii) the penetration is framed with noggins above and below the opening
(iii) the pillows are compressed to the same level as the tested systems
(iv) the wall system has an established FRL of 120/120/120 or -/120/120.

Similarly for plasterboard-lined framed wall systems of lesser FRL the installation of Thermachek pillows in the manner detailed above would not detrimentally affect the established FRLs of the wall system

5 Term of validity

This assessment report will lapse on 30 November 2018. Should you wish us to re-examine this report with a view to the possible extension of its term of validity, would you please apply to us three to four months before the date of expiry. This Division reserves the right at any time to amend or withdraw this assessment in the light of new knowledge.

References

The following informative documents are referred to in this Report:

AS 1530.4-1997	Methods for fire tests on building materials, components and structures Part 4: Fire-resistance tests of elements of building construction
Report # No. F91876	Warrington Fire Research (Aust) Pty Ltd report on fire-resistance test conducted in accordance with AS 1530.4-1997 and AS 4072-1992 on 24 April 2001.
Report # F91879	Warrington Fire Research (Aust) Pty Ltd report on fire-resistance test conducted in accordance with AS 1530.4-1997 and AS 4072-1992 on the 25 May 2001.
Assessment # FCO-2263	CSIRO Letter of Assessment dated 18 September 2008 on increase in aperture size for Thermachek fire pillows.
Assessment # FCO-2409	CSIRO Letter of Assessment dated 26 July 2005 on change of encapsulating material for Thermachek fire pillows.
Assessment # FCO-2721	CSIRO Letter of Assessment dated 9 April 2009 on installation of Thermachek fire pillows in plasterboard lined framed wall system.
Assessment # FCO-2723	CSIRO Letter of Assessment dated 14 April 2009 on installation of Thermachek fire pillows in conjunction with other pillow systems.

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Thermachek™ Fire Pillows

Australian made. Australian Owned.

Technical Data Sheet

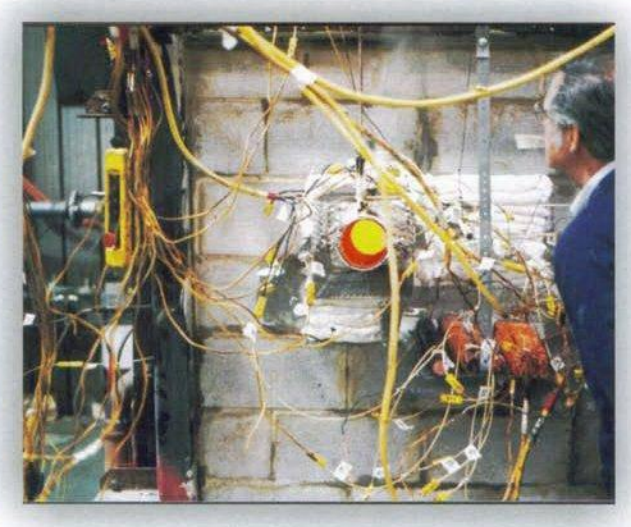


Photo shows Thermachek Fire Pillows during 3 hour fire test on a Masonry Wall

Product description Fire Rated Pillows for floor & wall penetrations

The Thermachek™ fire pillow is suited to fire wall and floor penetrations. The pillows are manufactured with a fire rated material, sewn into a high quality cloth envelope. The pillows can be used in environments where pipes, telecommunications cables, cable trays and service shafts penetrate a fire wall or floor. When used with a fire-rated sealant, the fire pillows will maintain the integrity of a fire wall or floor.

Thermachek™ fire pillows have been tested and certified for up to 3 hours of fire protection. They comply with fire resistance measures found with AS1530.4-1997 and AS4072-1992 as engaged by Warrington Test Report No. F.91876 dated 12 June 2001, Warrington Test Report No.F.91879 dated 12 June 2001 & CSIRO AssessmentNo. FCO.2263 dated 21st August 2003.

Size & Quantity

Large	300 x 200 x 40mm (box of 30)
Medium	200 x 200 x 40mm (box of 50)
Small	200 x 100 x 40mm (box of 125)

Advantages.

·Reusable - allows for opening & reopening of penetrations
·Non-toxic
·Convenient sizes
·Easy to carry, transport and store
·Low-cost solution to maintaining fire wall integrity
·Complies with all relevant standards
·Tested for up to three hours fire protection

Warrington Fire Research test reports. Test duration 3 hours.

Test No. F91876 (dated 12 June 2001)
Test for Fire Pillows protecting openings in masonry walls when tested in accordance with AS1530.4-1997 sections 2, 4 & 10 and AS4072.1-1992 as appropriate.
Test No. F91879 (dated 12 June 2001)
Test for Fire Pillows protecting openings in concrete floors when tested in accordance with AS1530.4-1997 sections 2, 4 & 10 and AS4072.1-1992 as appropriate.

Performance summary

In accordance with AS1530.4-1997 sections 2, 4 & 10 and AS4072.1-1992 as appropriate.

Separating Element	Fire Resistance Level (FRL) in minutes		
Minimum Thickness	Unpenetrated Openings	Cables / Cable Trays supporting telecommunications & electrical cables as recommended by AS4072.1-1992	Copper, Brass, Steel, & Cast Iron Pipes
140mm Concrete or Masonry wall	N/A/180/180	N/A/180/180	N/A/180/180
150mm Concrete floor	N/A/180/180	N/A/180/180	N/A/180/180

Installation

The pillows can be used to seal an opening in a floor or wall to a maximum width or height of 400 mm by any practical length.
The sealing between the pillows is achieved by 'pillow pressure' and the use of fire rated sealant to fill in voids around the various pipes, cables and penetrations.
The pillows should be stacked tightly in the direction of the least span (up to 400mm) and restrained on the sides by wall section or pillows.
Working from one side of the opening additional pillows should be stacked in the same direction and packed in tightly against the sides of the pillows already installed (see figure 1).
The appropriate size pillows should be packed around the various pipes, cables and penetrating elements and fire rated sealant used to a depth of 25mm to seal any gaps or voids around the pillows or penetrating elements.
The method of stacking the pillows used by the installer will vary depending on the shape and dimensions of the various apertures and penetrating elements (see figure 2).

Figure 1

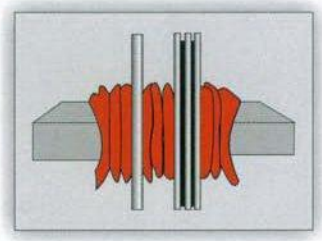


Figure 2

Thermachek® Fire Pillows
Australian made. Australian Owned.

