



PLUMBERS

This manual focuses specifically on fire stopping plumbing service penetrations using the wide range of Trafalgar Fire systems that have been tested and approved to AS1530.4:2014. These systems cover a wide range of common plumbing service types and fire rated barriers to suit common applications on all sites.



SERVICES COVERED

- Metal pipes
- Plastic Drain, Waste and Vent pipes (DWV)
- Plastic Floor Waste (FW) pipes
- Hot and cold water PEX pipes
- PEX-AL-PEX gas pipes
- Rehau, DBLue, PP Pipes

BARRIERS COVERED

- Plasterboard
- AAC (Hebel®/Walsc)
- Speedpanel®
- Concrete/Masonry Walls
- Concrete Floor Slabs
- Plasterboard Ceilings
- Oversized penetrations
- COREX walls and ceilings

SYSTEMS - CLICKABLE LOGOS

























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TO LEARN
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COMPLIANCE



COMPLIANCE WITH THE NATIONAL CONSTRUCTION CODE (NCC)

Formerly known as BCA

Under the building code, a Deemed to Satisfy (DTS) solution is one that satisfies the performance requirements set out in section C of volume one. Section C specifically deals with the fire protection of openings in fire barriers (i.e. service penetrations in fire rated walls and floors).

SECTION C3.15 – OPENINGS FOR SERVICE INSTALLATIONS

Where any service penetrates a fire barrier that has a Fire Resistance Level (FRL) with respect to integrity and insulation, the installation should comply with the following tested systems:

- A Fire Tested System – An identical prototype, installed in the same wall or floor system that has been tested/ approved to the fire testing standard AS1530.4 and AS4072.1 which has achieved an FRL of equal to or greater than that required by the fire barrier.

For example, if the site has a -/120/120 plasterboard wall system with a PEX pipe penetration, the product used to seal the PEX pipe must have been fire tested at an approved laboratory WITH the same size PEX pipe IN the same wall type AND tested for at least 120 minutes without failing the integrity or insulation criteria.

FIRE TEST ASSESSMENT REPORTS

Fire testing is a timely and expensive process, and it is impossible to test every single possible service configuration 'identically' in a practical sense.

- Under the building code C3.15 an accredited testing laboratory is permitted to write a formal assessment confirming the likely fire performance (FRL) of the penetration in accordance with AS4072.1.

For example, if a PVC pipe was tested in a small opening and a large opening with the same fire sealing system and achieved the same FRL, an assessment might be able to justify a range of approved aperture sizes.

This assessment or approval report can contain only minor variations to the tested systems as per schedule 5 of the NCC.



Image of an AS1530.4 fire test of our FyreSET® Mortar system being used in conjunction with FyreFLEX® and TWRAP™ to fire stop some copper pipes and cables.

UNIQUE CHALLENGES OF PLUMBING SERVICE PENETRATIONS

Some typical plumbing services can prove to be quite difficult to deal with in terms of fire stopping, as large metal pipes transfer huge amounts of heat during a fire, and plastic pipes will melt and burn away under fire conditions. Further to this, there can be a large quantity of services that are used by plumbers. This means that plumbers must be aware of a bigger range of fire stopping systems and how to install them correctly.

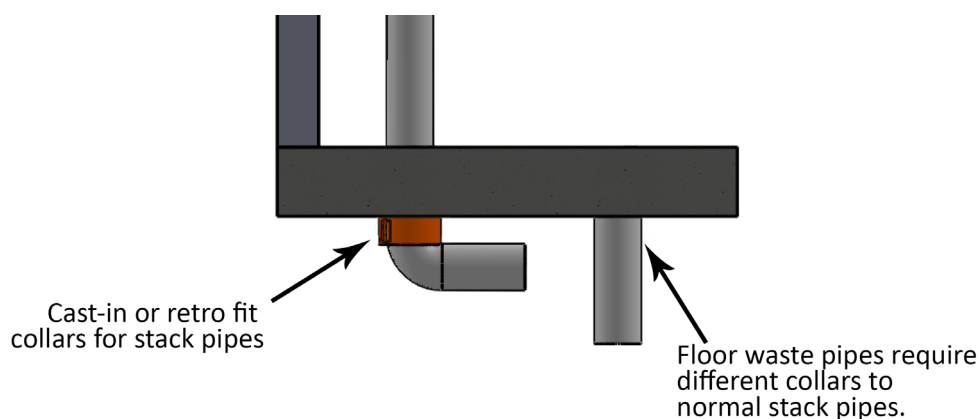
Large copper pipes can draw lots of heat, making it hard to keep the temperatures down. While 2 hour results are quite achievable, high FRLs such as -/180/180 and -/240/240 can be difficult or require long lengths of insulation wrap to achieve. In a fire test to AS1530.4, past the 2 hour mark the temperature in the furnace is higher than the melting point of copper, leading to failures and limited available fire stopping systems across the market. For a summary of all of our 3-4 hour penetration system, refer to the [3-4 Hour Penetration Systems Technical Manual](#).

