FIRE DOORS - GENERAL SPECIFICATIONS / EMPLOYERS REQUIREMENTS (ERs) & QUICK OVERVIEW

Fire Door Provision In UCL Buildings - what you need to know:

<table>
<thead>
<tr>
<th>Not Acceptable</th>
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<tbody>
<tr>
<td><strong>Opening direction</strong> - fire doors on circulation routes NOT opening in the direction of escape;</td>
</tr>
<tr>
<td><strong>Double swing fire doors</strong> - in locations other than doors forming a mid-corridor smoke break;</td>
</tr>
<tr>
<td><strong>Inner Rooms</strong> - doors to ‘Inner Rooms’ not provided with Vision Panels;</td>
</tr>
<tr>
<td><strong>Vision Panels (VP)</strong> - NOT providing VP in doors to laboratories, kitchens and areas where hazardous items such as chemicals or glassware pass through;</td>
</tr>
<tr>
<td><strong>Perko fittings</strong> - NOT normally acceptable on standard doors (but acceptable on ½ leafs due to size restrictions);</td>
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<tr>
<td><strong>Air Transfer Grilles / Letter boxes</strong> - fire doors should not have any grilles or letter boxes etc. where no alternative to be discussed with UCL Fire Safety Manager;</td>
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<table>
<thead>
<tr>
<th>Mandatory</th>
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<tr>
<td><strong>Signs</strong> - blue door signs must be provided for all fire doors as a legal instruction (see table below);</td>
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<tr>
<td><strong>Small Leafs</strong> - fire doors with ½ leafs to be fitted with a self-closing device either using an overhead unit where practical or Perko type unit for smaller leafs;</td>
</tr>
<tr>
<td><strong>MIP Access</strong> - auto opening devices for Mobility Impaired Persons (MIP) on certain fire doors locations NOT acceptable - See UCL technical note TN001;</td>
</tr>
<tr>
<td><strong>Clear Pyro Fire Glazing</strong> - identification is by means of each glass sheet provided with an ‘Acid Etching’ in the corner of the pane giving the trade name &amp; marked with BS 476 Part 22 - if acid etched trade name / BS standard NOT visible then the UCL Fire Safety Manager will not accept the glazing as FRG - and it will need to be replaced for correct specification and clear identification;</td>
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<table>
<thead>
<tr>
<th>Acceptable</th>
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<tr>
<td><strong>Vision Panels</strong> - all doors on main traffic and circulation routes, corridors, lobbies or stair enclosures to be provided with Vision Panels (VP);</td>
</tr>
<tr>
<td><strong>Inner Rooms</strong> - generally doors to ‘Inner Rooms’ should be provided with VP;</td>
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<tr>
<td><strong>Smoke Seals</strong> - recommended that the smoke seals fitted to all new &amp; upgraded fire doors are the brush type and NOT rubber blade type;</td>
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<tr>
<td><strong>Security Doors (SR2/SR3/SR4)</strong> - fire rated use Stafford Bridge Doors (see below);</td>
</tr>
<tr>
<td><strong>Security Doors (SR2/SR3/SR4)</strong> - fire rated use ASSA Abloy Doors also (see below);</td>
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**Definition of a Fire Door** - a door assembly, which is designed to hold back fire and smoke for a designated period and has been tested under conditions for door assemblies described in British Standard 476 Part 22;

**Fire Door Guidance** - British Standard 8214-2008 (Code of Practice for Fire Door Assemblies).


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**1.0. General Information**

