

## Scope

This section deals with 'composite' items or components, usually fabricated off site, fixed into openings to give access to or exit from the building or to parts of the building, or to subdivide spaces, and made from wood, metal, plastics, rubber, glass, or any combination of these materials.

Accessories and associated items are included as follows:

- Architraves where part of the component, e.g. in doorsets.
- Ironmongery where supplied with the component.
- Finishes where part of the component as delivered.
- Glazing where supplied with the component.
- Mechanical operating equipment where supplied with the component.
- Sealants.

This section does not include:

- Glazing supplied separately from a component – see section L40.
- Architraves, trim, etc. supplied separately from a component – see section P20.
- Ironmongery supplied separately from a component – see section P21.

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## Reference documents

For a list of documents cited in NBS, refer to the Reference documents listing on the subscriber website.

For a list of documents cited in this section, refer to All reference documents for a work section on the subscriber website.

To check the currency of documents cited in this section, refer to the list of New and amended reference documents on the subscriber website.

Publishers of documents cited in this section include:

- BRE Certification Limited
- British Standards Institution (BSI)
- British Wood Preserving and Damp-proofing Association (BWPDA)
- Building Research Establishment (BRE)
- Construction Industry Research and Information Association (CIRIA)
- Door and Shutter Manufacturers' Association (DSMA)
- English Heritage (EH)
- Intumescent Fire Seals Association (IFSA)
- National House Building Council (NHBC)
- Timber Research and Development Association (TRADA)
- Warrington Fire Research Certification (WFRC)

# General guidance

## 1 Fire resisting and smoke control doors, doorsets and shutter assemblies

### 1.1 Performance and design requirements

Fire resisting doors are required to perform two main functions:

- To protect escape routes from the effects of fire thus enabling building occupants to reach final exits.
- To protect the building contents by limiting the spread of fire and smoke, whilst still allowing the passage of people or goods from one compartment to another.

Several codes of practice (including all parts of BS 5588) deal with fire precautions, and compliance with some or all of their recommendations is mandatory in the whole of the UK and Ireland.

The recommendations in BS 5588 reflect the current approach to specifying fire resistance of doors. Both the code and Building Regulations set performance levels for integrity of doors when tested to BS 476-22. In addition, Building Regulations take into account testing to harmonized European standards:

- BS EN 1634-1 (IS EN 1634-1 in IRL) for fire doors and shutters.
- BS EN 1634-3 (IS EN 1634-3 in IRL) for smoke control doors.

The test methods embodied in the European standards, while similar in general principle to those in British Standards, are generally more onerous and may give significantly different results. For an explanation of the differences between the test methods, and the implications for fire doorset design, see TRADA Technology Report 1/2002 'Timber fire resisting doorsets: maintaining performance under the new European test standard'.

A transition period has been introduced, during which time products can be tested either to BS 476 or to the relevant part of BS EN 1634.

BS 5588 designates fire doors 'FD' followed by the required performance (in minutes) for integrity, e.g. 'FD 30'. All nonmetallic door assemblies require an intumescent seal between the door leaf (or leaves) and frame to achieve FD 30 performance or better. Some doorsets can achieve FD 20 performance without seals but this must be proved by testing.

Building Regulations require fire doors tested to European standards to be classified in accordance with BS EN 13501-2. In the European standards, integrity is denoted by the letter 'E', e.g. 'E 30'.

Doors in some locations must be fitted with seals to resist the passage of 'cold' smoke, unless pressurization techniques are used – see Building Regulations:

- **E&W** Approved Document B, Appendix B, table 1.
- **IRL** Technical Document B, Appendix B, table B1.
- **NI** Technical Booklet E, Section 3, table 3.5.
- **Scot** Technical Handbook 2, table to Annex 2.B.

Such doors, when successfully tested to BS 476-31.1, have the suffix 'S' added to the BS 5588 designation, e.g. 'FD 60S'. The leakage rate around the door leaf or leaves must be no greater than 3 m<sup>3</sup>/m.hour (at head and jambs only) when tested at 25 Pa. Alternatively, the door should meet the additional classification requirement of S<sub>a</sub> when tested to BS EN 1634-3 at ambient temperature. In Scotland this requirement is dispensed with where the fire door is in an external wall.

Care is needed when fitting seals or brushes, to ensure that they do not prevent the doorset from functioning properly. Furthermore, to achieve satisfactory sealing to prevent the passage of smoke, doors should be constructed to resist distortion. TRADA recommends that rebated meeting edges be avoided for double doors because:

- They do not contribute to smoke control.
- The door leaves only have to distort half their thickness before they effectively separate, possibly preventing smoke seals or intumescent strips from forming an effective seal.
- Selectors used with this type of door may become inoperative, allowing the leaves to close out of sequence, which again prevents an effective seal.

Tests carried out by TRADA Technology Ltd show that the size, type and fixing of doorstops is unimportant for fire resisting doors fitted with intumescent strips. Doorsets with 12 mm doorstops have performed satisfactorily in fire tests, and FD 120 and FD 180 double acting doorsets are available with no doorstops. Successful test results have also been achieved using pinned and glued doorstops (using phenolic and aminoplastic glues), and it is therefore not necessary for doorstops for one hour fire doors to be machined from the solid.

A fire door is tested to BS 476-22 or BS EN 1634 as part of a complete doorset assembly, including frame, intumescent/ smoke seals, and essential ironmongery. Where a specification requires deviation from a tested doorset configuration, the fire rating of the proposed assembly must be assessed by a competent authority. Where door leaves are supplied separately, the manufacturer must provide information regarding the type of frame and ironmongery required to maintain the fire rating of the door leaf.

However, considering the potentially disastrous consequences of a fire door failure, the risks involved in designing a fire doorset piecemeal must be carefully evaluated. The performance of such a doorset may be impaired by any one of a number of factors, including incorrect installation, on site alteration of the door leaf (e.g. planing wood doors, cutting openings for glazing), substituting inferior seals, or fitting additional, untested ironmongery (letter plates, ventilation grilles, etc).

The risk of failure may be virtually eliminated by specifying a factory assembled fire doorset, complete with hinges, ironmongery, glazed openings and seals.

For further guidance on the performance of fire resisting doorsets see:

- BS 8214.
- DSMA Code of practice for fire resisting metal doorsets.
- IFSA Technical Information sheets 1 and 3.
- TRADA Wood Information, Section 1, sheet 13.
- TRADA Technology Report 1/2002 'Timber fire resisting doorsets: maintaining performance under the new European test standard'.

For guidance in upgrading existing doorsets to give 20 or 30 minutes fire resistance, see:

- TRADA Wood Information, Section 1, sheet 32.
- English Heritage Technical Guidance Note XH20054 'Timber panelled doors and fire' (limited print availability, but accessible on IHS Construction Information Service (CIS)).

### 1.2 Product certification and installation

Further reassurance of satisfactory performance of a fire door or doorset may be had in the form of third party product certification. Certification should ensure that production doors or doorsets are manufactured to the same standard as the tested prototype. Products outside the scope of certification may be assessed by a competent authority using engineering principles. Organizations operating assessment and certification schemes include:

- BM TRADA Certification.
- CERTIFIRE.
- IFC Certification Ltd.
- International Fire Consultants (IFC) (engineering assessments).
- BRE Certification (incorporating LPCB).

**BM TRADA Certification**, in conjunction with door manufacturers, operates the Q-Mark Timber Fire Door Scheme for fire resisting doors and doorsets. Certified products are identifiable by plastics plugs fitted in the doorleaf and frame. Each plug, the core of which is in the shape of a tree, is coloured in accordance with a simple coding system describing the level of certification. An identification number facilitates traceability. Details of the scheme requirements, the plug colour coding and lists of certified manufacturers and installers can be found on BM TRADA's website.

**CERTIFIRE** operates product conformity certification schemes for wood doors (in conjunction with the British Woodworking Federation (BWF) and steel doors. A data sheet supplied with each door specifies the scope of application and gives

installation instructions for the door and its associated components (glazing, hardware, etc.).

Wood doorsets certified under the scheme carry the BWF-CERTIFIRE label, which uniquely identifies the door and gives its fire performance rating. Metal doorsets certified by CERTIFIRE are similarly labelled.

Other CERTIFIRE schemes cover intumescent and smoke seals, and builders' hardware. Details of all certified products are given in the CERTIFIRE Register of approved products (see under 'Certifying' on warringtonfire website).

**IFC Certification Ltd** offers both wood and steel fire door certification against the test requirements of BS 476-22 and BS EN 1634-1. Certified products are identified by a metal label (for steel doors) or a plastics label (wood doors) colour coded to BS 8214, uniquely numbered and identifying the door manufacturer, thus facilitating traceability. For further details see IFC Certification Ltd website.