Intumescent based fire stopping (like fire collars) are usually used to close off plastic pipes, however with new plastic and composite pipe materials flooding the market, you need to make sure the fire stopping you want to use is tested and approved for use with these new pipe materials. Traditional fire collars can struggle, so intumescent sealants are a great alternative for smaller pipes like PEX and PEX-AL-PEX.

DRAIN, WASTE AND VENT (DWV) VS. FLOOR WASTE (FW)

Plastic services such as PVC, HDPE, etc, typically fall into two categories: DWV, and FW. DWV pipes (or stack pipes) run continuously through fire barriers, where floor waste pipes end flush with the top side of the slab with a floor grate. These two applications require different fire-stopping methods, the reason being that floor waste configurations are more onerous in fire testing and as such need an upgraded fire stopping system to provide protection faster.

For typical DWV pipes (typically PVC), our cast-in or retrofit FyreCOLLAR Range are most appropriate. For FW pipes, our FyreCOLLAR Floor Waste is required. The floor waste collar has addition elements built into the design to close off service penetrations faster in a fire event, maintaining the FRL of the fire barrier.



CASTING-IN SERVICES

While pouring a concrete slab on site, it may save some time in the short term to put services in place and pour the concrete around them directly. However, in the long term this practice proves costly. For instance, a cast-in copper pipe running vertically through a concrete floor slab can cause issues in the long run. This includes creaking and noises as well as damage to the pipe and concrete as building movement occurs. As such, fire stopping systems are tested to include and seal an air gap around the pipe, and often cater for the building movement so the system maintains its integrity over the life of the building. There are a few methods of forming these annular gaps, each with advantages and disadvantages.

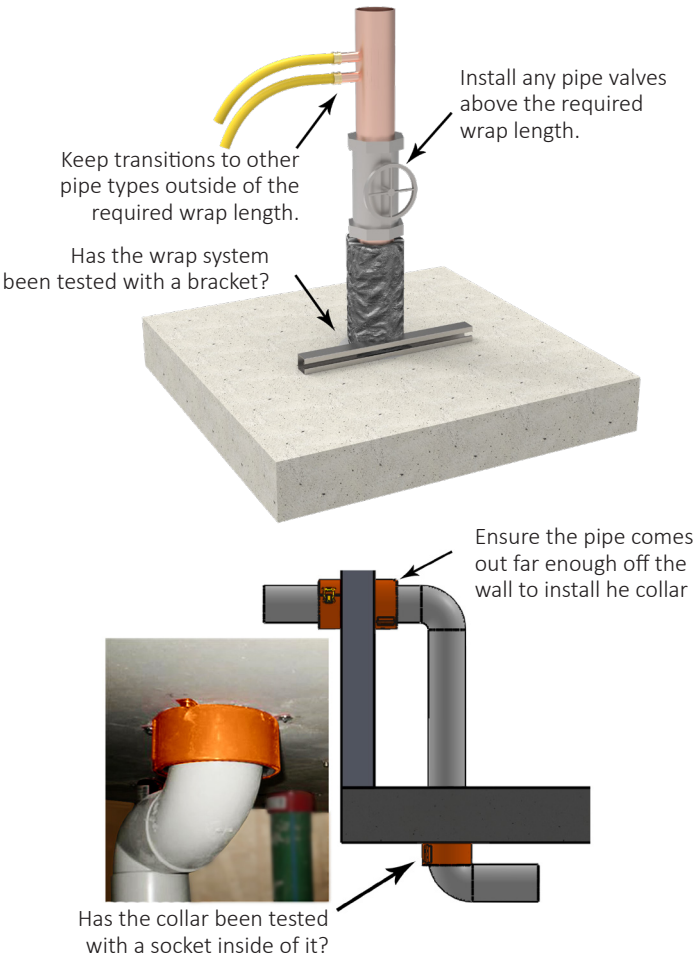
PRO		CON	
PVC FORMER PIPES CAST INTO THE SLAB			
✓	Forms neat hole	✗	Typically need to be knocked out for fire stopping system installation
FOAM BACKING ROD OR OTHER REMOVABLE PACKING			
✓	Easy to remove once floor slab has cured	✗	Does not form a perfect opening
CORE HOLE ONCE SLAB IS CURED			
✓	No formers need to be removed	✗	Services can't be run ahead of time
	Neat opening formed		More costly

PLANNING AHEAD FOR PASSIVE FIRE

VALVES, SOCKETS, AND BRACKETS

Per the below illustration, there are a few things to keep in mind when running plumbing installations.