**1.1. Fire Door Key**

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FD30</td>
<td>A Fire Door with 30 minutes Integrity properties (also shown as FD30) and complete with intumescent seals</td>
<td>FD60</td>
<td>A Fire Door with 60 minutes Integrity properties (also shown as FD60) and complete with intumescent seals</td>
</tr>
<tr>
<td>(S)</td>
<td>Smoke Seals (use brush type as generally found to wear better than rubber blade types)</td>
<td>SC</td>
<td>Self-closing device complying with BS EN 1154: Door Closers</td>
</tr>
<tr>
<td>FRG 30 / 60</td>
<td>Fire Resisting Glazing - 30 minutes Resistance including integrity (FRG 30 or FRG 60)</td>
<td>FD30(S)C &amp; VP</td>
<td>FRG 30 / 60 Fire Resisting Glazing integrity and insulation (FRG 30/30) or (FRG 60/60)</td>
</tr>
<tr>
<td>VP</td>
<td>Vision Panel - required (if within a fire door then glazing must meet FRG 30/60)</td>
<td>PB</td>
<td>Push Bar - emergency opening device complying with BS EN 1125</td>
</tr>
</tbody>
</table>

**1.2. Fire Door Signs** - all fire doors MUST be signed using one of the following standard signs (as a minimum it is recommended 80 mm x 80 mm Ridged Plastic signs in size with 4 x screw holes) but, others styles may be provided appropriate to door design & surfaces:

<table>
<thead>
<tr>
<th>Sign, Colour &amp; Pictogram</th>
<th>Description, Uses and Conventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire door keep shut</td>
<td>1. ‘Fire Door Keep Shut / Closed’ - positioned at eye level, on both faces of each fire doors leaf that are fitted with a self-closing device - include any ½ leaves which should also be signed in addition to the main door leaf. <strong>Note</strong> - on fire rated glazed partitions &amp; doors, FDKS signs may not be practicable or visually acceptable - suggest ‘FDKS glazed manifestation’ used instead.</td>
</tr>
<tr>
<td>Keep locked shut</td>
<td>2. ‘Fire Locked Shut’ - used on fire doors that are not fitted with self-closing devices (for example cleaner’s cupboard, some types of stores, plant rooms &amp; service risers) - sign fixed to outer door face, at eye level.</td>
</tr>
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</table>
2.0. Fire Doors (General)

2.1. Where fire doors are generally required:

- All doors to escape stair enclosures (both internal & external and protected fire routes);
- Office & reception accommodation particularly if off stairs and single escape routes etc. (note - not required where there is escape in two directions or relaxed if automatic fire detection (AFD) has been provided in each room off the dead end);
- Laboratory and equipment rooms;
- Cleaners’ cupboards and storage rooms;
- Service risers access doors and hatches;
- Electrical switch cupboards on Means of Escape;
- Plant equipment rooms and switch rooms;
- In some locations, information systems / server cupboards or rooms;

2.2. Halls of Residences - where fire doors are generally required:

- All bedrooms (including within cluster flats);
- All cluster flat kitchens;
- All studio flats;
- All cleaner cupboards / laundry rooms / storage rooms or cupboards;
- All service riser access doors and hatches;
- Electrical switch cupboards (particularly on corridors and lobbies);
- Plant equipment rooms and switch rooms;
- All information systems / server cupboards or rooms;
- Depending on location, office & reception accommodation;
2.3. **Fire resisting**

Generally, indicates that the construction is designated as capable of resisting the passage of flame and smoke, and providing insulation as defined in under the prescribed conditions of test appropriate to such construction in accordance with the current British Standard 476.

- **FD30** doors generally should not be less than 44mm in thickness;
- **FD60** doors generally should not be less than 54mm in thickness;

2.4. **Door Widths and Means of Escape:**

The following guide can be used to determine the general capacities of escape routes based on clear opening door widths:

<table>
<thead>
<tr>
<th>Door Widths:</th>
<th>Numbers of persons able to pass through:</th>
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<tbody>
<tr>
<td>750 mm (absolute minimum width)</td>
<td>60 persons (normal risk)</td>
</tr>
<tr>
<td>850 mm</td>
<td>110 persons (normal risk)</td>
</tr>
<tr>
<td>950 mm (minimum width for wheelchairs)</td>
<td>160 persons (normal risk)</td>
</tr>
<tr>
<td>1050 mm</td>
<td>220 persons (normal risk)</td>
</tr>
<tr>
<td>Doors greater than 1050 mm wide</td>
<td>1050mm = 220 persons then</td>
</tr>
<tr>
<td></td>
<td>Add 5mm per person on width greater than</td>
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<tr>
<td></td>
<td>1050mm (e.g. door width of 1500mm - 1050mm =</td>
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<td></td>
<td>450mm (450 ÷ 5mm = 90) 220 + 90 = max 310</td>
</tr>
<tr>
<td></td>
<td>persons</td>
</tr>
</tbody>
</table>