**International Fire Consultants (IFC)** offer an engineering assessment service for purpose made assemblies and modified off-the-shelf components, and advice on relevant regulations. Computer aided appraisal is available. See company website.

**BRE Certification Ltd** approves fire and security products. The BRE Certification/ LPCB Redbook, Volume 1 lists approved fire break doors and shutters and gives installation requirements. The Redbook can be searched or downloaded from the BRE website.

In addition to any marking/ labelling system used, as a final safeguard the manufacturer should be asked to provide a product conformity certificate, test report or assessment for each type of door or doorset delivered to site, to ensure that they comply fully with the requirements of the specification.

### 1.3 Modifications to certified products

It is inadvisable to modify certified fire doors or doorsets on site as this may destroy the integrity of the component and invalidate any certification. Where modifications are unavoidable, the manufacturer's advice should be sought. Correct modification and installation may be expected where a specialist firm is used. See clauses 809 and 810.

The FIRAS Register of accredited installers lists companies with trained operatives, whose work is independently sample inspected by FIRAS (FIRAS is operated by warringtonfire).

## 2 Strength and security of doors

### 2.1 Duty

A door should be strong enough for its intended use and should be capable of withstanding some degree of abuse. The strength required depends on the severity of duty, which includes:

- Frequency of use.
- Degree of care likely to be exercised by the users.
- Type of traffic, e.g. people alone, or people/ machines carrying or propelling bulky objects.
- Likelihood of accidental impacts.
- Degree of security required.

DD 171 specifies four categories of duty – light, medium, heavy and severe – and describes likely users and frequencies of use, giving examples for each category. Whatever the category of duty, the required strength should be such that normal usage will not result in damage leading to excessive maintenance costs.

### 2.2 Security

The security of a door is difficult to quantify, and depends to a large extent on the value of items being protected. The higher the value, the higher the risk of attack. Other factors must be considered such as the location of the premises, the location of the door within the building and the skill of the attacker, which can range from the 'opportunistic' with little in the way of tools to the 'professional' who comes prepared with a range of implements, including power tools.

Loss Prevention Standard LPS 1175 is a specification for testing and classifying the burglary resistance of building components, including doors. Components are rated from 1 to 6 according to their ability to withstand attack, security rating 6

being the highest. As an example, insurers recommend security rating 4 door assemblies for commercial premises. Doors achieving any classification to this standard are acceptable under the 'Secured by design' initiative, which supports the principles of 'designing out crime' by use of prevention and security standards for a range of applications. For more information on the scheme and a list of approved products and suppliers see 'Secured by design' website.

It is recommended that doors be supplied with their own frame, and that the ironmongery and method of fixing the frame into the opening are of equivalent standard.

Guidance on the security of buildings against crime is also given in BS 8220.

### 2.3 Bullet resistance

A classification system and requirements for bullet resistance of doors are given in BS EN 1522. Seven classes, FB1–FB7, are included for increasing resistance to attack by hand gun and rifle. Class FB1 represents the lowest bullet resistance, and class FB7 the highest. A single class (FSG) is given for resistance to shotgun attack. Test results are qualified by the addition of a suffix, (S) or (NS), according to the presence or absence of splinters, e.g. FB3(S), FB4(NS). The standard also gives the minimum class of bullet resistant glass (to BS EN 1063) to be used in the test. The glass classification is similar to that for the components, e.g. BR1 glass must be used in an FB1 door, BR2 glass in a FB2 door, and so on. FSG doors require SG2 glass.

It is recommended that doors be supplied with their own frame, and that the ironmongery and method of fixing the frame into the opening are of equivalent standard.

### 2.4 Resistance to high explosive detonation

BS EN 13123-1 gives a classification system and requirements for resistance of doors to high explosive detonation. Four classes, EPR1–EPR4, are given, covering detonations in the order of 100–2500 kg TNT at distances from about 35–50 m. As with the bullet resistance classification system, the test results are qualified by the suffix (S) or (NS) depending on whether or not splinters originate from the protected face of the test specimen.

### 3 Sound insulation

The sound insulation of a door assembly should be related to the sound insulation required of the wall in which it is installed.

DD 171 gives the approximate levels of sound insulation that can be achieved by various door assemblies.

The main factors which determine the sound insulation of a single door are the mass of the door leaf and the gaps around the edge. For good sound insulation it is important that the door forms airtight joints with the frame when closed and that the joints between frame and wall are properly sealed. A threshold seal is essential, as are keyhole covers, where applicable. For further guidance see BS 8233.

### 4 Adhesives for joinery

Most adhesives used in commercial joinery manufacture are produced synthetically (chemically engineered). There are two basic types:

**Thermoplastic adhesives:** This group includes:

- PVA emulsions, which are relatively safe and user friendly. They are ready to use and set at room temperature to a colourless glue line by losing water. Many are able to satisfy the requirements for the class D4 durability rating of BS EN 204, which means that they are suitable for use externally, exposed to the weather, provided they are adequately protected by a surface coating.

**Thermosetting adhesives:** This group includes:

- Ureas and urea-formaldehydes – These are popular as they provide moderate moisture resistance and colourless glue lines, and exhibit a wide variety of properties through multiple formulations. However, they are not gap filling – any excess adhesive in gaps will crystallize and crumble in time – and joints must be well fitted.

- Phenols, phenol-resorcinols, resorcinol formaldehydes (complying with BS EN 301) – These are mainly used for structural purposes, but can be used for joinery where better moisture resistance is required. They are expensive and hard to handle, and the dark glue lines they produce may not be acceptable in doors that are to be clear finished.

Any adhesive must be compatible with the proposed finish and with any preservative treatment used. Where specification of a proprietary adhesive is preferred, the manufacturer should be consulted about its properties and suitability.

## **5 Factory priming/ sealing of wood components**

Wood doors, frames and doorsets, particularly those for external use, where not fully factory finished should be supplied primed for painting or sealed to receive a staining system. The priming/ sealing may be either:

- Included as part of the door manufacturer's standard specification – in this case insert e.g. *Primed by manufacturer* and specify site painting in section M60, or
- Specified as part of the overall painting system in section M60 – give the relevant cross reference here, e.g. *Prepared and primed as section M60*.

Ensure that factory applied coatings offered as standard are of good quality. Paint primers should comply with BS 7956.

## **6 Contractual arrangements**

### **6.1 Subcontracting**

The specifier may choose a subcontractor or influence the choice of subcontractor in several ways. See Preliminaries section A30.

### **6.2 Requirements for submission of information**

The specifier may require the Contractor or a subcontractor to submit drawings or other technical information. See Preliminaries section A31.

## GUIDANCE NOTES

110

See general guidance 1. DD 171 makes recommendations for performance requirements for hinged and pivoted doors.

115

See general guidance 1.2.

150

Use this clause only where it is impractical to make proper allowance for tolerances in design, and where the construction programme allows sufficient time.

170

**Designated items:** Insert, e.g. *Recording studio door*.

If prototypes are needed it is advisable to have them made up before going to tender. Alterations to the design or construction can then be incorporated, thereby reducing the possibility of variations later in the contract.

210, 215

Use clause 210 to specify by proprietary reference. Use clause 215 for generic specification of external doors.

Doors of this type should not be used where there is a significant temperature difference between exterior and interior. Such conditions are likely to result in timber movement, causing the unbalanced leaf to twist.

**Clause heading:** Insert – *LEDGED AND BRACED*; – *FRAMED, LEDGED AND BRACED* or – *FRAMED AND LEDGED*

**Wood species (clause 215):** Insert a particular species or leave the choice to the contractor and insert, e.g. *Softwood*.

**Preservative treatment (clause 215):** Insert *Required* or *Not required*.

**Moisture content on delivery (clause 215):** BS EN 942 specifies:

- 13–19% for external joinery.
- 12–16% for unheated buildings.
- 9–13% for buildings with heating providing room temperatures in the range 12–21°C.
- 6–10% for buildings with heating providing room temperatures in excess of 21°C.

**Finish as delivered:** See general guidance 5.

230, 250

Use clauses 230 and 250 to specify proprietary flush and panelled wood or wood based door leaves. Specify frames in clause 310, 330 or 370. For doorsets see clauses 410–430.

For guidance on specification of fire resisting doors see general guidance 1. See also clause 115.

**Clause heading:** Insert, e.g.

– *EXTERNAL*

– *INTERNAL DOUBLE* →

## SPECIFICATION CLAUSES

### L20 Doors/ Shutters/ Hatches

To be read with Preliminaries/ General conditions.