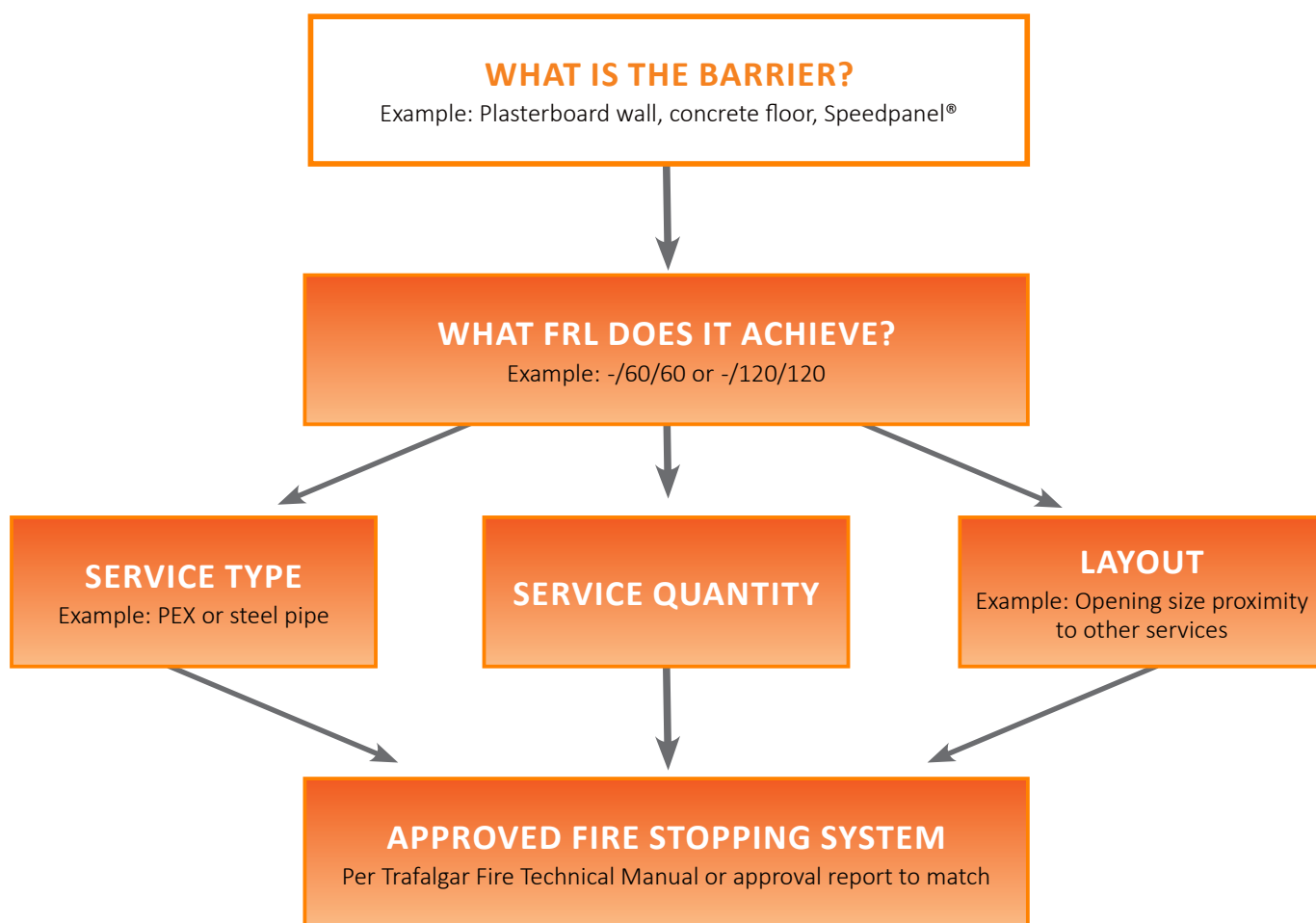
If it can be avoided, pipes should not be run inside the cavity of a **fire-rated wall**. This can primarily be avoided in instances where a service passes through a concrete slab, and the top side of the penetration is in the middle of a framed wall cavity. By doing this there is no practical way to apply fire stopping to the top side of the floor, the integrity of the wall can be compromised and fire-stopping must now be done from the underside with a bulkhead system which can be far more costly and labour intensive.