Distributed by:

TRAFALGAR

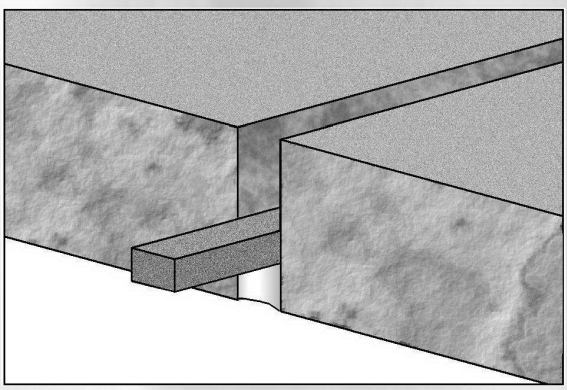
PAS 5.01
April 2009

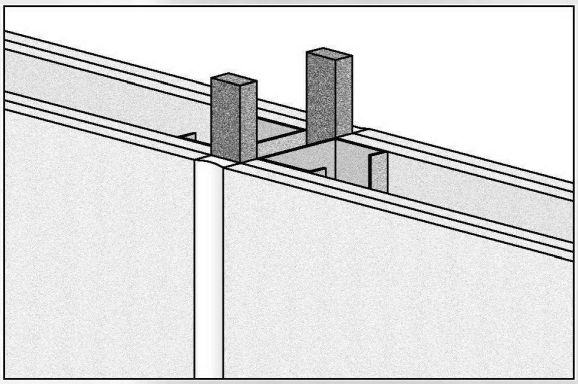
Fyreflex

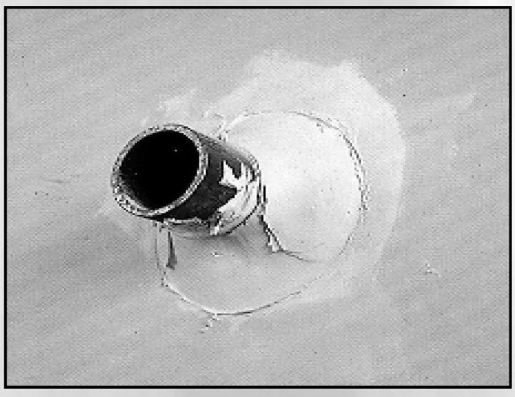
Fire Rated Sealant

Up To 4 Hours Fire Protection

(to AS 1530.4 - 1997)







Fyreflex Sealant

Description

Fyreflex is an acrylic (water based) gun grade mastic with limited (±5%) joint movement capability. Supplied in 10 litre buckets, 600ml sausage style sachets and 300ml cartridges with nozzle.

Fyreflex is available in off-white to suit plasterboard and grey to suit masonry applications.

Applications

Fyreflex is designed for sealing internal joints and wall penetrations subject to low movement and requiring up to 4 hours fire rating compliance.

- Insitu internal jointing of concrete, precast panels, block and brick work and drywall systems.
- Sealing of electrical cables and pipe penetrations.
- Acoustic gap filling combined with fire rating requirement.
- May be used in conjunction with other systems such as fire collars, pillows, board systems and fire rated mortar.

Advantages

- Water based (easy clean up)
- Smooth gunnability and tool off finish
- Excellent adhesion to metal, wood, plasterboard and all masonry
- Paintable
- Water resistant once cured
- Excellent acoustic properties with ratings up to 45 STC in joints

Method of Application

Install back-up material or joint filler as specified. Apply Fyreflex sealant in a continuous operation using a positive pressure adequate to properly fill and seal the joint or penetration. Tool Fyreflex with sufficient pressure to spread the sealant against the back-up material and onto the joint surfaces. A tool with a concave profile is recommended to achieve the correct shape.

Joint And Penetration Design

Fyreflex is gunned into and around the service penetrations and into any clearance holes through the fire separating element. Depth fill into cavities is controlled by pre-packing with foamed plastic backing rod.

Application Limitations

a) Fyreflex is not recommended for water immersion, exposed external joint sealing or areas subject to heavy traffic.
b) Fyreflex has a ±5% joint movement capability.
c) Fyreflex should not be applied with wet tooling techniques - using solvents, water or detergent/ soap solution is not recommended.
d) Fyreflex should not be applied to surfaces with special protective or cosmetic coatings without prior consultation with the manufacturer. Such surfaces include, but are not limited to, mirrors, reflective glass, or surfaces coated with Teflon, polyethylene or polypropylene.
e) Fyreflex can be affected by water before or during cure. The sealant should not be stored, applied or cured in areas where unusually high humidity or free water are pressent during the application or intial cure.
f) Fyreflex should be allowed to cure for 7 days prior to subjecting to any intermittent water exposure.
g) Temperature range during application +5°C to +35°C

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Specification And Standards

Testing
Fire tests have been conducted to AS 1530.4, in accordance with AS4072.1, on concrete floors, brick, masonry, tilt-up panels, block, and plasterboard walls.

Construction and Expansion Joints:
Construction and expansion joints to be fire stopped to maintain the required FRL of the wall or floor element by treatment with Fyreflex fire resistant sealant in accordance with Trafalgar Building Products instructions.

Service Penetrations:
Service penetrations to be fire stopped to maintain the required FRL of the penetrated wall or floor element by treatment with Fyreflex fire resistant sealant in accordance with Trafalgar Building Products instructions.

NOT TO BE TAKEN
KEEP OUT OF REACH OF CHILDREN

Avoid contact with skin and eyes and avoid breathing vapours. If poisoning occurs contact a doctor or poisons information centre. If skin contact occurs remove contaminated clothing and wash skin thoroughly. Refer to Material Safety Data Sheet for further information.

Storage & Handling

All materials shall be stored under cover in a manner that will prevent damage preferably on pallets and protected from moisture.

Do not freeze. Store in temperatures 5°C - 30°C.

Warranty

Limited Warranty:

Your purchase and use of this product is subject to Trafalgar's standard terms and conditions of sale. Trafalgar's sole liability in the event of a product defect is, at our option, to replace this product or return its purchase price.

All other warranties whether express or implied, including without limitations, any warranty of merchantability or fitness of purpose are expressly disclaimed unless prohibited by law or given in writing by Trafalgar for a specific project.

Fyreflex Usage Rate (ml/m)

DEPTH OF JOINT (mm)	WIDTH OF JOINT(mm)						
	10	**15**	**20**	**25**	**30**	**40**	**50**
10	100	150	200	250	300	400	500
12	120	180	240	300	360	480	600
15	150	225	300	375	450	600	750
20	200	300	400	500	600	800	1000

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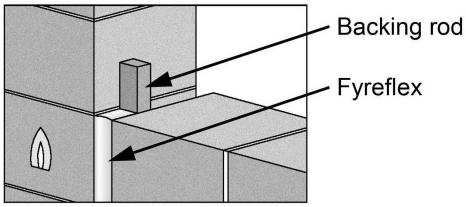
Fyreflex Grey

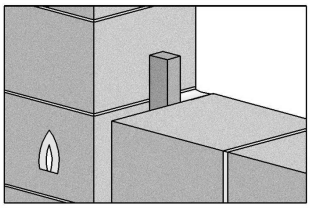
Masonry Construction and Expansion Joints

Concrete, Brick and Block Walls

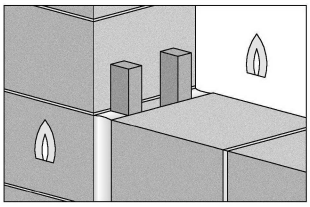
A) JOINT PROTECTED FROM EXPOSED SIDE



B) JOINT PROTECTED FROM UNEXPOSED SIDE



C) JOINT PROTECTED FROM BOTH SIDES

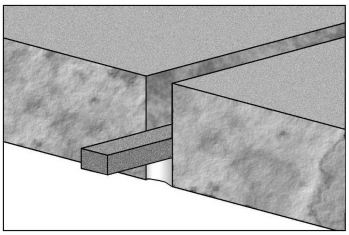


Fill Depths of Fyreflex (mm)

JOINT WIDTH (mm)	10			20			25		30		40		50	
JOINT FILL TYPE	A	B	C	A	B	C	A	C	A	C	A	C	A	C
RATING (hrs)														
-/120/120	10	15	10	10	30	10	12	12	15	15	20	20	25	20
-/180/180	10	15	10	10	30	10	12	12	15	15	20	20	25	20
-/240/240	15	15	10	30	35	15	30	20	30	20	40	20	40	20

NOTE: Joint may be filled on one side if direction of fire is known. If direction of fire is not known, sealant must be applied from both sides.