- An additional 75mm should be allowed for each additional 15 persons (or part thereof 15);

2.5. **UCL Design Requirements / Criteria for Fire Doors:**

All fire-resisting doors should be:

(a). Close fitting to the frame with a maximum gap of 5mm, but **3mm** is the accepted working gap;

(b). Hung by a minimum of 1½ pairs of all metal hinges with a melting point of not less than 800°C **(both nylon and nylon bushed hinges are unacceptable)**;

(c). Fitted with an effective self-closing device that is capable of closing the door tight against the stop, overcoming the resistance of any latch or lock provided;

(d). **Generally** - all fire doors on circulation routes should open in the direction of escape and but rebated to ensure intumescent and smoke seals work correctly:

   (1). Doors should **Not be double swing** in stairs or circulation areas;
(2). The exception is doors forming a mid-corridor smoke break; these may be double swing meeting [FD30(S)SC].

(e). **Vision Panels (VP)** (Note - these recommendations may be in addition to current regulations/guidance):

(1). All doors on main traffic and circulation routes, corridors, lobbies or stair enclosures etc., must be provided with **Vision Panels** for general safety (regardless of being fire doors or not but VPs should be fire resisting embedded with a fire door);

(2). All doors to laboratories, kitchens and areas where hazardous items such as chemicals or glassware pass through the doors regularly are also provided **Vision Panels** for general safety;

(3). **Inner Rooms** - doors to ‘Inner Rooms’ should be provided with Vision Panels;

(4). **Exceptions to providing Vision Panels** - where there is a need for privacy such as WCs / sleeping accommodation / rooms used for Patients / store rooms / dark rooms or light sensitive equipment rooms some specialist laboratory space etc.

(5). **Disability Access** - require vison panels (see approved Document Part M, The Building Regulations below);

(f). **Smoke Seals** - fire doors MUST be fitted with ‘intumescent and cold smoke seals / brushes’;

(g). For UCL projects cold smoke seals fitted to all new & upgraded fire doors are the **brush type** where ever possible and **not rubber blade type**. Rubber blade type, appear from experience, not to be as durable and long lasting in maintenance terms, as the brushes.

2.6. **Self-Closing (SC) Devices**

Where self-closing devices are specified, then **standard overhead units are to be used** meeting the latest edition BS6459: Door Closers. Door closers and accessories should comply fully with the latest edition BSEN1154-Building hardware - controlled door closing devices. Note the strength and features of the self-closer will depend of door location and usage:

(a). the door is subject to other factors such as air pressure, draughts, heavy traffic use, abusive treatment and use by elderly, infirm or disabled;

(b). whether the SC unit fitted to the door is to be latched or unlatched in its closing movement;

(c). whether smoke or other seals are to be fitted to the door set;
(d). **Fire doors with ½ leaves** - where fire doors are provided with a ½ leaf then these should be also **self-closing** either using an overhead unit where practical or using a Perko type fitting in smaller leaves, as necessary.

(1). **Perko fitting** are not normally acceptable on UCL doors with the exception of ½ leafs due to size restrictions;

(2). **Perkomatic / Powermatic** concealed door closers are acceptable for certain applications where an overhead SC unit is not practical due to local restrictions or for ½ leafs fitted to fire doors for self-closing;

(e). **Door Frames** - the selection and installation of doorframes is as important as the door itself. Where purpose built frames are installed they should be matched with the recommended door as the fire resistance of one may depend on design features of the other. Any gaps between the rear of the frame and the wall must be infilled with mineral wool, plaster or intumescent paste to meet FR30.