#### GENERAL

#### 110 EVIDENCE OF PERFORMANCE

- Certification: Provide independently certified evidence that all incorporated components comply with specified performance requirements.

#### 115 FIRE RESISTING DOORS/ DOORSETS/ ASSEMBLIES

- Evidence of fire performance: Provide certified evidence, in the form of a product conformity certificate, directly relevant fire test report or engineering assessment, that each door/ doorset/ assembly supplied will comply with the specified requirements for fire resistance if tested to BS 476-22, BS EN 1634-1 or BS EN 1634-3. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.

#### 150 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items: . . . . .

#### 170 CONTROL SAMPLES

- Procedure:
  - Finalize component details.
  - Fabricate one of each of the following designated items as part of the quantity required for the project.
  - Obtain approval of appearance and quality before proceeding with manufacture of the remaining quantity.
- Designated items: . . . . .

#### PRODUCTS

#### 210 MATCHBOARDED DOORS . . . . .

- Manufacturer: . . . . .
- Product reference: . . . . .
- Finish as delivered: . . . . .

#### 215 EXTERNAL MATCHBOARDED DOORS . . . . .

- Standard: Generally to BS 459.
- Wood species: . . . . .
- Preservative treatment: . . . . .
- Moisture content on delivery: . . . . .
- Finish as delivered: . . . . .

#### 230 WOOD FLUSH DOORS . . . . .

- Manufacturer: . . . . .
- Product reference: . . . . .
- Facings: . . . . .
- Lippings: . . . . .
- Preservative treatment: . . . . .
- Finish as delivered: . . . . .
- Glazing details: . . . . .
- Other requirements: . . . . .

– **FD60 FIRE RESISTING**

– **FD30S FIRE RESISTING AND SMOKE CONTROL**

Repeat the clauses for each different type of door.

**Facings (clause 230):** State material and thickness or veneer type.

Give details for both faces, if different.

**Lippings (clause 230):** Give the species and which edges are to be lipped. Include any special detailing required, e.g. pencil rounded arrises, radiused lipping for double swing doors.

**Preservative treatment:** NHBC Standards require external panelled doors to be made from a naturally durable wood species or timber pretreated against fungal decay. This may also be desirable for external flush doors.

Most manufacturers use double vacuum impregnation with organic solvents. These dry quickly and, more importantly, do not affect the moisture content or cause dimensional changes in the timber.

Insert *Required* if the door manufacturer's standard treatment is acceptable, otherwise give details of treatment. Alternatively, insert *Not required*.

**Finish as delivered:** See general guidance 5.

**Glazing/ Panel details:** Specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4.

Use this item to specify details of vision panels or other glazing/ panel configurations, e.g.

- Shape of aperture – rectangular, rectangular with radiused corners, circular.
- Infill material when supplied by door manufacturer, e.g. glass (if factory glazed), louvres, plywood panels.
- Type of bead and method of fixing.

Where factory glazing is specified, check compliance with BS 6262.

**Other requirements:** Insert, e.g.

*XYZ Ltd Fire and smoke seal, ref FR30SSDL to leading edges of double doors.*

*Additional blockings for letter plate.*

*Magnetic door seals.*

## 270

Use this clause to specify purpose made wood doors. These are usually of panelled construction. Repeat the clause for each different type of door construction. Specify frames in clause 310, 330 or 370. For guidance on specification of fire resisting doors see general guidance 1.

**Clause heading:** Complete by inserting locational or type description, e.g.

*TO MAIN ENTRANCE*

*TO BAPTISTRY*

**Materials:**

– **Species:** Select from BS EN 942, National Annex NA.

Alternatively, leave the choice to the manufacturer and insert, e.g.

*Softwood as table NA1.*

*Hardwood as table NA2.*

– **Appearance class:** BS EN 942 defines five classes of timber:

- J30 for high quality or specialized joinery.
- J40 and J50 for general purpose joinery.
- J2 and J10 for clear grades of softwood or hardwood.

The class designation indicates the maximum size of knot or knot cluster permitted; for example, knots up to 30 mm are deemed acceptable in a piece of timber classed as J30. For the extent of other features permitted in each class see BS EN 942, table 1.

**Panels:** Insert details of infill other than glazing, e.g.

*6 mm birch faced plywood, bonding quality to BS EN 314-2, Class 3.*

*70 x 15 mm (PAR) t&g softwood boarding.*

Specify site glazing in section L40.

**Assembly:**

– **Adhesive:** See general guidance 4. Insert, e.g. *PVAC to BS EN 204, Class D4.*

Alternatively, insert, e.g. *WBP* and leave the choice to the manufacturer.

**Preservative treatment:** BWPDA Commodity Specification C5 covers the requirements for preservative treatment of softwood for external joinery. The heartwood of softwoods rated moderately durable or better (see BRE Digest 429) may be used untreated for a service life of 30 years, those rated durable or better may be used untreated for a service life of 60 years. Where sapwood is present, or a less durable species is used, treatment is required. Insert, e.g.

## 250 WOOD PANELLED DOORS . . . . .

- **Manufacturer:** . . . . .
  - **Product reference:** . . . . .
- **Wood species:** . . . . .
- **Preservative treatment:** . . . . .
- **Finish as delivered:** . . . . .
- **Glazing/ Panel details:** . . . . .
- **Other requirements:** . . . . .

## 270 WOOD DOORS . . . . .

- **Materials:** Generally to BS EN 942.
  - **Species:** . . . . .
  - **Appearance class:** . . . . .
- **Panels:** . . . . .
- **Assembly:**
  - **Adhesive:** . . . . .
  - **Joinery workmanship:** As section Z10.
  - **Accuracy:** To BS 4787-1.
- **Preservative treatment:** . . . . .
- **Moisture content on delivery:** . . . . .
- **Finish as delivered:** . . . . .
- **Other requirements:** . . . . .

*Organic solvent as section Z12 and BWPDA Commodity*

*Specification C5; Desired service life: 30 years.*

Water based preservative treatments are available as alternatives to OS treatments. To specify such products, insert the solution manufacturer's name and reference together with a brief description of the treatment.

Insect attack is not usually a problem with external joinery.

**Moisture content on delivery:** BS EN 942 specifies:

- 13–19% for external joinery.
- 12–16% for unheated buildings.
- 9–13% for buildings with heating providing room temperatures in the range 12–21°C.
- 6–10% for buildings with heating providing room temperatures in excess of 21°C.

**Finish as delivered:** See general guidance 5.

**Other requirements:** Use this item to specify, e.g. perimeter seals for weatherproofing, fire resistance/ smoke control, sound or light reduction.

280

Use this clause to specify proprietary doors to be fitted into frames specified elsewhere in this section (e.g. clause 330) or in another section (e.g. L10). Specify metal or composite doorsets in clause 480.

**Clause heading:** Insert location and material, e.g.

*TO MAIN ENTRANCE – ALUMINIUM*

*TO LOCKER ROOM – STEEL*

**Finish as delivered:** Most metal doors are factory finished. Insert, e.g.

*Polyester powder coated to BS 6496, colour ???.*

*Anodized to BS 3987, AA25, colour/ finish ???.*

**Glazing details:** Use this item to specify details of vision panels or other glazing configurations, e.g.

- Shape of aperture.
- Type of glass (if factory glazed). Check compliance with safety requirements of BS 6262-4.

**Ironmongery:** List requirements or refer to an ironmongery schedule.

**Other requirements:** Insert, e.g.

*XYZ Ltd anti finger trap stiles, ref 321AFT.*

*XYZ Ltd weatherseals to meeting stiles.*

310

Use this clause to specify proprietary wood door frames.

**Clause heading:** Complete by inserting, e.g.

*TO STUDY BEDROOM*

*– INTERNAL*

If architraves are supplied with the frames add *AND ARCHITRAVES* after *FRAMES*, otherwise specify separately in section P20.

**Preservative treatment:** NHBC Standards require external door frames to be made from naturally durable wood species or timber pretreated against fungal decay.

Most manufacturers use double vacuum impregnation with organic solvents. These dry quickly and, more importantly, do not affect the moisture content or cause dimensional changes in the timber.

Insert *Required* if the door frame manufacturer's standard treatment is acceptable, otherwise give details of treatment. Alternatively, insert *Not required*.

**Finish as delivered:** See general guidance 5.

**Perimeter seals:** Use this item to specify seals rebated into the frame, to prevent or reduce penetration of weather, fire/ smoke, sound or light. Where the seals are required for fire resistance/ smoke control, obtain evidence of performance with the specified door leaf. Insert, e.g.