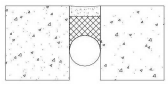
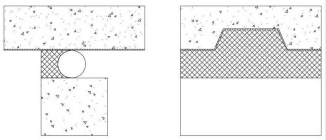
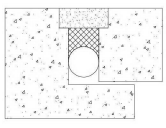
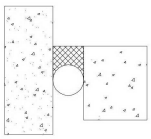
Internal Concrete and Pre-Cast Slabs



Fill Depths of Fyreflex (mm)

	JOINT WIDTH (mm)					
RATING (hrs)	10	20	25	30	40	50
-/120/120	10	10	12	15	20	25
-/180/180	10	10	12	15	20	25
-/240/240	15	30	30	30	40	40

Special Applications

System Description	System Diagram	System Description	System Diagram
• External applications • Up to 4 hours • With non-rated external grade sealant		• Steel decking • Upto 4 hours	
• Slab-on-slab • Up to 4 hours • With non-rated external or internal grade sealant		• Joint between wall and floor slab • Upto 4 hours	

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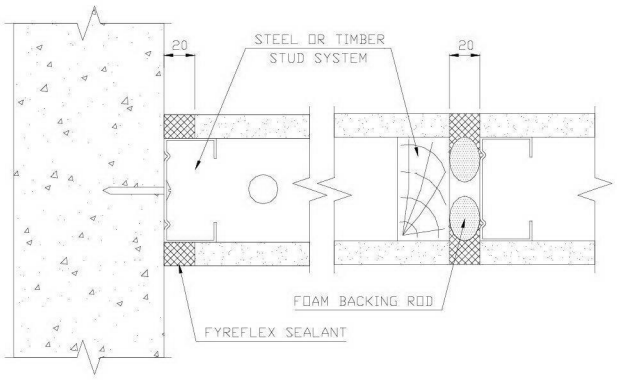
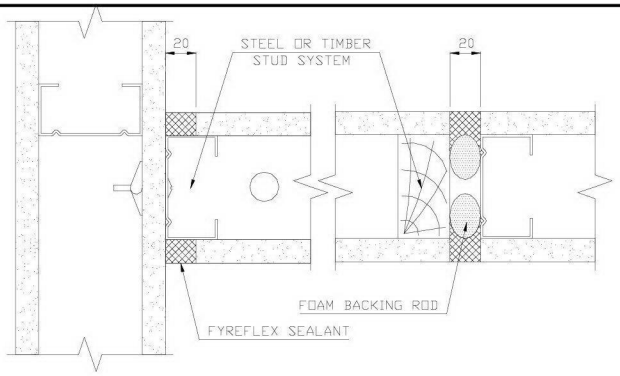
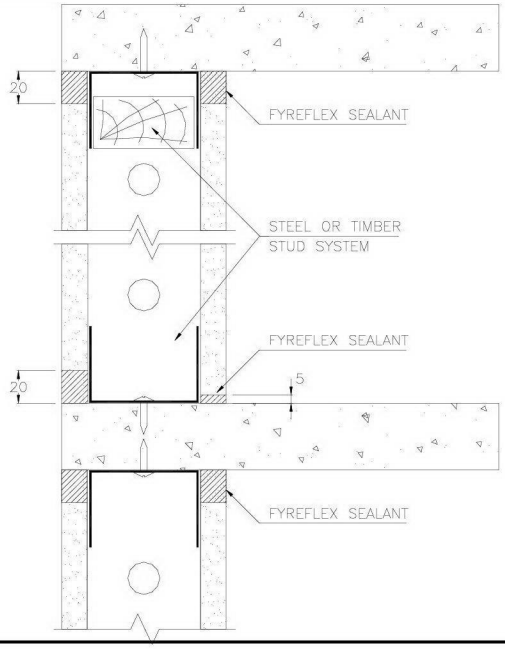
Fyreflex White

Drywall Construction and Expansion Joints

1 Hour Plasterboard Systems

SYSTEM	SYSTEM DIAGRAM
• T-Junction between concrete wall and plasterboard wall • Typical control joint in plasterboard wall	
• T-junction between two plasterboard walls • Typical control joint in plasterboard wall	
• Deflection head and base between concrete slabs and plasterboard wall ***NOTE:*** • *Fire Rated Plasterboard Systems must be installed according to manufacturers instructions.* • *Fyreflex is filled to depth of plasterboard sheet.*	

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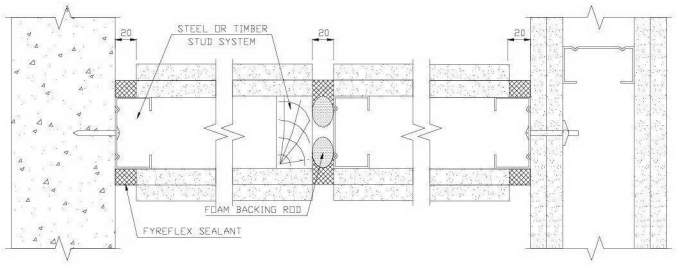
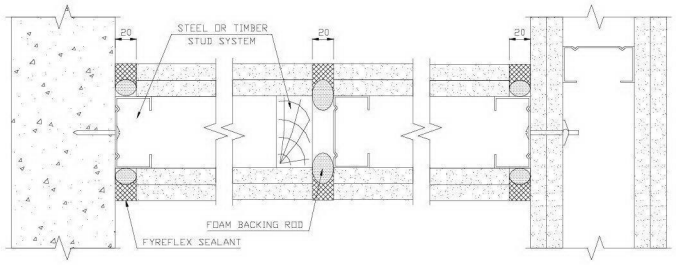
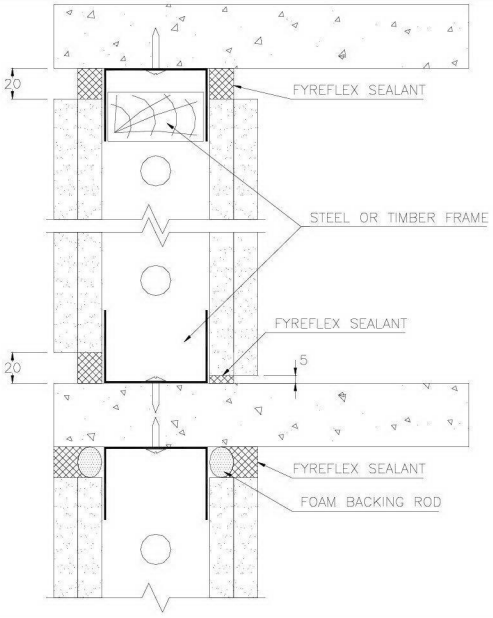
Fyreflex White

