Passive Fire Protection considerations for School Buildings

Leading passive fire protection manufacturer Promat highlights how the correct application of fire protection systems can mitigate against losses and disruption caused by fire in schools.

Educational environments such as schools and colleges can be particularly vulnerable to fire. Large, open-plan areas can make it difficult to contain a fire and easy access to secluded areas behind buildings can provide targets for arsonists. School fires are often started in public areas that are not sealed off in any way. Given the risk to life and property, the scale of the disruption and the amount of money involved it is important to minimise the effect of these fires.

Figures from the Communities and Local Government (CLG) show that over 1300 school fires a year in England and Wales are attended by the Fire and Rescue Services. The Association of British Insurers (ABI) recently reported that a serious school fire occurs, on average, every month with around 60% started deliberately. The physical cost of fire damage to schools in 2008 was £33m.

The problem that specifiers increasingly face is how to keep pace with regulation changes. Schools' exemption from the Building Regulations ended in 2001, when design guidance was provided by Approved Document B. In September 2007 the Department for Children, Schools & Families published Building Bulletin 100 – Design for Fire Safety in Schools providing a package of design measures to cut the risk of fire, including better detection, better alarms, more effective means of escape and the selection of robust materials and fire suppression.

In order to comply with the building regulations, building design must make provisions to ensure escape routes are protected, fire spread is limited and the structural integrity of the building is maintained. Regulations require up to 120 minutes fire protection depending on the location, maximum occupancy requirements and provision of sprinklers.

Special consideration for schools must be given due to large, open areas such as assembly rooms and the congregation of large groups. Whilst protection of life remains the priority, it is also important to consider protecting the fabric of school building in order to minimise the loss of facilities, and subsequent education disruption when fire occurs.

Passive fire protection is the use of fire resisting materials which are built into the fabric of the building, limiting the spread of fire, providing compartmentation and preventing structural collapse. Containing a fire at its source allows occupants to evacuate the building safely and provides

firefighters with time to respond and extinguish fire before it can further spread. Passive fire protection includes elements such as fire doors, fire resisting partitions and ceilings, cavity barriers, structural fire protection and fire stopping materials.

The importance of sealing any gaps in fire resisting constructions is vital to ensure the system works to its maximum ability. Smoke is responsible for over 75% of deaths in fires and can travel up to 10 metres per second, penetrating the smallest of gaps. Such gaps are typically at service penetrations through walls and floors, but would also include gaps left for structural movement and gaps due to poor workmanship. A range of fire-stopping materials are available to stop the spread of fire and smoke through these gaps including fire barriers, fire compounds, intumescent sealants and intumescent pipe collars.

Further consideration should be given to preventing the spread of fire and smoke via concealed cavities, such as a roof space, and through ventilation ductwork.

Passive fire protection systems should work in conjunction with active systems, such as smoke alarms and sprinklers, forming an integrated fire protection regime. Designers should ensure that both active and passive fire protection materials and systems are third party accredited, confirming testing and assessments have been carried out to meet the required specification.

Promat have experience in providing a full range of fire protection solutions and technical advice for effective compartmentation, structural protection and fire stopping of schools and other educational facilities.

Promat's product portfolio includes Promat SUPALUX®, a strong, non-combustible board which can provide up to 4 hours fire protection. Promat SUPALUX® is an effective solution for achieving fire compartmentation and also protecting means of escape such as corridors and stairways.

When correctly specified and installed, passive fire protection systems can help save lives and property during the lifetime of the building.

Sean Appleton is Marketing Manager of Promat UK.

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Editors' Notes
Promat UK Limited is the UK's only dedicated manufacturer of passive fire protection products and systems. Promat's product portfolio includes high performance calcium silicate boards Promat SUPALUX®, Promat MASTERBOARD® and Promat VERMICULUX®, as well as the Promat PROMASEAL® range of fire-stopping products.

The company is renowned for its technical expertise and draws upon the resources of a worldwide research and development network and over 50 years experience in passive fire protection. Promat is subsidiary of Etex, the Belgian building materials group present in over 40 countries.

Issued on behalf of:
Sean Appleton, Marketing Manager, Promat UK Ltd., The Sterling Centre, Eastern Road, Bracknell, RG12 2TD. Tel: 01344 381350 sappleton@promat.co.uk
Website: www.promat.co.uk

Promat SUPALUX® provides effective passive fire protection solutions to school buildings