*XYZ Ltd EPDM weatherseal, ref WSF123.*

*XYZ Ltd fire and smoke seal, ref FR30ss2f.*

*Not required.*

**Fixing:** See clause 790. Insert, e.g.

*Built in with cramps as section Z20.*

*Plugged and screwed as section Z20.*

280 DOORS . . . . .

- Manufacturer: . . . . .
- Product reference: . . . . .
- Finish as delivered: . . . . .
- Glazing details: . . . . .
- Ironmongery: . . . . .
- Other requirements: . . . . .

310 WOOD DOOR FRAMES . . . . .

- Manufacturer: . . . . .
- Product reference: . . . . .
- Species: . . . . .
- Preservative treatment: . . . . .
- Finish as delivered: . . . . .
- Perimeter seals: . . . . .
- Fixing: . . . . .

330

Use this clause to specify purpose made wood door frames. Specify architraves here or in section P20.

**Clause heading:** Insert, e.g.

– FIRE RESISTING

AND ARCHITRAVES – INTERNAL

**Materials:**

– **Species:** Select from BS EN 942, National Annex NA.

Alternatively, leave the choice to the manufacturer and insert, e.g.

*Softwood as table NA1.*

*Hardwood as table NA2.*

– **Appearance class:** BS EN 942 defines five classes of timber:

- J30 for high quality or specialized joinery.

- J40 and J50 for general purpose joinery.

- J2 and J10 for clear grades of softwood or hardwood.

The class designation indicates the maximum size of knot or knot cluster permitted; for example, knots up to 30 mm are deemed acceptable in a piece of timber classed as J30. For the extent of other features permitted in each class see BS EN 942, table 1.

**Assembly:**

– **Adhesive:** See general guidance 4. Insert, e.g. *PVAC to BS EN 204, Class D4*. Alternatively, insert, e.g. *WBP* and leave the choice to the manufacturer.

**Preservative treatment:** BWPDA Commodity Specification C5 covers the requirements for preservative treatment of softwood for external joinery. The heartwood of softwoods rated moderately durable or better (see BRE Digest 429) may be used untreated for a service life of 30 years, those rated durable or better may be used untreated for a service life of 60 years. Where sapwood is present, or a less durable species is used, treatment is required. Insert, e.g. *Organic solvent as section Z12 and BWPDA Commodity Specification C5; Desired service life: 30 years.*

Water based preservative treatments are available as alternatives to OS treatments. To specify such products, insert the solution manufacturer's name and reference together with a brief description of the treatment.

Insect attack is not usually a problem with external joinery.

**Moisture content on delivery:** BS EN 942 specifies:

- 13–19% for external joinery.

- 12–16% for unheated buildings.

- 9–13% for buildings with heating providing room temperatures in the range 12–21°C.

- 6–10% for buildings with heating providing room temperatures in excess of 21°C.

**Finish as delivered:** See general guidance 5.

**Perimeter seals:** BRE Information Paper 16/81 describes the main types of weather seal available and gives guidance on selection and application. Compression seals, wiper seals and brush seals are commonly used. Materials for brush seals include siliconized wool or polypropylene pile, and nylon. Elastomeric materials, e.g. EPDM, PVC and neoprene (polychloroprene) are used for compression and wiper seals.

It is sometimes desirable to fit fire/ smoke seals into the frame rebate. In this case, evidence of performance with the specified door leaf should be obtained. See also general guidance 1. Sound or light seals can also be fitted in this location. Insert, e.g.

*XYZ Ltd 'Fireseal', ref FR60df.*

*XYZ Ltd 'Soundseal' acoustic seal, ref SS1001db.*

*Not required.*

**Fixing:** See clause 790. Insert, e.g.

*10 mm phosphor bronze Gripit expanding bolts.*

*Plugged and screwed as section Z20.*

370

Use this clause for proprietary door frames of steel, aluminium, plastics or composite construction, etc.

**Clause heading:** Insert material and general use/ location, e.g.

*TO OFFICES – ALUMINIUM*

*TO MAIN ENTRANCE – STEEL*

**Perimeter seals:** Use this item to specify factory fitted seals to prevent or reduce penetration of weather, fire/ smoke, sound or light. Where the seals are required for fire resistance/ smoke control, obtain evidence of performance with the specified door leaf. Insert, e.g.

330 WOOD DOOR FRAMES . . . . .

- **Materials:** Generally to BS EN 942.

- **Species:** . . . . .

- **Appearance class:** . . . . .

- **Assembly:**

- **Adhesive:** . . . . .

- **Joinery workmanship:** As section Z12.

- **Preservative treatment:** . . . . .

- **Moisture content on delivery:** . . . . .

- **Finish as delivered:** . . . . .

- **Perimeter seals:** . . . . .

- **Fixing:** . . . . .

370 DOOR FRAMES . . . . .

- **Manufacturer:** . . . . .

- **Product reference:** . . . . .

- **Perimeter seals:** . . . . .

- **Finish as delivered:** . . . . .

- **Fixing:** . . . . .



*EPDM weatherseal, ref WSF123.*

*Fire and smoke seal, ref FR60ss.*

*Not required.*

**Fixing:** Insert appropriate method of fixing from manufacturer's recommendations.

410, 420

Use clause 410 to specify proprietary doorsets with wood frames and flush door leaves for internal or external use. Use clause 420 for proprietary doorsets with wood frames and panelled door leaves for internal or external use. Use clause 430 for generic specification.

For guidance on specifying fire resisting doorsets see general guidance 1. See also clause 115.

For guidance on bullet and burglar resistant doorsets see general guidance 2.

**Clause heading:** Insert, e.g.

– *EXTERNAL*

– *INTERNAL*

– *FD 30 FIRE RESISTING*

– *FD 60S DOUBLE FIRE RESISTING AND SMOKE CONTROL*

– *40 DB SOUND INSULATING*

– *BULLET RESISTANT*

Repeat the clause for each different type of door construction.

**Door leaf/ Frame and architraves:**

– **Facings (clause 410):** State material or veneer type. Give details for both faces, if different.

– **Lippings (clause 410):** Give the species and which edges are to be lipped, if options are available.

– **Wood species (clause 420):** Select a species from the range offered by the manufacturer or insert *Hardwood* or *Softwood* if a choice is not available.

– **Finish as delivered:** See general guidance 5. Separate items are provided for the door and the frame/ architraves, as the finish may be different.

**Preservative treatment:** NHBC Standards require external panelled doors and frames to be made from naturally durable wood species or timber pretreated against fungal decay. This may also be desirable for external flush doors.

Most manufacturers use double vacuum impregnation with organic solvents. These dry quickly and, more importantly, do not affect the moisture content or cause dimensional changes in the timber.

Insert *Required* if the manufacturer's standard treatment is acceptable, otherwise give details of required treatment.

Alternatively, insert *Not required*.

**Glazing details:** Specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4.

Use this item to specify details of vision panels or other glazing configurations within the door leaf, e.g.

- Shape of aperture – rectangular, rectangular with radiused corners, circular.
- Infill material when supplied by door manufacturer, e.g. glass (if factory glazed), louvres.
- Type of bead and method of fixing.

Also include here details of glazing to overpanels/ side panels, where specified.

Where factory glazing is specified, check compliance with BS 6262.

**Ironmongery:** Doorsets are normally supplied with hinges and flush fitting items factory fitted. Specify here or refer to an ironmongery schedule.

Doorset manufacturers usually have a preferred range of ironmongery and it may be advisable to select from this to ensure satisfactory performance – particularly for fire resisting doors.

**Perimeter seals:** Use this item to specify factory fitted seals to prevent or reduce penetration of weather, fire/ smoke, sound or light. Where the seals are required for fire resistance/ smoke control, obtain evidence of performance with the specified door leaf. Insert, e.g.

*EPDM weatherseal, ref WSF123.*

*Fire and smoke seal, ref DFR60ss.*

*Not required.*

**Other requirements:** Insert, e.g.

*Hardwood clashing strips on doors with overpanels.*

*Architraves to be mitred. →*

410 WOOD DOORSETS . . . . .

- Manufacturer: . . . . .
  - Product reference: . . . . .
- Door leaf:
  - Facings: . . . . .
  - Lippings: . . . . .
  - Finish as delivered: . . . . .
- Frame and architraves:
  - Wood species: . . . . .
  - Finish as delivered: . . . . .
- Preservative treatment: . . . . .
- Glazing details: . . . . .
- Ironmongery: . . . . .
- Perimeter seals: . . . . .
- Other requirements: . . . . .
- Fixing: . . . . .

420 WOOD DOORSETS . . . . .

- Manufacturer: . . . . .
  - Product reference: . . . . .
- Door leaf:
  - Wood species: . . . . .
  - Panel details: . . . . .
  - Finish as delivered: . . . . .
- Frame and architraves:
  - Wood species: . . . . .
  - Finish as delivered: . . . . .
- Preservative treatment: . . . . .
- Glazing details: . . . . .
- Ironmongery: . . . . .
- Perimeter seals: . . . . .
- Other requirements: . . . . .
- Fixing: . . . . .