Drywall Construction and Expansion Joints

2 Hour Plasterboard Systems

SYSTEM	SYSTEM DIAGRAM
• T-Junction between concrete wall and plasterboard wall • Typical control joint in plasterboard wall • T-junction between two plasterboard walls	
• T-Junction between concrete wall and plasterboard wall • Typical control joint in plasterboard wall • T-junction between two plasterboard walls	
• Deflection head and base between concrete slabs and plasterboard wall ***NOTE:*** • *Fire Rated Plasterboard Systems must be installed according to manufacturers instructions.* • *Fyreflex is filled to depth of plasterboard sheet.*	

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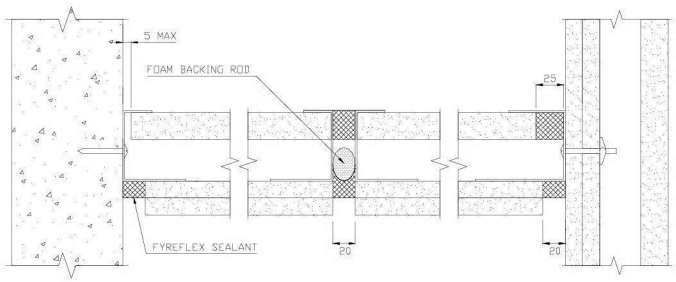
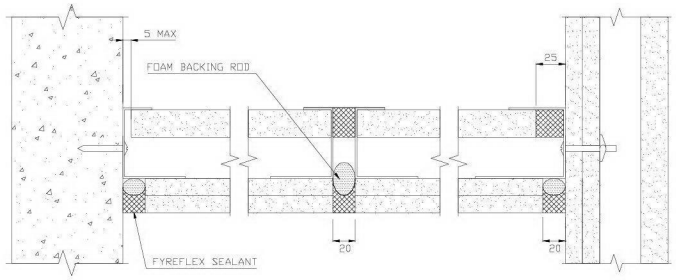
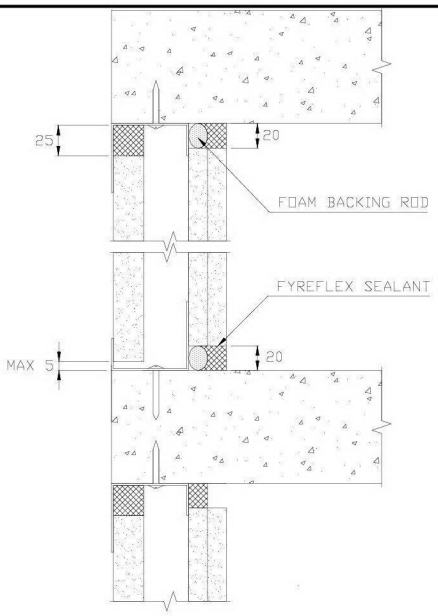
Fyreflex White

Drywall Construction and Expansion Joints

2 Hour Shaft Wall Systems

SYSTEM	SYSTEM DIAGRAM
• T-Junction between concrete wall and shaft wall • Typical control joint in shaft wall • T-junction between two shaft walls	
• T-Junction between concrete wall and shaft wall • Typical control joint in shaft wall • T-junction between two shaft walls	
• Deflection head and base between concrete slabs and plasterboard wall ***NOTE:*** • *Fire Rated Plasterboard Systems must be installed according to manufacturers instructions.* • *Fyreflex is filled to depth of plasterboard sheet.*	

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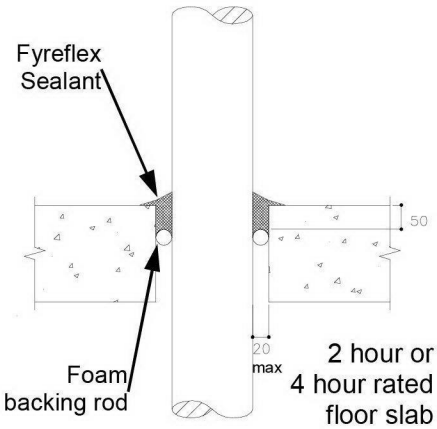
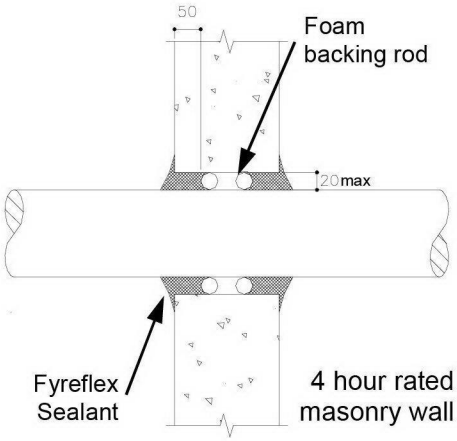
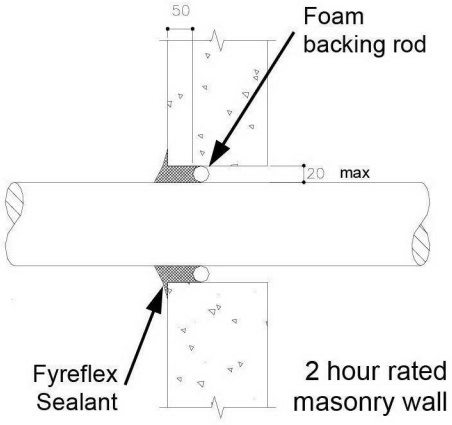
Fyreflex Sealant

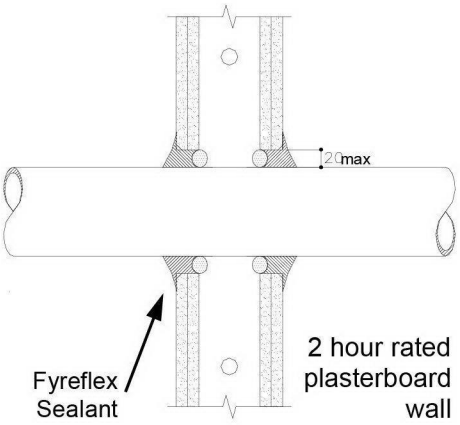
Miscellaneous Penetrations

Pipe Penetrations









PIPE TYPE	WALL OR FLOOR	PIPE SIZES	FRL
STEEL			
⇒ Non insulated	Walls and floors	Up to 225mm diam.	240/240/-
⇒ With 25mm rockwool insulation	Floors only	Up to 200mm diam.	180/180/-
CAST IRON			
⇒ Non insulated	Walls and floors	Up to 225mm diam.	240/240/-
⇒ With 25mm rockwool insulation	Floors only	Up to 200mm diam.	180/180/-
BRASS			
⇒ Non insulated	Walls and floors	Up to 102mm diam.	240/240/-
COPPER			
⇒ Non insulated	Walls and floors	Up to 225mm diam.	240/240/-
⇒ With 25mm rockwool insulation	Floors only	Up to 19mm diam.	120/120/-
FIBRE RE-INFORCED CEMENT PIPES AND COLUMNS	Walls and floors	Up to 225mm diam.	120/120/120

