

# Passive fire protection: everything you need to know

Across the Asia Pacific region, building construction becomes ever more ambitious. Fire safety has never been so important – the risks from getting it wrong are dire. And yet, many still need further knowledge to understand, specify and install the correct systems to protect lives and minimise building damage, should the worst happen.



**Rebecca Yeung**

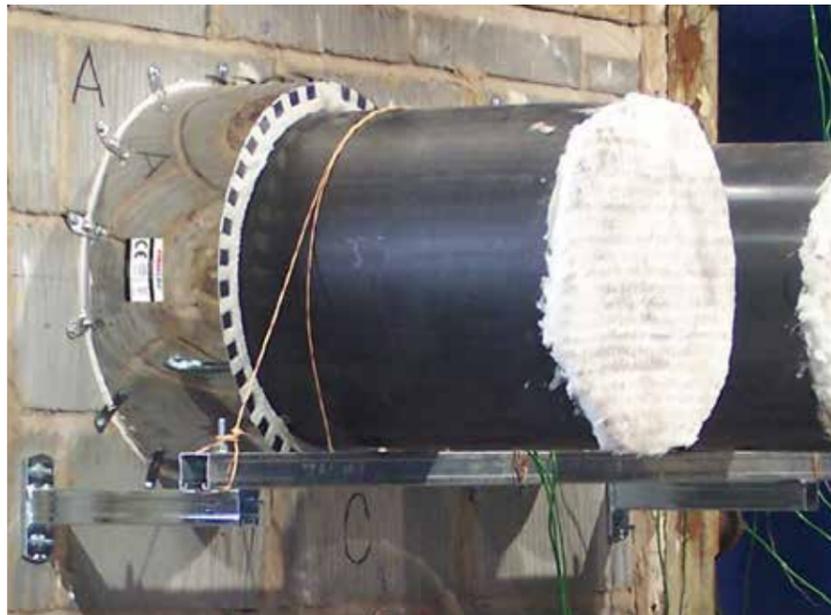
## What is it?

You'd be mistaken for thinking that fire protection is all about fire extinguishers and sprinkler systems. They're "active" fire safety measures and clearly important to install. "Passive" fire safety concerns systems and products that form part of the construction of the building. It's a fundamental part of the fire safety strategy that should be discussed from the outset.

Passive fire protection requires no action, should a fire break out. The installed system will activate automatically and slow the spread of fire. It will limit the building damage and, most importantly, give people more time to evacuate safely.

Also known as fire stopping, passive fire protection is essential. Correctly specified and installed systems are literally the difference between life and death.

▼ **Third party testing of pipe collars in action.**



## What is compartmentalisation?

When you read about passive fire protection, the term "compartmentalisation" is commonly used. It defines the principle of dividing a building into "compartments". Fire stopping products seal the cavities and voids between them – helping to slow the spread of smoke and fire.

Floors and walls are obvious dividers to create compartments. But there'll be gaps around doors to consider. And utilities such as water and gas will create cavities that, without correctly sealing, enable fire to spread more swiftly.

Compartments must be sealed. If a fire breaks out in one compartment, the passive fire system will slow it from spreading to another, lessening damage.

Architects and building companies should determine the compartments early in the project. It's critical to integrate passive fire protection into the construction plan.

## Who should be responsible for it?

Passive fire protection is not the responsibility of one person or department. Many parties will get involved, including: the building owner, occupier, architect, insurer, fire safety engineer, main contractor and fire protection contractor.

Passive protection should be at the heart of your fire safety strategy. Architects must design buildings with fire safety in mind. Building owners must budget for the incorporation of the necessary systems (and ensure they remain intact post-build). Contractors must have, or hire, the right skills and know-how to install the various components during construction.

Should your building plans change, passive fire safety must be re-assessed. For example, if additional internal glazing is installed, the specification of passive fire components must adapt to mitigate against this increased risk.

It's wise to limit the number of people with authority to alter the building specification. This will minimise the risk resulting from undue compromise on fire protection. If lots of specification changes are required, a competent third-party should be invited to review the revised plans for just these issues.

## When should you plan for it?

When the building design starts, so does the need for passive fire protection. It's not something to "add in" as an after-thought. It's part of the fabric of the building. Working in this way, the system can deliver maximum protection automatically.

## What are the most commonly used products?

You'll soon realise there's no end of passive fire safety products. It can be difficult to understand the best choices for your project. The market is full of bold claims; it's easy to be misled. And yet, specification is a critical stage in achieving the desired level of fire resistance.

With the wrong products, your passive fire system can be ineffective in the event of a fire.

The uninitiated will often look at cost first. This is a risky policy. Far better to become informed and select products that will deliver the right level of protection. Different risks will be present



▲ **A selection of different fire door seals.**

across your building. Those areas with a higher risk will need enhanced resistance capabilities. For example, a stairway is a key exit and must be protected at all costs.