*Additional blockings for letter plate.*

**Fixing:** Insert, e.g. *Frame fixings with colour matching caps supplied by doorset manufacturer.*

430

Use this clause for generic specification of wood doorsets.

**Clause heading:** Insert, e.g.

– *FIRE RESISTING*

– *SOUND INSULATING*

**Fire resistance rating:** Insert, e.g.

*To BS 476-22, FD 30 (30 minutes integrity).*

*To BS EN 1634-1, E 30 (30 minutes integrity).*

*Not applicable.*

**Sound insulation rating:** Insert e.g.

*30 dBA.*

*Not applicable.*

**Door leaf:**

– **Core:** Give a brief description of the core construction or insert *Manufacturer's choice.*

– **Facings:** Insert, e.g. *Crown cut maple veneers.* Give details for each face, if different.

– **Lippings:** Specify wood species and profile, e.g. *Hardwood to match facing veneers; 9 mm square edge.*

– **Finish as delivered:** Insert, e.g. *Satin polished.* Separate items are provided for door leaf and frame/ architraves as in some cases the finish may be different.

**Frame and architraves:**

– **Appearance class:** BS EN 942 defines five classes of timber:

• J30 for high quality or specialized joinery.

• J40 and J50 for general purpose joinery.

• J2 and J10 for clear grades of softwood or hardwood.

The class designation indicates the maximum size of knot or knot cluster permitted; for example, knots up to 30 mm are deemed acceptable in a piece of timber classed as J30. For the extent of other features permitted in each class see BS EN 942, table 1.

**Preservative treatment:** BWPDA Commodity Specification C5 covers the requirements for preservative treatment of softwood for external joinery. The heartwood of softwoods rated moderately durable or better (see BRE Digest 429) may be used untreated for a service life of 30 years; those rated durable or better may be used untreated for a service life of 60 years. Where sapwood is present, or a less durable species is used, treatment is required. Insert, e.g. *Organic solvent as section Z12 and BWPDA Commodity Specification C5; Desired service life: 30 years.*

Water based preservative treatments are available as alternatives to OS treatments. To specify such products insert the solution manufacturer's name and reference together with a brief description of the treatment.

Insect attack is not usually a problem with external joinery.

**Moisture content on delivery:** BS EN 942 specifies:

• 13–19% for external joinery.

• 12–16% for unheated buildings.

• 9–13% for buildings with heating providing room temperatures in the range 12–21°C.

• 6–10% for buildings with heating providing room temperatures in excess of 21°C.

**Glazing details:** Specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4.

Use this item to specify details of vision panels or other glazing configurations within the door leaf, e.g.

• Shape of aperture, e.g. rectangular, rectangular with radiused corners, circular.

• Type of bead and method of fixing.

• Infill material when supplied by door manufacturer, e.g. glass (if factory glazed), louvres.

Also include here details of glazing to overpanels/ side panels, where specified.

**Ironmongery:** Doorsets are normally supplied with hinges and flush fitting components factory fitted. List all components required or refer to an ironmongery schedule. Insert, e.g. *Alltonks Ltd 'Mercury' range, as ironmongery schedule.*

**Perimeter seals:** Use this item to specify seals rebated into the door edges/ frame, to prevent or reduce penetration of weather, fire/ smoke, sound or light. Where the seals are required for fire

430 WOOD DOORSETS . . . . .

• Fire resistance rating: . . . . .

• Sound insulation rating: . . . . .

• Door leaf:

– Core: . . . . .

– Facings: . . . . .

– Lippings: . . . . .

– Finish as delivered: . . . . .

• Frame and architraves:

– Wood species: . . . . .

– Appearance class to BS EN 942: . . . . .

– Finish as delivered: . . . . .

• Preservative treatment: . . . . .

• Glazing details: . . . . .

• Moisture content on delivery: . . . . .

• Ironmongery: . . . . .

• Perimeter seals: . . . . .

• Fixing: . . . . .

resistance/ smoke control, evidence of performance with the specified door leaf and frame should be obtained.

**Fixing:** See clause 790. Insert, e.g. *Screwed and plugged to brickwork.*

460

**Clause heading:** Complete by inserting, e.g. *TO MAIN ENTRANCE*

**Door leaf material:** Safety glass should be specified for all fully glazed doors and side panels for public and domestic areas. Toughened (tempered) glass is recommended for frameless doors. Laminated glass should be avoided because it tends to fracture at the bolt holes provided for door fittings.

BS 6206 specifies the impact performance of three classes of safety glass: A (the highest), B and C. Where the glass door leaf is more than 900 mm wide BS 6262-4 recommends that the glass should conform to at least class B of BS 6206. For door leaves less than 900 mm wide, glass conforming to at least class C of BS 6206 may be specified. However, considering the potentially severe consequences of glass failure, it may be prudent to specify the highest performance category, class A, in all cases.

– **Thickness:** This also depends on the door leaf size and on the location of the door. 10 mm glass may be suitable for narrow internal doors. For external or wide doors, 12 mm thickness may be required.

– **Colour:** Insert, e.g.

*Clear.*

*Body tinted bronze.*

**Decoration:** Acid embossed or sandblasted lettering/ logos can be incorporated into the glass either before or after tempering. There are risks associated with both options. Decorated glass may fracture in the quenching process during tempering, and toughened glass may fracture as it is being etched or sandblasted. Glass manufacturers tend to favour decoration of glass after toughening, but advise that the depth of working should be restricted to 0.5 mm. Some processes, e.g. brilliant cutting, must be carried out before the glass is tempered.

Areas within 25 mm of door/ panel edges and holes/ cut-outs must be protected unless the methods of etching/ sandblasting used can be precisely controlled.

In all cases the manufacturer's advice should be sought regarding the proposed decorative treatment. Insert, e.g. *Acid embossed logo as detailed on drawing C20.*

**Door rails/ Patch fittings:** Configurations available are:

- Full width rails along top and bottom edges.
- Full width rail along bottom edge + patch with pivot at top corner.
- Patches with pivots at top and bottom corners.

Special patch fittings are available for sidelights and transoms.

Insert, e.g. *Bottom Rail BR123 + Top Patch with pivot TP456.*

– **Material/ Finish:** Rails and patches are available in a range of materials and finishes. Insert, e.g.

*Polyester powder coated aluminium.*

*Polished brass.*

*Polished stainless steel.*

**Peripheral fixings:** Insert either *Concealed channel* or *Surface mounted*. Provide details of custom designed fixings. Insert *Not applicable* if side lights or transoms are not specified.

**Lock:** Insert, e.g. *Profile double cylinder.*

– **Position:** Insert, e.g. *Profile double cylinder.*

Locks can generally be incorporated into top or bottom rails/ patch fittings, or centrally in the opening edge of the door. Insert, e.g. *Door bottom rail.*

**Floor springs:** Various strengths are available, with single or double swing actions. A 90° retention (stand open) option is also available. Floor stops should be used to prevent doors from being opened too far.

Insert, e.g. *Double swing with 90° retention, reference FS321.*

**Pull handles:** Most manufacturers supply a range of standard handles in various materials and finishes, however almost any ironmongery can be fitted provided the following rules are observed:

- The diameter of any fixing holes must not be less than the glass thickness.
- The distance from the door edge to the edge of a fixing hole must be at least 1½ x the glass thickness.
- The edge of a fixing hole must be at least 4 x glass thickness from

460 FRAMELESS GLASS DOORS . . . . .

- Manufacturer: . . . . .
  - Product reference: . . . . .
- Door leaf material: Toughened safety glass to BS 6206, class . . . . .
  - Thickness: . . . . .
  - Colour: . . . . .
- Decoration: . . . . .
- Door rails/ Patch fittings: . . . . .
  - Material/ Finish: . . . . .
- Peripheral fixings: . . . . .
- Lock: . . . . .
  - Position: . . . . .
- Floor springs: . . . . .
- Pull handles: . . . . .
  - Size: . . . . .
  - Material/ Finish: . . . . .
- Additional ironmongery/ accessories: . . . . .

a corner.

- The distance between edges of adjacent fixing holes must be greater than 4 x glass thickness.

**Additional ironmongery/ accessories:** List here, with references where appropriate, other items to be provided, e.g. door stops, letter plates, etc.

480

Use this clause for proprietary doorsets of steel, aluminium, PVC-U, glass fibre or composite construction.

For guidance on specifying fire resisting doorsets see general guidance 1. See also clause 115.