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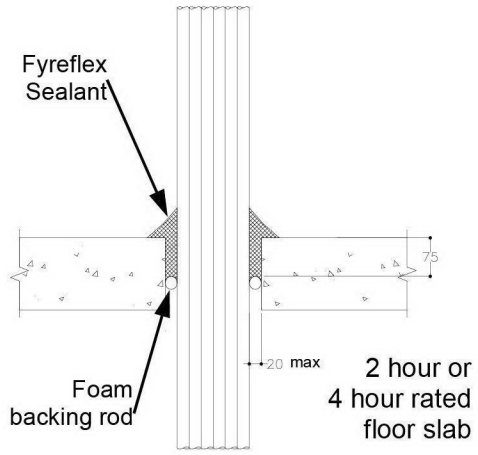
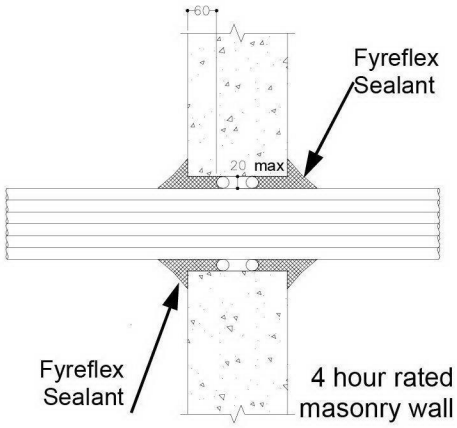
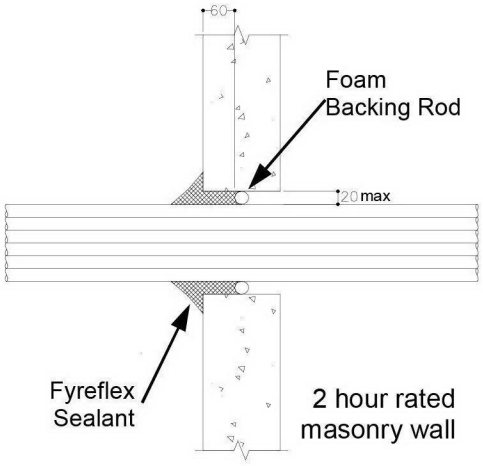
Fyreflex Sealant

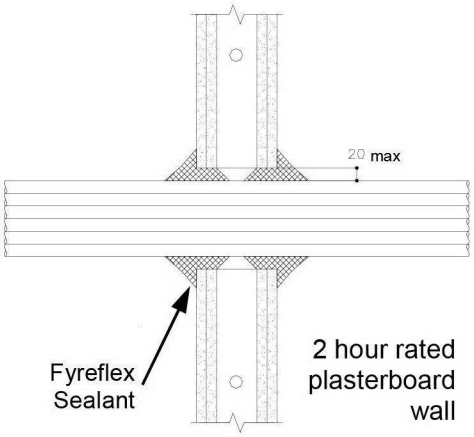
Miscellaneous Penetrations

Electrical Cable Penetrations









PENETRATION TYPE	WALL OR FLOOR	PENETRATION SIZES	FRL
SINGLE CABLE	Walls and floors	Up to 54mm diam.	240/240/110
CABLE BUNDLE	Walls and floors	Bundle of up to 24 cables.	240/240/95
STEEL CABLE TRAY	Walls and floors	Up to 380mm wide with assorted cables	240/240/110
BUS BARS	Walls and floors	50 x 10mm copper bus bars	120/120/-

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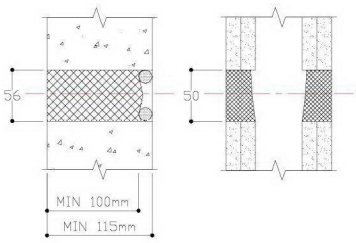
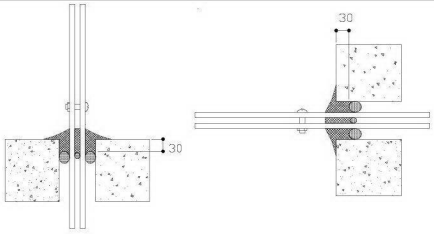
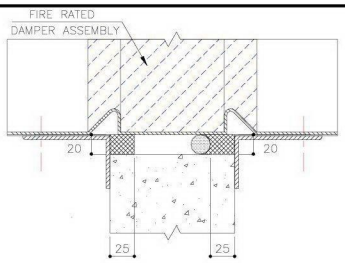
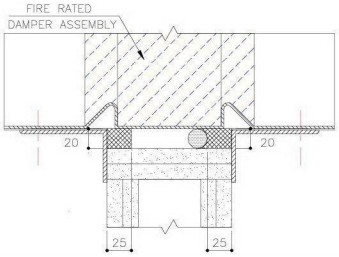
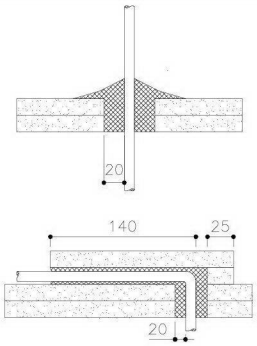
Miscellaneous Penetrations

Special Applications

SYSTEM	SYSTEM DIAGRAM	FIRE RESISTANCE
• Blank penetration. walls and floors. Max 56mm diameter.		120/120/120
• Copper and aluminium bus bars. Walls and floors. Max size 10 x 200mm.		120/120/-
• Perimeter seal for steel duct and damper used in masonry walls and floors.		120/120/-
• Perimeter seal for steel duct and damper used in drywalls.		120/120/-
• Cable penetrations through plasterboard ceiling		60/60/- ***NOTE:*** • *Fire Rated Plasterboard Systems must be installed according to manufacturers instructions.* • *Fyreflex is filled to depth of plasterboard sheet.*

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Fyreflex Sealant

Joint Sealant Quantity Estimation Table

Note: All quantities estimated for 100 lineal metre requirement

Joint Size WIDTH	DEPTH	LITRES	300 ml Cartridge	600 ml SAUSAGES	10 LITRE PAIL
5	10	5	17	9	-
6	10	6	20	10	-
8	10	8	27	14	-
10	10	10	34	17	1
15	10	15	50	25	2
15	15	22.5	75	38	3
20	10	20	67	34	2
20	15	30	100	50	3
20	20	40	134	67	4
25	15	37.5	125	63	4
25	20	50	167	84	5
30	15	45	150	75	5
30	20	60	200	100	6
40	20	80	266	134	8
50	20	100	334	167	10
60	20	120	400	200	12