**2.7. Intumescent Materials**

Door edges are the part of a door-set most susceptible to penetration by fire. The pressure of a developed fire drives hot gases between the door and frame leading to loss of integrity. Traditionally this weakness was countered using a large doorstop. However, this method relied on a very close fitting door with a gap of less than 3mm between door and frame. The modern solution to this problem relies on the use of intumescent materials applied or set into the edge of doors or doorframes opposite the door edge. Intumescent materials expand at around 100°C to several times their original size and fill the gap between the door and the frame.

An intumescent strip can be fitted either in the frame or in the door edge itself and must follow the centre line of the door edge; on no account must an intumescent strip be fitted to the door stop as the door will be forced open when the strip expands.

Several points should be considered in their use:

- They are applied along the top edge and sides; intumescent material is not required along the bottom edge;

- There are several types of intumescent material and it is important to use the correct type as specified by the manufacturer or the door-set. The differing types are not interchangeable;

- Where a door is required to have intumescent strips and flexible seals this is best achieved by using a single strip combining both functions;
- On fire doors up to 30 minutes fire resistance, it is acceptable to interrupt the intumescent strip for hinges or latches;

- On fire doors exceeding 30 minutes fire resistance, where double intumescent strips are required, one of the strips must be continuous the other may be interrupted;

- The long-standing requirement to provide oversize doorstops on fire doors is no longer applicable to doors with edges fitted with intumescent protection. A 12mm planted stop fixed with nails is acceptable in this case;

- Intumescent materials must not be reduced in size during installation by planing or sawing. In particular, installers should be aware that some are fitted beneath veneers or door trims;

2.8 Air Transfer Grilles:

Air transfer grilles in fire doors will not only allow air to pass through but smoke and fire also. It is, therefore, essential that whatever fire door a transfer grille is fitted, the fire and smoke resisting qualities of the door must not be reduced as a result:

(a). Where a fire door is fitted purely to resist the passage of fire and not to resist the combination of fire and smoke, a heat activated fire damper is usually acceptable. These are normally of the intumescent honeycomb or fusible strut type of operation.

(b). Where a fire door is fitted to protect an internal escape route and especially if the door has ‘Smoke Seals’ fitted, the only air transfer grille permitted is one that resists the passage of smoke as well as fire. This type of damper is electro-magnetically released by the activation of a smoke detector located on the risk side(s) of the door [e.g. a Gilbert Damper]. Air transfer grilles in fire doors should not be fitted higher than 1000 mm from the floor threshold.

3.0 Security and Fire Rated (Croydon) Door Sets

UCL has standardised its requirements for those areas requiring security doors (SR2/SR3/SR4) with a fire rating using Croydon Security Doorsets, which are available from Stafford Bridge Doors (www.sbdoors.com) who offer a range of security doorsets fully certified to the Loss Prevention Certification Board’s LPS 1175 standard. See attached guidance sheet.

ASSA-ABLOY also provide SR Security and Fire rated Doors, which meet UCL locking and security requirements - security door specifications need to be discussed with UCL Access Systems in the first instance.
4.0. Ironmongery

4.1. Ironmongery - provide strong and fully functioning ironmongery that is approved for use with fire doors.

- **Essential Ironmongery** - items vital to achieve the fire resistance performance of a fire door assembly;

- **Non-Essential Ironmongery** - items which are not required to achieve the fire resistance performance of a fire door assembly but which if fitted may affect the performance;

- **Lock** - a mechanism combining, in one case, a spring bolt and a dead bolt operated respectively by handle and a removable key;

- **Latch** - a device, operable from both sides and generally self engaging, for holding closed a door, gate or the like, consisting of a moveable part operated by a handle, falling by gravity or sliding or moving by means of a spring into a retaining member;

- **‘D’ Handles** - in many cases the installation of a ‘D’ handle allows the tension to be released on locks to allow ease of opening - pulling a door open on a thumb turn, key or a small knob is difficult and not acceptable on an escape route where the door needs to open inwards without a suitable handle.