For guidance on bullet and burglar resistant doorsets see general guidance 2.

**Clause heading:** Insert, e.g.

*TO FRONT ENTRANCE – ALUMINIUM*

*TO CLEAN ROOM – PVC-U*

*– STEEL: FD 60S FIRE RESISTING AND SMOKE CONTROL*

Repeat the clause for each different type of door construction.

**Door leaf/ Frame and architraves:**

**– Finish as delivered:** Select from manufacturer's options. Insert, e.g.

*Galvanized.*

*Factory applied primer.*

*Polyester powdercoated, colour RAL 123.*

**Glazing details:** Specify glazing to be carried out on site in section L40. For factory glazed doorsets give details of glass or double glazing and method of fixing if alternatives are available. Ensure compliance with requirements for safety (to BS 6262-4) and fire resistance.

**Ironmongery:** Doorsets are normally supplied with hinges and flush fitting components factory fitted. Other items (e.g. handles, panic bolts) are also often supplied as standard. List the components required or refer to an ironmongery schedule.

**Perimeter seals:** Use this item to specify factory fitted seals to prevent or reduce penetration of weather, fire/ smoke, sound or light. Where the seals are required for fire resistance/ smoke control, obtain evidence of performance with the specified door leaf. Insert, e.g.

*XYZ Ltd EPDM weatherseal, ref WSF123.*

*XYZ Ltd Fire and smoke seal, ref FR30ss2f.*

*Not required.*

**Other requirements:** Use this item to specify, e.g. side/ over panels, special thresholds, profile reinforcement.

**Fixing:** Seek manufacturer's advice on appropriate method of fixing to supporting construction. Insert, e.g. *Plugged and screwed to masonry as section Z20.*

490

Guidance on safety, maintenance and the immediate environment applicable to automatic doors is given in BS 7036, as follows:

BS 7036-1: General safety recommendations.

BS 7036-2: Straight and curved sliding doors, prismatic and folding doors.

BS 7036-3: Swing and balanced doors.

BS 7036-4: Low energy swing doors.

BS 7036-5: Revolving doors. Note that, because of the distinctive mode of operation of revolving doors, they are specified separately in clauses 495 (automatic doors) and 500 (manual doors).

BS 7036-1 recommends that the specifier seek specialist advice from the manufacturer at the design stage. Other relevant authorities should also be consulted, e.g. building control, fire, and health authorities. In addition, a full hazard analysis and risk assessment should be carried out to check that the final installation is safe for its predicted use.

Note that low energy swing doors are generally not fitted with safety devices. They should therefore only be considered where the hazard analysis and risk assessment indicates a low risk to elderly, frail or disabled users – see BS 7036-4, clause 1.

For further guidance see BS 7036 and BRE Report 334.

**Clause heading:** Insert location, e.g. *TO MAIN ENTRANCE*

**Type:** Insert, e.g. *Bi-parting curved sliding doors.*

**Glazing:** Safety glass to BS 6206 should be used. Check that installation complies with BS 6262 and BS 6262-4. ➔

480 DOORSETS . . . . .

- Manufacturer: . . . . .
  - Product reference: . . . . .
- Door leaf: . . . . .
  - Finish as delivered: . . . . .
- Frame and architraves: . . . . .
  - Finish as delivered: . . . . .
- Glazing details: . . . . .
- Ironmongery: . . . . .
- Perimeter seals: . . . . .
- Other requirements: . . . . .
- Fixing: . . . . .

490 AUTOMATIC DOORS . . . . .

- Type: . . . . .
- Manufacturer: . . . . .
  - Product reference: . . . . .
- Materials/ finishes:
  - Doors: . . . . .
  - Frames: . . . . .
  - Screens: . . . . .
- Glazing: . . . . .
- Activation and control system: . . . . .
  - Safety devices: . . . . .
  - Breakout facility: . . . . .
- Locking mechanism: . . . . .
- Signs: . . . . .
- Barriers: . . . . .
- Other requirements: . . . . .

**Activation and control system:** Activation may be automatic, manual or remote; controlled by infra-red, microwave, radar, etc. Various combinations are available.

– **Safety devices:** Options include safety mats, pressure sensitive strips, emergency stops, presence sensors.

– **Break out facility:** This allows doors to be opened manually in an emergency, and should be specified on all emergency exit routes. Insert *Required* or *Not required*.

**Locking mechanism:** Insert *Mechanical* or *Electro-mechanical*, and lock reference.

**Signs:** Insert wording and size, e.g.

*'NO ENTRY', 150 mm diameter.*

*'Keep clear', 250 mm wide x 100 mm high.*

**Barriers** are used to prevent traffic (pedestrian or vehicular) approaching the door from an unsafe direction. BS 7036 requires barriers to conform to BS 6180.

495, 500

Guidance on safety, maintenance and the immediate environment applicable to automatic revolving doors is given in BS 7036-1 and BS 7036-5. BS 7036-1 recommends that the specifier seek specialist advice from the manufacturer at the design stage. Other relevant authorities should also be consulted, e.g. building control and fire authorities. In addition, a full hazard analysis and risk assessment should be carried out to check that the final installation is safe for its predicted use.

**Clause heading:** Insert, e.g. *TO ENTRANCE FOYER*

**Materials/ finishes:** Insert, e.g.

– *Doors: Aluminium sections; anodized, colour: RAL 456.*

– *Drum walls: Aluminium frame; to match doors. Glazing: 9 mm laminated glass.*

– *Canopy: Plywood dust cover, aluminium clad; finish to match drum.*

**Activation and control system (clause 495):** Activation may be automatic, manual or remote; controlled by infra-red, microwave, radar, etc. Various combinations are available.

– **Safety devices:** Options include safety mats, pressure sensitive strips, emergency stops, presence sensors.

**Locking mechanism:** Insert details of security devices, selected from manufacturer's options, e.g. *Mortice espagnolette lock with profile cylinder*.

**Breakout facility:** This allows doors to open conventionally in an emergency, and should be specified on all emergency exit routes. Insert *Required* or *Not required*.

**Other requirements:** Use this item to specify manufacturer's optional features, e.g.

*Automatic re-positioning drive.*

*External sliding night shields.*

*Natural coir fibre floor mat.*

510

Frame fixing points are required to be built into the structure at an early stage. Follow the manufacturer's recommendations when detailing.

Check that freestanding safes to be placed inside a strongroom can pass through the doorway and that the access route can take the loading.

**Blank bullet item:** Insert descriptions of requirements under appropriate headings, e.g. *Locking mechanism: Time delay combination lock*.

#### 495 AUTOMATIC REVOLVING DOORS . . . . .

- Manufacturer: . . . . .
- Product reference: . . . . .
- Materials/ finishes:
  - Doors: . . . . .
  - Drum walls: . . . . .
  - Canopy: . . . . .
- Activation and control system: . . . . .
  - Safety devices: . . . . .
- Locking mechanism: . . . . .
- Breakout facility: . . . . .
- Other requirements: . . . . .

#### 500 MANUAL REVOLVING DOORS . . . . .

- Manufacturer: . . . . .
- Product reference: . . . . .
- Materials/ finishes:
  - Doors: . . . . .
  - Drum walls: . . . . .
  - Canopy: . . . . .
- Locking mechanism: . . . . .
- Breakout facility: . . . . .
- Other requirements: . . . . .

#### 510 STRONG ROOM DOOR

- Manufacturer: . . . . .
- Product reference: . . . . .
- . . . . .

515

Apart from protection against terrorism, typical applications for this type of door include ordnance stores in military establishments and high risk production areas in manufacturing laboratories and workshops.

**Configuration:** Insert, e.g.

*Single leaf side-hinged.*

*Double leaf sliding.*

*Multi-leaf folding.*

*Bi-folding.*

**Design parameters:**

– **Blast Duration:** This is the time from when the initial blast wave impinges on the face of the door to when it decays to zero, and is usually expressed in milliseconds (ms). Together with the blast pressure, it determines the total energy of the blast and the rebound loads. These are then used to calculate the required strength of the door. If there is a negative phase to the blast loading then its duration should also be specified.

– **Pressure mode:** Insert *Continuous static* or *Dynamic*.

– **Maximum overpressure:** This is the maximum pressure that the door must withstand. Insert, e.g. *100 kN/m<sup>2</sup>*.

– **Rebound pressure:** For doors designed to withstand a dynamic blast, the rebound pressure is usually calculated by the manufacturer. If the door is subject to a continuous static pressure, then the specifier should advise the maximum rebound pressure that the door must accept, expressed as a percentage of the maximum positive overpressure. This may be up to 100%.

**Fire rating:** Fire assessments of blast doors can be made, enabling them to be incorporated in compartment walls. See general guidance 1. Insert performance required or *Not applicable*.