FORMULA FOR ESTIMATING QUANTITY OF JOINT SEALANT REQUIREMENTS
(Use whole numbers for millimetres and for metres)

L = Length of joint in metres	D = Depth of joint in millimetres
W = Width of joint in millimetres	Q = Quantity in Litres required
$Q = \frac{L \times W \times D}{1000}$	eg $Q = \frac{100m \times 15mm \times 10mm}{1000}$ = 15 litres required

Notes:

1. Sealant depth in joints between 10mm & 40mm wide should never be less than half the width
2. It is not recommended for any sealant depth to be less than 10mm or greater than 20mm
3. To estimate the quantity of a triangular fillet, the amount of sealant required would be half that required for a rectangular joint of the same dimensions

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T.A.G. Cabling Systems

A.B.N. 61 057 430 654

SECTION J6 –CERTIFICATION FORM
FOR APPLICANT'S/ PRINCIPAL CONTRACTOR'S

I SIMON MARCHANT (name)

Of T.A.G. Cabling Systems Pty Ltd

hereby certify that the interior artificial lighting & power control, at BASSIKE HEAD OFFICE, 2 DAYDREAM ST, WARRIEWOOD (Address) have been installed in accordance with Section J6 of Australian BCA 2015 and AS 1680.0.

Further, I am appropriately qualified and experienced to provide the certification for this component of the project.

Signature SMT

Date 26/9/10

BLACKETT MAGUIRE+ GOLDSMITH

31 October 2016

Bassike Pty Ltd ATF Bassike Unit Trust
5/2 Daydream Street,
Warriewood NSW 2102

Attention: Billy Voss

Dear Billy,

REFERENCE: **BASSIKE - 2 DAYDREAM STREET, WARRIEWOOD**
FINAL OCCUPATION CERTIFICATE

Your recent application for an Occupation Certificate dated 10/09/2015 has now been approved. We hereby enclose a copy of the Occupation Certificate No. OC-16267 in relation to the fitout for office use at Level 2, and warehouse racking within warehouse Tenancy G2.

We have forwarded a copy of the Occupation Certificate together with the approved documentation to Council for its record.

If we have provided the approved documentation back to you electronically on a USB storage device, we would like to advise you that this device is for transmittal purposes only and is not designed for long term storage, please transfer all documentation to a purpose designed form of storage media.

We thank you for your assistance in this matter and should you have any enquiries please do not hesitate to contact me on 9211 7777.

Yours Sincerely,

Tony Heaslip
Director
Blackett Maguire + Goldsmith Pty Ltd

Address Suite 2.01, 22-36 Mountain St Ultimo NSW 2007
Postal PO Box 167 Broadway NSW 2007
ABN 18 408 985 851
Contact Ph: 02 9211 7777
Fax: 02 9211 7774
Email: admin@bmplusg.com.au

BLACKETT MAGUIRE+ GOLDSMITH

OCCUPATION CERTIFICATE

Pursuant to Part 4A of the Environmental Planning & Assessment Act 1979

CERTIFICATE NO.:	OC-16267
TYPE:	☐ Interim ☑ Final
DETERMINATION:	Approved
DATE OF DETERMINATION:	31 October 2016
SUBJECT LAND:	
Lot & DP	Lot 100 DP 1174851
Address	2 Daydream Street, WARRIEWOOD NSW 2102
LOCAL GOVERNMENT AREA:	Northern Beaches Council
APPLICANT:	
Name	Billy Voss
Company	Bassike Pty Ltd ATF Bassike Unit Trust
Address	14/2 Daydream Street WARRIEWOOD NSW 2102
Phone / Fax	Phone: (02) 8457 6800 Mobile: 0402 012 958 Email: billy@bassike.com
OWNER:	
Name	Livpac Developments Pty Ltd
Address	PO Box R215 ROYAL EXCHANGE NSW 1225
Phone / Fax	Phone: (02) 8274 0400 Email: mlivingstone@livgroup.com.au
DESCRIPTION OF DEVELOPMENT:	Fitout for office use at Level 2, and warehouse racking within warehouse Tenancy G2 *Note: This Occupation Certificate excludes any external ancillary services, structures or civil works required by relevant authorities.*
WHOLE / PART:	Whole
Description of part (where applicable):	
BCA CLASSIFICATION:	Class 5 & 7b
DEVELOPMENT CONSENT:	
Complying Development Certificate & Date of Determination:	CDC-15074 dated 27 July 2015

STATUTORY CERTIFICATION:

Blackett Maguire + Goldsmith certify that:

- *The health and safety of the occupants of the building have been taken into consideration where an interim occupation certificate is being issued; and*
- *A current development consent or complying development certificate is in force for the building; and*
- *If any building work has been carried out, a current construction certificate (or complying development certificate) has been issued with respect to the plans and specifications for the building; and*
- *The building is suitable for occupation or use in accordance with its classification under the Building Code of Australia; and*
- *A fire safety certificate has been issued for the building; and*
- *A report from the Fire Commissioner has been considered (if required).*

DOCUMENTATION RELIED UPON:	As listed in Schedule 1
DETAILS OF CERTIFYING AUTHORITY:	
Certifying Authority	Blackett Maguire + Goldsmith Pty Ltd
Accreditation No.	ABC 4
SIGNATURE:	Date: 31/10/2016
SIGNED ON BEHALF OF BM+G:	Tony Heaslip Accreditation No. BPB0178

Address: Suite 2.01, 22-36 Mountain St Ultimo NSW 2007
Postal: PO Box 167 Broadway NSW 2007
ABN: 18 408 985 851
Contact: Ph: 02 9211 7777 Fax: 02 9211 7774 Email: admin@bmplusg.com.au