WHAT TO CONSIDER WHEN LOOKING FOR PASSIVE FIRE SYSTEMS

There are a few steps to selecting the correct fire stopping system. It is important to consider all elements of the system (services, barrier, fire stopping, etc). The below guide should assist with this process.



This manual has collated a range of passive fire penetration systems specifically for plumbing service penetrations, with system selectors to aid in selection of materials based off the above variables. See below for more details.

SYSTEM SELECTOR

METAL PIPES

Small Annular Gaps (Core Holes)



The following information relates to approved penetration systems for metal pipes. Refer to the product manuals for specific FRL's and installation details. It should be noted that metal pipes should always have a gap around them, if metal pipes are cast-into the slab building movement can cause damage to the pipes. In the below systems, a small annular gap is accounted for and sealed with FyreFLEX® Sealant, which can flex and account for this movement.



SYSTEM SELECTOR

METAL PIPES Large (oversized) Annular Gaps



The following information relates to approved penetration systems for metal pipes. The systems shown here may be used to close down larger oversized openings to a smaller one. Once the penetration is closed off to maintain the fire integrity rating, an insulation wrap (or UniGUARD™) is still required to seal the penetration locally. Refer to the product manuals for specific FRL's and installation details.



		FyreBOARD Maxilite® & TWRAP™	FyreSET® Mortar & TWRAP™	FyrePLUG® Pillows & TWRAP™	FyreBOX™ Range
Barrier	Plasterboard Walls	✓	✗	✓ ✗	✓
	AAC (Hebel®/WALSC)	✓	✗	✓	✓
	Speedpanel®	✓	✗	✓	✓
	Concrete/Masonry Walls	✓	✗	✓	✓
	Concrete Floors	✓	✓	✓	✓
	COREX Walls	✗	✗	✗	✓
	COREX Ceilings	✗	✗	✗	✓
Services	Max Pipe Size	150mm	150mm	100mm	100mm
	Copper	✓	✓	✓	✓
	Steal	✓	✓	✓	✓
		<div><div>FyreBOARD</div><div>MAXILITE</div></div> <div><div>TWRAP</div></div>	<div><div>FyreSET</div></div> <div><div>TWRAP</div></div>	<div><div>FyrePLUG</div></div> <div><div>TWRAP</div></div>	<div><div>FyreBOX</div></div> <div><div>TWRAP</div></div>

SYSTEM SELECTOR

PLASTIC PIPES

Stack (drain, waste vent) applications



The following information relates to approved penetration systems for plastic pipes, including walls and floors. Refer to the product manuals for specific FRL's and installation details. Note that floor waste pipes (such as drains and toilets) require different fire stopping, this is specified on the next page.

		FyreCOLLAR PREMIUM RETROFIT	FyreCOLLAR CAST-IN	FyreCOLLAR CAST-IN	FyreBOX CAST-IN	BLADE RUNNER
Barrier	Plasterboard Walls	PVC	x	x	x	x
	AAC (Hebel®/WALSC)	PVC	x	x	x	x
	Speedpanel® Walls	PVC	x	x	x	x
	Concrete/Masonry Walls	PVC	x	x	x	x
	Concrete Floors	PVC and HDPE	PVC, HDPE, PPR	PVC, HDPE, PPR	PVC	PVC, HDPE*
	COREX Walls	x	x	x	x	x
	COREX Ceilings	x	x	x	x	x
Services	Tested with Socket/Elbow	Floors only	✓	✓	✓	✓
	PVC	✓ Up to 150mm	✓ Up to 150mm	✓ Up to 100mm	✓ Up to 80mm	✓ Up to 100mm
	HDPE	✓ Floors (Up to 100mm)	✓ (Up to 110mm)	x	x	✓ 40mm FW only
		FyreCOLLAR PREMIUM RETROFIT	FyreCOLLAR CAST-IN	FyreCOLLAR CAST-IN	FyreBOX CAST-IN	BLADE RUNNER

The following information relates to approved penetration systems for PEX pipes, including cold, hot and gas variants. Refer to the product manuals for specific FRL's and installation details. These systems refer specifically to a single pipe penetration, note that an appropriate separation between this type of penetration is 50mm from other services.