**Glazing:** See general guidance 2.4. Insert requirements or *Not required*.

**Ironmongery:** List here items supplied as part of the assembly. Specify items to be supplied from other sources in section P21, in a schedule, or on drawings.

**Locking mechanism:** Various options are possible. Insert, e.g.

*High alloy blast bolts.*

*Power operated.*

**Fixing:** Give brief details of method of fixing door frame/ surround to the supporting structure.

515 BLAST RESISTANT DOOR

- Manufacturer: . . . . .
  - Product reference: . . . . .
- Configuration: . . . . .
- Design parameters:
  - Blast duration: . . . . .
  - Pressure mode: . . . . .
  - Maximum overpressure: . . . . .
  - Rebound pressure (maximum): . . . . .
- Fire rating: . . . . .
- Materials/ finishes:
  - Door: . . . . .
  - Frame: . . . . .
- Glazing: . . . . .
- Ironmongery: . . . . .
- Locking mechanism: . . . . .
- Fixing: . . . . .

520

Use this clause for doors with leaves that move in their own plane across an opening.

Sliding doors can be top hung with a bottom guide (generally up to 6 m high) or bottom rolling on a rail track with a top guide (up to 25 m high). Practically any opening width can be achieved using multiple leaves. Wide openings will almost certainly require bottom rolling doors so that their weight is not carried by the superstructure. Special variants of sliding door types are available for 'round the corner' operation.

**Clause heading:** Insert, e.g. *TO GARAGE WORKSHOP*

**Performance:** Insert specific requirements for fire resistance, wind resistance, thermal insulation, acoustic control, etc. where not evident from the product reference.

For guidance on specifying fire resisting/ smoke control doors see general guidance 1 and clause 115.

Doors can be insulated to any required level, e.g. to suit special environments such as freezer compartments where temperatures may range from -45°C to +40°C.

Acoustic doors are available, giving typical average sound insulation levels of between 30 and 55 dB.

**Arrangement:** State, e.g. whether top hung or bottom rolling; single, paired or multi leaf.

– **Track system:** Give details of hangers/ rollers where options are available.

**Door leaf:** Give brief construction details where the product reference is not definitive.

– **Finish as delivered:** Select from manufacturer's options. Specify site painting in section M60.

**Operation:** Doors may be manual or power operated. Power operated doors will usually have a manual override option, but this should be specified as a requirement if essential. Include here details of operational and safety controls/ devices, e.g. constant

520 SLIDING DOORS . . . . .

- Manufacturer: . . . . .
  - Product reference: . . . . .
- Performance: . . . . .
- Arrangement: . . . . .
  - Track system: . . . . .
- Door leaf: . . . . .
  - Finish as delivered: . . . . .
- Operation: . . . . .
- Ironmongery: . . . . .
- Other requirements: . . . . .

pressure button control, electrical interlocking for power operated doors incorporating pass doors.

**Ironmongery:** List here items supplied as part of the assembly. Specify items to be supplied from other sources in section P21, in a schedule, or on drawings.

**Other requirements:** Use this item to specify, e.g. vision panels, personnel doors.

### 530

This type of door has two or more wide leaves hinged together with one leaf side hung to the door frame. The leaves are guided by horizontal tracks. Use clause 540 to specify sliding folding doors, partitions or walls for internal applications.

Doors of this type are custom made. The maximum sizes available will vary with the manufacturer, and are typically:

- Single doors: 12 m wide x 8 m high.
  - Biparting doors: 24 m wide x 8 m high.
- Larger sizes are possible where bottom rolling doors are used.

**Clause heading:** Insert, e.g. *TO SERVICE BAY*

**Performance:** Insert specific requirements for fire resistance, wind resistance, thermal insulation, acoustic control, etc. where not evident from the product reference.

For guidance on specifying fire resisting/ smoke control doors see general guidance 1 and clause 115.

**Arrangement:** State, e.g. whether top hung, side hung or bottom rolling; one way bunching or biparting opening; face fixed to inside of opening or mounted in reveal.

– **Track system:** Give details of hangers/ rollers where options are available. On power operated doors an auxiliary top track is required to allow the panels to fold correctly.

**Door leaf:** Give brief construction details where the product reference is not definitive.

– **Finish as delivered:** Select from manufacturer's options.

Specify site painting in section M60.

**Operation:** Doors may be manual or power operated. Include here details of operational and safety controls/ devices, e.g. safety edges, photosensors.

**Ironmongery:** List here items supplied as part of the assembly. Specify items to be supplied from other sources in section P21, in a schedule, or on drawings.

**Other requirements:** Use this item to specify, e.g. vision panels, personnel doors.

### 535

A folding shutter door comprises a panel of multiple pairs of vertical leaves, continuously hinged and mounted to a collapsible frame of vertical posts latticed to provide a constant horizontal movement. This type of door is especially suitable for large openings. The concertina form of the door gives it exceptional resistance to wind loading when in the closed position. They are also used for landing and car doors in goods/ service lifts.

Typical maximum sizes of single leaf doors are:

- Manually operated doors: 7 m high x 7 m wide.
- Power operated doors: 15 m high x 18 m wide.

Wider openings are possible using a biparting arrangement.

**Clause heading:** Insert, e.g. *TO WAREHOUSE*

**Performance:** Insert specific requirements for fire resistance, wind resistance, thermal insulation, acoustic control, etc. where not evident from the product reference.

Fire resistance of up to 240 minutes is possible. For guidance on specifying fire resisting/ smoke control doors see general guidance 1 and clause 115.

**Arrangement:** State, e.g. whether one way bunching or biparting opening; face fixed to inside of opening or mounted in the reveal.

– **Track system:** Give details of hangers/ guides where options are available. The weight of the door is generally carried by a box section top track. The door bottom guides run in a channel or similar section set into the floor. Sump boxes can be fitted to assist removal of debris.

**Door leaf:** Give brief construction details where the product reference is not definitive. Individual leaves connected to the door frame are normally available in three widths – 152 mm, 229 mm and 305 mm. The larger widths are mostly used in the construction of industrial doors over 3 m high. 152 mm wide strips are generally

### 530 SLIDING FOLDING EXTERNAL DOORS . . . . .

- Manufacturer: . . . . .
- Product reference: . . . . .
- Performance: . . . . .
- Arrangement: . . . . .
- Track system: . . . . .
- Door leaf: . . . . .
- Finish as delivered: . . . . .
- Operation: . . . . .
- Ironmongery: . . . . .
- Other requirements: . . . . .

### 535 SLIDING FOLDING SHUTTER DOORS . . . . .

- Manufacturer: . . . . .
- Product reference: . . . . .
- Performance: . . . . .
- Arrangement: . . . . .
- Track system: . . . . .
- Door leaf: . . . . .
- Finish as delivered: . . . . .
- Operation: . . . . .
- Ironmongery: . . . . .
- Other requirements: . . . . .

used for internal commercial applications in door leaves less than 3 m high.

Leaves may be galvanized steel, stainless steel, or aluminium. They can be perforated or louvred for ventilation, or provided with vision panels glazed with toughened glass.

– **Finish as delivered:** Select from manufacturer's options.

Specify site painting in section M60.

**Operation:** Doors may be manual or power operated. Include here details of operational and safety controls/ devices, e.g. constant pressure button control, fire/ emergency release mechanisms.

**Ironmongery:** List here items supplied as part of the assembly. Specify items to be supplied from other sources in section P21, in a schedule, or on drawings.

**Other requirements:** Use this item to specify, e.g. vision panels, personnel doors, protective canopies.

#### 540

Use this clause for internal, concertina style doors or room dividers comprising either a pantographic frame faced with flexible material (usually heavy duty vinyl), or solid panels hinged or linked together. Use clause 545 for individual panel stacking systems.

**Clause heading:** Complete the clause heading by inserting either *DOORS* or *PARTITIONS* or *WALLS* together with a location if desired.

**Performance:** Insert specific requirements for fire resistance, acoustic control, etc. where not covered by product reference.

**Arrangement:** State, e.g. whether one way bunching or biparting opening.

– **Track system:** Give details of hangers/ rollers/ guides where options are available.

**Door leaf:** Give brief construction details where the product reference is not definitive. They may be constructed as solid panels, e.g. from MDF with a veneered or vinyl facing, or they may have a skeletal framework of scissor hinges and connecting rods with a fabric backed vinyl covering. In some cases the panels form a flat surface when the door is in the closed position.

– **Finish as delivered:** Select from manufacturer's options.

**Ironmongery:** List here items supplied as part of the assembly. Specify items to be supplied from other sources in section P21, in a schedule, or on drawings.