Andy Walsh, Technical Manager of Pyroplex Ltd (sister company to Reddiplex Asia), explains the importance of choice: "Choosing the right products is critical to ensure the outcome can achieve the required level of fire resistance. For example, when specifying pipe wraps, the proposed system might need to accommodate a variation of service sizes and service combinations. The ability of any system to maintain performance is also dependent upon the material composition, geometry and thermal behaviour of the element being used. It's not surprising errors can occur, should inexperienced colleagues have inadequate guidance in this key decision-making process."

## Pipe wraps and collars

Essential components in the fire safety strategy for any construction project, pipe wraps and collars are necessary in all new buildings. Where services such as water, waste and drainage are installed using plastic flammable pipes, openings (cavities) are made in both floors and walls. These openings must be effectively

sealed to reinstate the fire resistance of that wall or floor.

The chosen wraps and collars must be suitable for the size and specification of pipe in question. Installation is straight forward. Pipe wraps, for example, are placed around the pipe upon installation and attached with adhesive fixings. It should then be pushed along the pipe and into the cavity. At this point, the cavity can be closed and sealed.

## Door and glazing seals

Fire doors are essential for any large building. And yet, without the correct seals, their resistance can be significantly hampered. Smoke and flames will quickly escape through gaps around doors and door glazing. Plus, the glazing panels must be of the correct specification to resist the transfer of radiant heat.

Competent fire door manufacturers will provide an assembly system that has been tested to work together, and to your desired level of fire resistance. To alter this proven formulation is high-risk.

Installation of fire doors and seals should be carried out with the right knowledge. Again, reliable manufacturers will provide this freely.

Rebecca joined Reddiplex Asia as an accountant in 2006 and developed her knowledge and expertise in the business before taking on the role of General Manager in 2011. She holds both CPA and MBA qualifications. Rebecca works entirely in the Asia Pacific region, drawing the close relationship with sister company, Pyroplex Ltd – a world name in passive fire protection and technical expertise.



◀ A fire door undergoing independent testing.

have correctly specified the product, a poor installation will, at best, give limited results. At worst, it risks lives and a greater level of damage to the building.

Talk to your manufacturers early in the building programme. They can recommend specialist installers or provide education and training for your existing team. They'll help you to ensure correct installation of their products at the right time in the build.

#### Where to seek more help

Understandably, everyone in the construction industry cannot be an expert on passive fire protection. In addition, regional knowledge is required to assist in an effective outcome.

Work closely with your manufacturers and suppliers. They'll be keen to help. You'll then be able to develop a strategy to meet the approval of the authorities first time, minimising delays due to unforeseen problems during the build.

Independent organisations such as the Association for Specialist Fire Protection (ASFP) can also provide a wealth of valuable information for specifiers and installers around the issue of fire protection.

The Association strives to promote excellence in the design and installation of fire protection products through high quality standards and unrivalled technical expertise. It fosters the education and training of all those involved in the development, specification and use of 'built-in' passive fire protection.

The Association and its membership (which includes Reddiplex Asia and Pyroplex) works closely with international standard setting bodies. It provides significant input into many guidance documents and standards that have been developed to support and guide the industry, promoting high standards of specification and installation.

➔ For more information, go to [www.reddiplex.com/asia](http://www.reddiplex.com/asia) [www.pyroplex.com](http://www.pyroplex.com)

#### Fire resistant sealants and foams

With every component a potential weak link in the chain, attention should be paid to sealants and foams. Where fire resistance is required, correct specification is essential. Those suitable for fire resistance continue to perform in temperature extremes where others would fail. Intumescent sealants are also available, offering excellent fire resistance when used correctly.

Reputable manufacturers and suppliers will provide expert guidance and robust test data to help you specify correctly. Suppliers used to working with construction companies throughout the Asia Pacific region will also be of great value. They'll understand the regulatory requirements to achieve approval from authorities such as the Hong Kong Housing Association.

#### Why third-party certification is key

The only way to be certain that a fire protection product will deliver the desired and stated performance is to specify third-party certified products accompanied by independent test results. Bold claims are of no consequence without robust proof.

Choosing a product that carries

the mark of a reputable third-party certification body gives assurances as to the overall effectiveness of that product. Using correctly installed certificated products provides a powerful demonstration that due diligences have been served.

There are a number of industry recognised third-party certification schemes available, covering a wide range of passive fire protection products. Independent third-party certification schemes formally assure performance, quality, reliability and traceability.

Recognised by regulatory authorities worldwide, these schemes are an internationally respected mark of fire protection and some of the most authoritative voices in the industry.

Specifiers, building owners and end-users can have confidence of the assurances made. Third-party certification enables an informed choice of such components, driving safety standards up.

#### The importance of correct installation

Not all contractors have the right knowledge and skillset to install passive fire protection products. Even if you

## Tried and Tested with full traceability

### Fire Glazing System - 60 Minute

#### Testing & Certification With Extended Scope

Pyroplex® Fire Rated Glazing System - 60 Minute has demonstrated effective performance under:

• Fire- BS 476: Part 20/22

Pyroplex® 60 Minute Fire Rated Glazing System holds Third Party Approval under the CERTIFIRE scheme.

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