SCHEDULE 1

SCHEDULE OF DOCUMENTATION

ITEM	DOCUMENTATION	PREPARED BY	DATE
1.	OC Application Form	Bassike Pty Ltd	10 September 2015
2.	Fire Safety Certificate	Integrated Project Group	31 October 2016
3.	Certification – Exit signs & emergency light fittings	T.A.G Cabling Systems	22 September 2015
4.	Installation Compliance Certificate – Fire seals	Fire Stopping	28 September 2015
5.	Certification – Fire seal	Danny Hall Plumbing Pty Ltd	9 September 2015
6.	Certification – Hot water supply	Danny Hall Plumbing Pty Ltd	9 September 2015
7.	Certification – Plumbing & drainage	Danny Hall Plumbing Pty Ltd	9 September 2015
8.	Installation Certificate – Engineering timber floors	JU Flooring	6 October 2015
9.	Certification – Building works	Integrated Project Group	14 September 2015
10.	Certification – Glazing works	Omega Partitions Pty Ltd	14 September 2015
11.	Certification – Mechanical services	Whiffen & Andrews Air Conditioning	8 September 2015
12.	Installation Certificate – Mechanical services	Whiffen & Andrews Air Conditioning	8 September 2015
13.	Installation Certificate – Timber floors	JU Flooring	15 September 2015
14.	Certificate of Compliance – Electrical work	T.A.G Cabling Systems	22 September 2015
15.	Certification – Automatic sprinkler system, building occupant warning system & automatic smoke detection system	Force Fire Pty Ltd	18 September 2015
16.	Installation Certificate – Tiling & waterproofing	Myland Ceramics Pty Ltd	9 September 2015
17.	Waterproofing Compliance Certificate	Sydney Seal Insulation Works Pty Ltd	13 July 2015
18.	Accessibility Completion Statement	ABE Consulting Pty Ltd	17 September 2015
19.	Installation Certificate – Wall and ceiling linings	Omega Partitions Pty Ltd	Undated
20.	Installation Certificate – Knauf plasterboard walls	Omega Partitions Pty Ltd	Undated
21.	Certification – + Automatic Sprinkler System + Building Occupant Warning System + Automatic Smoke Detection System	Force Fire Pty Ltd	27 October 2015
22.	Installation Certificate – Timber floor	JU Flooring	6 October 2015
23.	Slip Resistance Test Report – European Oak Timber floor board – Test Report No. R3542b	Safe Environments Pty Ltd	24 May 2012
24.	Fire Test for Floorings (Tretford Cord) – Test No. 7-530721-AQ	Australian Wool Testing Authority Ltd	14 September 2004
25.	Certificate of Assessment – Forbo Surestep No. 1618	CSIRO	29 September 2011
26.	Test Report – Surestep PVC flooring	TUV Rheinland	23 December 2010
27.	Certification – + Exit signs + Emergency light fittings	T.A.G. Cabling Systems	22 September 2015
28.	Certification – Automatic door equipment	ADIS Automatic Doors	9 September 2015
29.	Installation Certificate – Fire wall between warehouse and office	Fire Stopping Pty Ltd	28 September 2015

ITEM	DOCUMENTATION	PREPARED BY	DATE
	areas		
30.	Installation Certificate – Services penetrations including electrical cables and electrical conduits	Fire Stopping Pty Ltd	9 October 2015
31.	Installation Certificate – Trafalgar Fyreflex Mastic & Trafalgar Fyreplug pillows	Fire Stopping Pty Ltd	9 October 2015
32.	Certification - Section J6	T.A.G. Cabling Systems	26 September 2010

SCHEDULE 2

FIRE SAFETY SCHEDULE

Issued under Clause 168 of the Environmental Planning & Assessment Regulation 2000

OWNER:	Livpac Developments Pty Ltd
ADDRESS:	Bassike, 2 Daydream Street, Warriewood
COMPLYING DEVELOPMENT CERTIFICATE NO.:	CDC-15074
OCCUPATION CERTIFICATE NO.:	OC-16267

SCHEDULE

Statutory Fire Safety Measure	Design/Installation Standard	Existing	New/ Altered
Alarm Signalling Equipment	AS1670.3 – 2004	✓	
Automatic Fire Detection & Alarm System *Tenancy 1 (Amber Technology) & Level 2 of Stage 2 Development*	Clause 5 of BCA Specification E2.2a Fire Engineering Report prepared by Exova Warringtonfire, Report No. 2567602- RPT01-2, Revision 2 dated 22/12/2011 Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	✓
Automatic Fire Suppression Systems (Excluding Swim school tenancy)	BCA Spec. E1.5 & AS 2118.1-1999 Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	✓
Building Occupant Warning System activated by the Sprinkler System	Clause 8 of BCA Spec E1.5 & Clause 3.22 of AS 1670.1 – 2004	✓	✓
Emergency Lighting	BCA Clause E4.4 & AS 2293.1 - 2005	✓	✓
Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS 2293.1 - 2005	✓	✓
Fire Blankets	AS 3504 - 1995 & AS 2444 – 2001	✓	
Fire Dampers	BCA Clause C3.15, AS 1668.1 - 1998 & AS 1682.1 & 2 - 1990	✓	
Fire Doors	BCA Clause C2.12, C2.13, C3.2, C3.4, C3.5, C3.6, C3.7 & C3.8 and AS 1905.1 – 2005	✓	
Fire Hose Reels	BCA Clause E1.4 & AS 2441 – 2005	✓	
Fire Hydrant Systems	Clause E1.3 & AS 2419.1 - 2005	✓	
Fire Seals	BCA Clause C3.15, AS 1530.4 & AS4072.1 - 2005	✓	✓
Lightweight Construction	BCA Clause C1.8 & AS 1530.3 – 1999	✓	
Mechanical Air Handling Systems	BCA Clause E2.2, AS/NZS 1668.1 - 1998 & AS 1668.2 – 1991	✓	✓
Paths of Travel	EP & A Regulation Clause 186 and Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	✓
Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001	✓	✓
Required Exit Doors (power operated)	BCA Clause D2.19(b)	✓	
Warning & Operational signs	Section 183 of the EP&A Regulations 2000, AS 1905.1 - 2005, BCA Clause C3.6, D2.23, E3.3	✓	✓

Statutory Fire Safety Measure	Design/Installation Standard	Existing	New/ Altered
Wall-wetting sprinklers (Stage 2 - Pool tenancy and fire stair 1)	AS 2118.1-1999 Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	
Fire Engineered Alternative Solution relating to fire resisting construction (allowing reduced FRL's from 4hrs to 2hrs)	BCA Performance Requirements CP1 & CP2 Stage 1: Fire Engineering Report prepared by Exova Warringtonfire, Report No. 2567600-RPT02-3, Revision 3 dated 6/10/2011. Stage 2: Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	
Fire Engineered Alternative Solution relating to distances between alternative exits in Tenancy 1 (Amber Technology) comprising 75m in Lieu of 60m – Stage 1 development	Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	
Fire Engineered Alternative Solutions for the Stage 2 Development relating to: ▪ To allow the provision of a 120/120/120 FRL fire walls, floors and columns in lieu of 240/240/240 FRL to the warehouse areas. ▪ To allow drencher protected glazing in lieu of 120/120/120 FRL to the Ground Floor entry lobby of the swim school and Stair 2. ▪ Fire isolation of Fire Stair 2, and separation of rising and descending stairs in fire isolated exits. ▪ Travel distance of up to 65m to an exit within the basement carpark in lieu of 40m. ▪ Travel distance of up to 120m between alternative exits within the car parking basement levels in lieu of 60m. ▪ Travel distance up to 25m to the single exit in lieu of 20m within the warehouse mezzanine. ▪ Travel distance of up to 30m to the single exit in lieu of 20m within the Level 2 office. ▪ Travel distance up to 70m between alternative exits within Tenancy G.3 in lieu of 60m. ▪ Travel distance within the childcare centre on Level 2 of up to 70m between alternative exits in lieu of 60m. ▪ To allow the travel path egress width within the swim school between columns and the pools is 820mm wide, in lieu of 1m. ▪ The non-provision of a	BCA Performance Requirements CP1, CP2, DP4, DP5, EP1.4 & EP2.2 Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	

Statutory Fire Safety Measure	Design/Installation Standard	Existing	New/ Altered
sprinkler system to the swim school tenancy. ▪ The use of jet-fans in lieu of a conventional exhaust air system in the basement carpark where the jet-fans do not comply with the requirements and recommendations in clause 5.5 of AS/NZS 1668.1. ▪ The provision of Danpalon and Alucobond Plus, which are not considered "non-combustible", to form part of the external walls at various locations. ▪ Non-provision 120/120/120 FRL to the timber floor and timber columns supporting the floor of the offices of the Level 1 Swim School			