4.2. **Locks** - locking devices fitted with Thumb Tums (known as Emergency Fastenings(EF)) should always be used on the inside leaf in direction of escape, unless other types of escape furniture is to be provided; or no locking furniture at all designated ‘Free From Fastenings’ (FFF) for Means of Escape purposes.

5.0. Glazing in Fire Doors

5.1. If a Vision Panel (VP) or glazing is required in a fire door or partition then the glazing has to be **Fire Resisting Glazing of 30 or 60 minutes integrity** (FRG 30/60) meeting BS 476: Part 22.

**Note 1:** **Clear Fire Glazing** - it is extremely important to be able identify clear glazing as fire glazing (Pyro) this is generally done by ensuring each glass sheet is provided with a visible ‘**Acid Etching**’ giving the trade name in the corner of the pane and marked with BS 476: Part 22.

**Note 2:** If the acid etched trade name or BS 476: Part 22 information is **NOT** visible then the UCL Fire Safety Manager will **not** accept the glazing as **FRG30** - the glazing will be required to be replaced for correct specification and visible etching.
**Note 3:** Safety Glazing - glazing that is marked with BS 6206: 1981 / BS 6262 Series (or latest issue) is **not fire resisting glazing.** It is often mistaken for FRG30 and the UCL Fire Safety Manager will require this glazing to be replaced for FRG where necessary.

5.2. Glazing to FRG30 in design, imbedded in intumescent paste rebates etc. as per manufacture's specification.

5.3. Fanlights above fire doors are to be sealed so they cannot be opened and the construction to meet either FRG30 or FR30, as required.

**6.0. General View of a Fire Door and Associated Furniture**

*Figure 61: A fire resisting and smoke stopping door*
7.0. **Approved Document M - The Building Regulations**

7.1. General guidance on Vision Panel dimensions, however if Vision Panels form part of a fire resisting door set then the area of the glass may be determined by the fire resistance properties and the manufacturer's specifications etc.

7.2. All door glazing on traffic routes and public areas should be **Safety Glazing Standard**, in addition to any fire resistance required.

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**Diagram 9 Effective clear width and visibility requirements of doors**

[Diagram of effective clear width and visibility requirements of doors]
### Quick Reference Guide

<table>
<thead>
<tr>
<th>Door Range</th>
<th>Number of Leaves</th>
<th>Door Finish</th>
<th>Lock Fitting</th>
<th>Vision Panels</th>
<th>Safety</th>
<th>Security</th>
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<td>Steel Faced</td>
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- FD30, FD60 & FD90 – 30-, 60- & 90-minute fire resistant options on single, double, inward & outward opening doors
- BS EN 1125 – Latest European Panic Exit standard
- BS EN 179 – Latest European Emergency Exit standard
- BS EN 1522 – FB1 to FB7; hand gun and rifle round (in order of magnitude). FSG; solid slug shot gun ammunition
- LPCB – Loss Prevention Certification Board
- LPS 1175 – Loss Prevention Standard for Forced Entry

N.B. Our doorsets are regularly tested and assessed - refer to current certificates 516a for full list of product conformity

- ACPO – Association of Chief Police Officers
- Blast – Ensures blast protection to the requirements of HM Government explosion test standard for protected spaces
- Approved manufacturer of HM Government ‘Croydon’ Security Doorset
- Currently under test
- Aimed at LPS 1175 but as yet untested

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<table>
<thead>
<tr>
<th>Fire Rating</th>
<th>Blast</th>
<th>Ballistics</th>
<th>Panic</th>
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- Rating 2 Class 1
- Rating 3 Class 2
- Rating 3 Class 2
- Rating 4 Class 3
- Rating 5 Class 4
- Rating 5 Class 4

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**Certificate No.** TT-COC-1818
Assessed to IS0 9001:2000
Certificate No. 516-2
Police Preferred Specification

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