FyreCOLLAR CONDUIT



FyrePEXHP



		FyreCOLLAR Conduit	FyrePEX™ HP Intumescent Sealant
Barrier	Plasterboard Walls	✓	✓
	AAC (Hebel®/WALSC)	✓	✓
	Speedpanel®	✓	✓
	Concrete/Masonry Walls	✓	✓
	Concrete Floor Slabs	✓	✓
	Plasterboard Ceilings	x	x
Services	Gas PEX	✓	✓
	Hot PEX	✓	✓
	Cold PEX	✓	✓
	Mas Service Size	25mm	25mm



FyreCOLLAR CONDUIT



FyrePEXHP

Note: Pipes can be run, tested, and charged before walls are erected.

		<div> <div>FyreBOXTM MINI</div> <div>  </div> </div>	<div> <div>FyreBOXTM MAXI</div> <div>  </div> </div>	<div> <div>FyreBOXTM CAST-IN</div> <div>  </div> </div>	<div> <div>FyreBOXTM SLAB-MOUNT BAMBINO</div> <div>  </div> </div>	<div> <div>SuperSTOPPER</div> <div>  </div> </div>
		FyreBOX TM Mini	FyreBOX TM Maxi	FyreBOX TM Cast-in	FyreBOX TM Slab-Mount Bambino	SuperSTOPPER
Barrier	Plasterboard Walls	✓	✓	✗	✓	✓
	AAC (Hebel®/WALSC)	✓	✓	✗	✓	✓
	Speedpanel®	✓	✓	✗	✓	✓
	Concrete/Masonry Walls	✓	✓	✗	✓	✓
	Concrete Floor Slabs	✓	✓	✓	✗	✓
	Plasterboard Ceilings	✓	✓	✗	✗	✓
	COREX Wall	✓	✓	✗	✓	✓
	COREX Ceiling	✓	✓	✗	✗	✓
Services	Gas PEX	✓	✓	✓	✓	✓
	Hot PEX	✓	✓	✓	✓	✓
	Cold PEX	✓	✓	✓	✓	✓
	Max Service Size	32mm	32mm	32mm	32mm	32mm
	Max Quantity	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
						
		<div> <div>FyreBOXTM MINI</div> </div>	<div> <div>FyreBOXTM MAXI</div> </div>	<div> <div>FyreBOXTM CAST-IN</div> </div>	<div> <div>FyreBOXTM SLAB-MOUNT BAMBINO</div> </div>	<div> <div>SuperSTOPPER</div> </div>

OVERSIZED OPENINGS

In instances where one or multiple services run through a larger opening, most of the above fire stopping systems do not directly apply anymore (refer to the system selector on [page 4](#)). However, Trafalgar Fire have a few systems that can be used to bring down the size of an opening and make it appropriate for some of the above fire stopping systems.

BOARD MAXILITE

FyreBOARD Maxilite® is Trafalgar Fire's calcium silicate board that can be used to bring down the size of an opening in a wall or floor, to install a local fire stopping system. Refer to the following link for more information: [FyreBOARD Maxilite®](#).

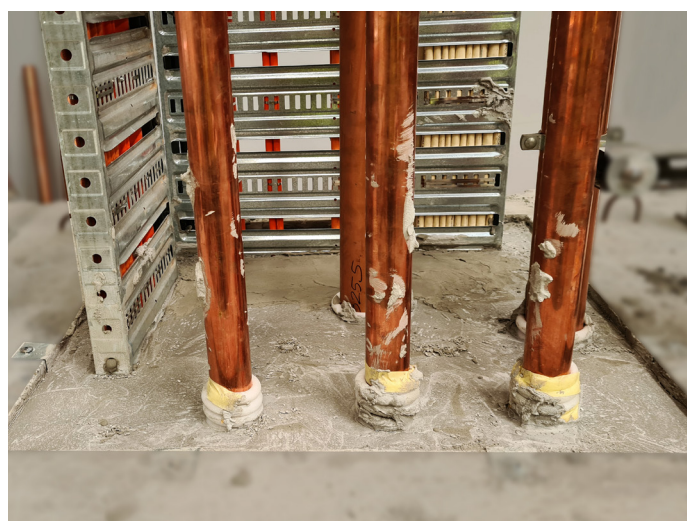
FyreBOARD Maxilite® can also be used to construct fire rated bulkheads which can solve complex problems like riser shafts with no access, or services installed into fire escapes. Contact Trafalgar for more info.