SCHEDULE 3

INSPECTION SCHEDULE

Inspection Type	Inspection by	Date	Satisfactory
▪ After the building work has been completed and prior to any occupation certificate being issued in relation to the building.	Tony Heaslip (BPB0178)	27/10/2016	Yes
▪ Other Inspections:			
Progress Inspection	Tony Heaslip (BPB0178)	12/08/2015	
Progress Inspection	Tony Heaslip (BPB0178)	21/09/2015	

BLACKETT MAGUIRE+ GOLDSMITH

31 October 2016

The General Manager
Northern Beaches Council
PO Box 882
Mona Vale NSW 1660

Dear Sir / Madam,

REFERENCE: BASSIKE, 2 DAYDREAM STREET, WARRIEWOOD
FINAL OCCUPATION CERTIFICATE

As required by Clause 151(2) of the EP&A Regulation 2000 (the Regulation) notice is hereby given that the following application for a Final Occupation Certificate has now been approved.

Applicant: Bassike Pty Ltd ATF Bassike Unit Trust

Subject Address: 2 Daydream Street, Warriewood

Date Received: 02 October 2015

Date Determined: 31 October 2016

Please find undercover a copy of the Occupation Certificate No. OC-16267 for the completed fitout for office use at Level 2, and warehouse racking within warehouse Tenancy G2.

We have also enclosed a copy of the documentation relied upon as indicated on the Occupation Certificate for Council's record.

Pursuant to Clause 263(2) Environmental Planning and Assessment Regulation 2000, please find enclosed a cheque to the sum of $36.00 for the submission of this Part 4A Certificate and request that a receipt for which is forwarded to our office.

If we have provided the approved documentation to you electronically on a USB storage device, we would like to advise you that this device is for transmittal purposes only and is not designed for long term storage, please transfer all documentation to a purpose designed form of storage media.

Please contact the undersigned should you have any further enquiries on 02 9211 7777.

Yours Sincerely,

Tony Heaslip
Director
Blackett Maguire + Goldsmith Pty Ltd

Rec: 403532 4/11/2016 PRVC $36-

Address: Suite 2.01, 22-36 Mountain St, Ultimo NSW 2007
Postal: PO Box 167, Broadway NSW 2007
ABN: 18 408 985 851
Contact: Ph: 02 9211 7777
Fax: 02 9211 7774
Email: admin@bmplusg.com.au

BLACKETT MAGUIRE+ GOLDSMITH

OCCUPATION CERTIFICATE

Pursuant to Part 4A of the Environmental Planning & Assessment Act 1979

CERTIFICATE NO.:	OC-16267
TYPE:	☐ Interim ☑ Final
DETERMINATION:	Approved
DATE OF DETERMINATION:	31 October 2016
SUBJECT LAND:	
Lot & DP	Lot 100 DP 1174851
Address	2 Daydream Street, WARRIEWOOD NSW 2102
LOCAL GOVERNMENT AREA:	Northern Beaches Council
APPLICANT:	
Name	Billy Voss
Company	Bassike Pty Ltd ATF Bassike Unit Trust
Address	14/2 Daydream Street WARRIEWOOD NSW 2102
Phone / Fax	Phone: (02) 8457 6800 Mobile: 0402 012 958 Email: billy@bassike.com
OWNER:	
Name	Livpac Developments Pty Ltd
Address	PO Box R215 ROYAL EXCHANGE NSW 1225
Phone / Fax	Phone: (02) 8274 0400 Email: mlivingstone@livgroup.com.au
DESCRIPTION OF DEVELOPMENT:	Fitout for office use at Level 2, and warehouse racking within warehouse Tenancy G2 *Note: This Occupation Certificate excludes any external ancillary services, structures or civil works required by relevant authorities.*
WHOLE / PART:	Whole
Description of part (where applicable):	
BCA CLASSIFICATION:	Class 5 & 7b
DEVELOPMENT CONSENT: Complying Development Certificate & Date of Determination:	CDC-15074 dated 27 July 2015

STATUTORY CERTIFICATION:

Blackett Maguire + Goldsmith certify that:

- *The health and safety of the occupants of the building have been taken into consideration where an interim occupation certificate is being issued; and*
- *A current development consent or complying development certificate is in force for the building; and*
- *If any building work has been carried out, a current construction certificate (or complying development certificate) has been issued with respect to the plans and specifications for the building; and*
- *The building is suitable for occupation or use in accordance with its classification under the Building Code of Australia; and*
- *A fire safety certificate has been issued for the building; and*
- *A report from the Fire Commissioner has been considered (if required).*

DOCUMENTATION RELIED UPON:	As listed in Schedule 1
DETAILS OF CERTIFYING AUTHORITY:	
Certifying Authority	Blackett Maguire + Goldsmith Pty Ltd
Accreditation No.	ABC 4
SIGNATURE:	Date: 31/10/2016
SIGNED ON BEHALF OF BM+G:	Tony Heaslip Accreditation No. BPB0178

Address: Suite 2.01, 22-36 Mountain St Ultimo NSW 2007
Postal: PO Box 167 Broadway NSW 2007
ABN: 18 408 985 851
Contact: Ph: 02 9211 7777 Fax: 02 9211 7774 Email: admin@bmplusg.com.au

SCHEDULE 1

SCHEDULE OF DOCUMENTATION

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32.	Certification - Section J6	T.A.G. Cabling Systems	26 September 2010

SCHEDULE 2

FIRE SAFETY SCHEDULE

Issued under Clause 168 of the Environmental Planning & Assessment Regulation 2000

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ADDRESS:	Bassike, 2 Daydream Street, Warriewood
COMPLYING DEVELOPMENT CERTIFICATE NO.:	CDC-15074
OCCUPATION CERTIFICATE NO.:	OC-16267

SCHEDULE

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Fire Seals	BCA Clause C3.15, AS 1530.4 & AS4072.1 - 2005	✓	✓
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Mechanical Air Handling Systems	BCA Clause E2.2, AS/NZS 1668.1 - 1998 & AS 1668.2 – 1991	✓	✓
Paths of Travel	EP & A Regulation Clause 186 and Fire Engineering Report prepared by Exova Warringtonfire, Report No. 26664700-RPT01-9, Revision 9 dated 6/07/2015.	✓	✓
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sprinkler system to the swim school tenancy. ▪ The use of jet-fans in lieu of a conventional exhaust air system in the basement carpark where the jet-fans do not comply with the requirements and recommendations in clause 5.5 of AS/NZS 1668.1. ▪ The provision of Danpalon and Alucobond Plus, which are not considered "non-combustible", to form part of the external walls at various locations. ▪ Non-provision 120/120/120 FRL to the timber floor and timber columns supporting the floor of the offices of the Level 1 Swim School			

SCHEDULE 3

INSPECTION SCHEDULE

Inspection Type	Inspection by	Date	Satisfactory
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Progress Inspection	Tony Heaslip (BPB0178)	21/09/2015	