

scrutiny to ensure they do not come to threaten product performance in practice.

### **Fire Safety Means Product Systems**

Like all fire safety products, fire door assemblies are technical product systems using a number of separate matched components from different manufacturers. Those include, for example, a door leaf construction, a door frame, various types of hardware or ironmongery, door edge seals of various types separately for fire and smoke control (and perhaps acoustic performance as well), and glass and glazing components. Changes to a door assembly product specification must not be undertaken without the approval of the responsible door assembly manufacturer.

How those various elements are put together and installed also matters a great deal. And sealing against fire and smoke penetration between the frame and the surrounding supporting structure must not be forgotten as well.

### **The Importance of Applicable Test Evidence**

The key fire safety properties of fire door assemblies must be established and validated by test. There is no other way. Fire resistance and smoke control are properties that cannot be calculated. Testing is essential. And any assessment projections from test data must be based on relevant, appropriate and applicable test evidence. A so-called desk top assessment in the absence of suitable test information is not acceptable as a way to validate performance in fire.

It is very important not to assume that essential elements can be tested successfully in one door assembly and then be assumed to be just as appropriate for other, different, door designs.

For example, a CE-marked fire-resistant glass evaluated in generic-type tests cannot be used on its own, in isolation. Its application requires a glazing system made up of beads, glazing seals, fixings and specific setting arrangements within a frame or door design. Performance sensitivities in fire can be very different depending on the glass type and the manufacturing controls. Some glass types are more sensitive to detail than others. There can be different levels of consistency, in metal or timber, for different pane sizes or aspect ratios.

Similar considerations apply for hardware and ironmongery, which may well work in some doors but not always so effectively in others. Component suppliers must demonstrate their products in viable door assemblies. CE marking type tests are not application system tests which show the full scope of use. Application tests in specified door assemblies are still important. And CE marking alone, based on generic type conformity requirements, is not of itself sufficient. Similarly, tests of fire resilience must be relevant to the application. And it is important to use test evidence derived from standards defined under UK regulations (eg BS 476 Part 22 or BSEN 1634). Fire test data generated under other regulatory regimes (eg UL10C from the USA) should not be used to underpin product performance in the UK.

### **Information from Manufacturers**

Achieving a required level of fire safety requires a particular focus on product performance. Success both in the level and consistency of performance can be dependent on process know-how and product insights, which cannot be fully appreciated except by those inside the door industry.

It is only by repeat and varied testing, allied with product system development and materials or component R&D, that the main factors can be fully understood together with the limits that apply, perhaps in subtle ways, especially concerning performance in fire.

A depth of test experience and know-how in product design is a core strength of manufacturers. The best place to find the supporting knowledge is therefore the manufacturers themselves. They have the necessary product expertise to point out weaknesses and risks that are not apparent to others. Best practice guidance provided by responsible representative trade organisations is also an important source (eg [www.asdma.com](http://www.asdma.com)).

### **Application is Everything**

The door manufacturer will often need to work closely with the architect, interior designer, contractor or premises manager concerning the needs of the project and the application. Contributions are needed from all the various parties to enable selection of the most appropriate door construction for the application.

Each must take their share of the responsibility. It is not realistic, viable or possible to expect the door manufacturer to shoulder all the responsibility for every aspect of the final door assembly compliance, especially when the manufacturer is unlikely to be unaware of the particular conditions that apply where the door is to be used.

The process of determining performance requirements has to be carefully and thoroughly undertaken. Any gaps in compliance need to be picked up before manufacturing starts. Checks are best carried out with the full involvement of the door manufacturer at the earliest possible stage in the design and specification process.

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For example, it is not the time on handover to discover that there is no applicable fire resistance test evidence for the product that has been installed or that another key requirement has not been adequately provided for due to a failure to specify it fully in the first place. Vigilance is particularly necessary if value engineering is brought into play, leading to cost savings which risk compromises arising in aspects of technical quality, in-service performance or product longevity.

Fire safety should be a shared responsibility. There is a duty of care at all stages along the chain through from building design to construction. For products and systems that have a fire safety function, the performance specification is key. And respecting that specification is fundamentally important if people and buildings are not to be put at risk.

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