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For information

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*Concerning the validation of fire resistance and smoke control performances of timber fire doors.*

### Technical Assessments from Test Evidence to establish Doorset Design and Specification

Technical assessments described here for specialist timber fire doors are those based on evidence from the testing of main door designs and constructions, with further data from the relevant testing of product variations.

The primary test evidence comes from proprietary results owned by the door manufacturer or door leaf core manufacturer for their products. Supporting test evidence also comes from the manufacturers of main door components - including glass, glazing systems, sealants, and door hardware, which individually have been validated for use in applicable fire door designs by the manufacturers, with their own established test record.

A third source of information comes from the product and applied technology skills and know-how accumulated and passed on by the sector, arising from consistent testing of designs and different variations over several decades.

The assessment details are provided in formal reports, which lead to important information that characterises the product for transparency of performance and use. That includes data sheets, system specifications and scope of application, product handling and installation advice provided by the manufacturer for users and installers.

The following levels of detail can be expected in technical assessment evaluations of this type for a doorset design:

- Door leaf construction and permitted variations to the construction. Included, for example, are differences, in door cores, facings, veneers, stiles, rails, beads, fixings, adhesives and panel arrangements.
- Door leaf size extrapolation and adjustment (within practical limits) justified by the margin of time overrun performance achieved in tests, characteristics exhibited in tests (in particular degree of distortion, precise mode of failure, residual thickness and the like) and the complexity of the configurations that apply.
- Door configurations and modes of operation. E.g. Single and double door options; latched or unlatched situations; single or double action modes of opening; door and screen design options, with side and over panels, glazed or unglazed. Test experience tends to support a hierarchy of complexity, i.e. that the least onerous situation is latched single acting single door, the most onerous unlatched single acting or double acting double door with over panels.
- Glass and glazing systems for the door leaf, including area/size and shape of apertures, single panes or multiple panes, types of glasses and glazing system (i.e. sealant, fixings, beads, any pocket linings).
- Over panels or side panels, including intumescent requirements at the joints with transoms and mullions.
- Glazed screens permitted in association as part of the installed doorset assembly E.g. glazed fanlights and sidelight arrangements, including defined glazing sizes and approved aspect ratios. Glazing arrangements should include glass types and their glazing systems with a validated test performance in the relevant pane sizes, configurations and glazing arrangements, backed by the responsible glass supplier.

*NB* Fire-resistant glass and glazing systems are supported by specific test information from the glass manufacturer and the glazing material supplier, which includes approved glazing system arrangements.

- Door leaf edge detailing. As determined by test data, including timber and other materials if applicable. Limits imposed by dimensions and density.
- Door frames defining options of material types, dimensions and densities, including steel or aluminium frames if justified by test data, and joinery details for timber. Beech is only exclusion for 60 minute and greater periods, otherwise for timber-based frames density is the defining limiting factor.
- Decorative facings. E.g. wood veneer, melamine laminates, pvc etc, subject to thickness restrictions. Also lacquer and paint finishes. Decorative features such as grooves, and inserts subject to test data justification.
- Intumescent seals between the leaf and the frame, also around panel edges and protection requirements under door ironmongery (e.g. hinges, latches, closers, pivots and flush bolts). Also includes types of acoustic and weather seals specified by name where applicable.
- Ironmongery proven by test in the specific door leaf construction: e.g. hinges, pivots, closers, locks/latches, flush bolts, door viewers, letter plates, push and kick plates, pull handles, lever handles. Defined by type, location and fitting. Where an EN product standard applies CE Marking attestation may apply.
- Smoke sealing as edge seals to the frame and drop-down seals or other types under the door leaf (subject to floor condition and the final situation of the door, where specified).
- Gap sealing to the surrounding structure (perhaps with reference to standard BS 8214:2016 ). However, the integrity and robustness of the structure is the responsibility of the building contractor (not the door manufacturer), and doorsets are normally assembled and fitted into a contractor-prepared opening.

Also included are: a) summary product data sheets, e.g. determined leaf sizes, permitted configurations and frame specifications, intumescent seal specifications, permitted glazing area; b) a statement by the assessment body to establish responsibility, validity of the evaluation and any limitations that apply; and c) acceptance declaration by the owner of the report and the proprietary product design specification which follows.

Timber requirements are normally defined by density, in some cases with specific reference to timber species.

**PLEASE NOTE.** Technical assessments described here are *NOT* those which have been referred to as desktop studies, i.e. opinion-based deductions or projections, instead of conclusions drawn from directly applicable testing.

*Further:*

1. *These assessment evaluations are essential for the specialist timber door industry in order to satisfy building user requirements for flexibility in design and application whilst meeting key product requirements to demonstrate fitness-for-purpose as a fire and smoke control door.*
2. *The design features and options come from available test knowledge. Where explanation is needed then that should be provided in the assessment report with the applicable rationale, It should be appreciated that the level of detail requires, in turn, a major level of accumulated testing knowledge and product technology know-how.*
3. *Evaluations can be of three types: a) exemplar product systems, with the applicable test evidence and assembly instructions for the recommended design; b) manufacturer-owned proprietary designs, established from a track record of test information and R&D development test work; and c) individual project-specific evaluations for situations which apply to specifier requests for particular door sizes or design features which are not the norm, or which cannot be tested as a system with available test facilities and capabilities*
4. *Where a level of technical judgment is necessary that should be informed by appropriate and directly applicable test evidence, with reference as well to the knowledge base established by test experience.*
5. *It is customary to use components that themselves have a test track record, confirmed by the responsible manufacturer in each case, in applicable and relevant doorset situations.*
6. *The specialist timber door sector has been well established now for several decades, and the testing of fire performance is recognised good sector practice. Assessment evaluations apply within a known door product technology field which itself has been built on accrued expertise and major investment in test knowledge.*
7. *Test evidence and technical assessments related to test data are together embedded in third-party certification for specified door designs and constructions, linked with factory control checks and confirming audit testing.*