SET



FyreSET® Mortar is a special cement-based mixture formulated specifically for fire rating applications. It is perfect to be backfilled into a concrete floor slab, forming the correct sized open for your local fire stopping like a FyreBOX™ Cast-In, leaving a neat and tidy finish on site. Refer to the [FyreSET® Mortar Technical Manual](#) for more information.



For assistance with any oversized openings, contact the Trafalgar Fire Technical Team technical@tgroup.com.au for assistance.

OVERSIZED OPENINGS



Trafalgar Fire FyrePLUG® pillows are a tried and tested passive fire penetration system that have been used across the industry for over forty years. Made in Australia, FyrePLUG® pillows consist of a high temperature resistant and granulated fire stopping material enclosed in a durable and fire-resistant covering which can be tightly hand packed into an opening around service penetrations to provide a high level of fire separation. For more information [click here](#).



Trafalgar FyreBATT's are a coated mineral fibre product, designed for use as a fire seal for service penetrations. Consisting of a high-density fibrous lamella core, sealed on both sides with a flexible fire rated ablative coating, FyreBATT's offer a high fire protection, along with an effective smoke and acoustic seal. For more information [click here](#).



For assistance with any oversized openings, contact the Trafalgar Fire Technical Team technical@tgroup.com.au

FIRE RATED ACCESS PANELS



It is common on construction sites to come across service shaft penetrations that only have one sided access. This can be an issue as most fire stopping systems are required to be symmetrical and as such need access to both sides for installation. Further to this, access to both sides is often required for inspection and maintenance throughout the life of the building.

A simple solution to this is to install an Access Panel. The main consideration is that much like service penetrating in the wall, the Access Panel must also be fire rated to maintain the FRL of the barrier. The NCC requirements for an Access Panel in a service shaft, is -/xx/30. For example, an Access Panel installed into a 90 minute plasterboard shaft wall must achieve -/90/30. Trafalgar Fire have a range of Access Panels designed to achieve this, none more prominent than the FyreSHIELD™. For more information on FyreSHIELD™, check out the [FyreSHIELD™ Technical Manual](#).

FyreSHIELD™ is a proudly Australian made Access Panel system which has been designed and tested to be built into partition walls and riser shafts. With improved fire and acoustic performance while maintaining the signature Trafalgar Australian-made quality, the FyreSHIELD™ is the only Access Panel worth specifying and installing!

For more information on the FyreSHIELD™ Range, or any other Access Panels, go to taccess.com.au, or call 1800 888 714.

FIRE RATING – HOW IS FIRE PERFORMANCE MEASURED?

An FRL (fire resistance level) is a handy way of summarizing the performance of a building element. It consists of 3 numbers, all given in minutes:

FRL 120/120/120

(example)



Structural Adequacy

The ability of the building element to support the weight of adjacent building elements.

ie: a brick wall supporting a concrete floor slab above.



Integrity

The ability of an element to prevent the passage of flames and hot gases.

ie: a plasterboard wall remaining intact and not allowing holes to form.



Insulation

The ability of an element to resist heat transfer from the exposed face to the unexposed face.

ie: a bundle of cables remaining below a set temperature limit on the unexposed side of the wall penetration system.



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RELATED SYSTEMS

FyreBOX CAST-IN





FyreBOX MAXI





FyreBOX MINI





FyreBOX SLAB-MOUNT



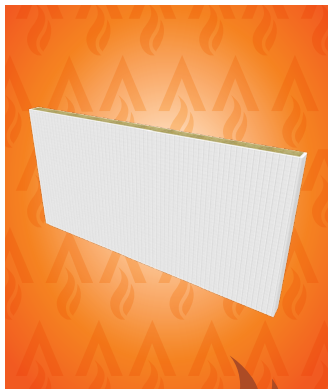


FyreBOX SLAB-MOUNT BAMBINO





FyreBATT





FyreBOARD MAXILITE





FyreSET





RELATED SYSTEMS

FyreCOLLAR PREMIUM RETROFIT



FyreCOLLAR CONDUIT



FyreFLEX



FyreSHIELD



FyrePEXHP



FyreSHEATH



TWRAP



SuperSTOPPER



BLADERUNNER



TRAFALGAR coreX