**Other requirements:** Use this item to specify, e.g. vision panels, pass doors.

#### 545

Also referred to as moveable or operable walls, these systems comprise individual panels suspended from one or two points, depending on the choice of stacking position. (Use clause 540 for systems where the panels are hinged or linked together). A bottom track is not required, the panels being 'locked' into position by extendable pressure seals at the top and bottom.

Panels up to 16 m high are available, with a large range of face finishes, acoustic ratings and stacking positions. The large acoustic panels are heavy and this should be allowed for in the structural design.

**Clause heading:** Insert, e.g. *TO STUDIO 4*

**Performance:** Insert specific requirements for fire resistance, acoustic control, etc. where not covered by product reference.

**Arrangement:** State, e.g. whether one way bunching or biparting opening.

– **Track system:** Give details of tracks/ hangers/ pressure seals where options are available.

**Door leaf:** Give brief construction details where the product reference is not definitive.

– **Finish as delivered:** Select from manufacturer's options.

**Ironmongery:** List here items supplied as part of the assembly. Specify items to be supplied from other sources in section P21, in a schedule, or on drawings.

**Other requirements:** Use this item to specify, e.g. vision panels, pass doors.

#### 540 SLIDING FOLDING . . . . .

- Manufacturer: . . . . .
  - Product reference: . . . . .
- Performance: . . . . .
- Arrangement: . . . . .
  - Track system: . . . . .
- Door leaf: . . . . .
  - Finish as delivered: . . . . .
- Ironmongery: . . . . .
- Other requirements: . . . . .

#### 545 SLIDING STACKING PANEL PARTITIONS . . . . .

- Manufacturer: . . . . .
  - Product reference: . . . . .
- Performance: . . . . .
- Arrangement: . . . . .
  - Track system: . . . . .
- Door leaf: . . . . .
  - Finish as delivered: . . . . .
- Ironmongery: . . . . .
- Other requirements: . . . . .



550

Sometimes described as 'crash doors', these doors are made from rubber, pvc, clear polycarbonate or a combination, in various material thicknesses. The type of traffic likely to pass through the door should be carefully assessed to ensure that a suitable door material and arrangement is specified.

Being smooth, seamless and washable, they can be used in situations where hygiene is important. Options include reinforcement studs/ strips and vision panels.

Double doors up to 3 x 3 m are obtainable, and some manufacturers may offer larger sizes.

**Clause heading:** Insert, e.g. *TO COLD STORE*

**Performance:** Insert specific requirements, e.g. for surface spread of flame resistance, wind resistance, etc. where not covered by product reference.

**Arrangement:** State, e.g. whether soffit fixed or jamb fixed.

**Operation:** Flexible doors can be modified to operate automatically, but only in one direction – although such doors are generally able to swing in both directions manually. They can be automated either pneumatically or electrically. The direction of swing must be specified. Give details of activation method, e.g. push button, photobeam, radar.

560

Strip curtains provide a simple and cost effective method of reducing heat transfer through an opening (internal or external) where control of the environment is desirable, while at the same time allowing good visibility and easy movement through. They can also be used as dust, spray or fume barriers.

**Clause heading:** Insert, e.g. *TO WELDING BOOTH*

**Arrangement:** Curtains can be face fitted across an opening or into the reveal. They are frequently fitted, on secondary steelwork, behind roller shutters or sectional overhead doors.

– **Hanging system:** In the standard method, stainless steel clamp plates riveted to the top of each PVC strip are fitted over hooks on a stainless steel angle section. The strips are easily removed for replacement or when not required, e.g. during warm weather. Other methods of hanging include bolt on systems where the strips are clamped between two metal plates, and sliding tracks systems where the curtain can be slid aside when not required.

– **Overlap:** The strips can be fitted with no overlap, partially overlapped or fully overlapped, to suit, e.g. traffic and weather conditions.

**Strips:** Various grades of PVC are available, including:

- Welding – cuts out UV radiation associated with welding.
- Polar – remains flexible at temperatures as low as -40°C.
- Self extinguishing – does not support combustion in normal or oxygen rich (up to 30% oxygen) atmospheres.

Some grades are available with raised ribbing on both faces, which gives greater strength and scratch resistance.

– **Size:** Common strip sizes are 200 mm x 2 mm, 300 mm x 3 mm and 400 mm x 4 mm. Narrow strips are generally used for internal pedestrian or light traffic applications. The wider, thicker strips are used, internally and externally, for larger openings, usually for industrial or commercial applications.

570

Use this clause for flexible rapid roll and rapid fold doors for internal or external applications.

The high operating speeds of this type of door minimize heat loss (or gain) in environments where this is important, while optimising traffic flow. Typical opening speeds are between 0.8 m/s and 3 m/s. Closing speeds are generally half the opening speed.

**Clause heading:** Complete the heading with the location, if desired.

**Type:** Insert either *Roll up* or *Fold up*.

**Arrangement:** Doors can be face fitted across an opening or into the reveal. They are frequently fitted behind roller shutters or sectional overhead doors.

**Curtain:** A range of materials is used, including canvas, woven polyester and PVC. Specify colour where options are available.

**Frame/ Guides:** Various methods are used to keep the curtain taut. Stainless steel fittings are recommended for food processing areas.

**Operation:** Options include push button, pull cord, remote control, movement sensor and induction loop. ➔

550 FLEXIBLE DOORS . . . . .

- Manufacturer: . . . . .
- Product reference: . . . . .
- Performance: . . . . .
- Arrangement: . . . . .
- Door leaf: . . . . .
- Colour: . . . . .
- Frame: . . . . .
- Finish as delivered: . . . . .
- Operation: . . . . .

560 PVC STRIP CURTAINS . . . . .

- Manufacturer: . . . . .
- Product reference: . . . . .
- Arrangement: . . . . .
- Hanging system: . . . . .
- Overlap: . . . . .
- Strips: . . . . .
- Size: . . . . .
- Colour: . . . . .

570 HIGH SPEED DOORS . . . . .

- Manufacturer: . . . . .
- Product reference: . . . . .
- Type: . . . . .
- Arrangement: . . . . .
- Curtain: . . . . .
- Frame/ Guides: . . . . .
- Finish as delivered: . . . . .
- Operation: . . . . .
- Other requirements: . . . . .

**Other requirements:** Use this item to specify, e.g. vision panels, hoods, motor covers.

## 610

Use this clause for shutters made from solid or perforated laths. Specify roller grilles made from links using clause 612.

Roller shutters are suitable for a range of applications including entrances to industrial/ commercial premises, shop front protection, internal separation/ compartmentation (e.g. hatches, escalator closures).

**Clause heading:** Insert. e.g. *TO WORKSHOP*

**Performance:** Insert specific requirements for fire resistance, wind resistance, thermal insulation, acoustic control, etc. where not evident from the product reference.

Fire resistance of up to 240 minutes is possible. For guidance on specifying fire resisting/ smoke control doors see general guidance 1 and clause 115.

**Arrangement:** Doors can operate vertically, laterally or horizontally. Laterally operating doors are useful where curves or corners need to be negotiated. Horizontal shutters are used to close off escalators, stairwells, lightwells, etc. The doors can be face fixed across the opening or mounted in the reveal.

**Shutter curtain:** Shutter laths are made from galvanized or stainless steel, aluminium, wood, GRP and PVC. They may be flat or curved, and can be perforated for ventilation or vision.

**Operation:** Lateral and horizontal shutters are normally power operated. Options for vertical shutters are:

- Self coiling, push up/ pull down (spring assisted). Doors over 2.5 m x 2.5 m should be chain or electrically operated.
- Chain operated. Suitable for infrequent use for openings up to 5 m x 5 m.
- Electrically operated. Suitable for large openings and frequent use. 230v single phase tubular motors are generally used for small doors. 400v three phase geared motors are used for large/ frequently used doors.

Control options for electrically operated shutters include constant pressure button, key switch, remote control (radio or loop detection).

**Ironmongery:** List here items supplied as part of the assembly, e.g. lifting handles, locks, shootbolts. Where these are required for electrically powered doors, suitable interlocking must be provided.

Weatherstripping not supplied with the door should be specified in section P21, in a schedule, or on drawings.

**Other requirements:** Use this item to specify, e.g. vision panels, pass doors.

## 612

Use this clause for grilles made from links. Specify shutters made from solid or perforated laths using clause 610.

Open grilles are often preferred where surveillance or viewing is required with security, e.g. in shopping malls, car park entrances, server counters.

**Clause heading:** Insert. e.g. *TO SHOP ENTRANCE*

**Arrangement:** Most grilles are constructed for vertical operation, but some curtain designs are suitable for lateral operation. Grilles can be face fixed across the opening or mounted in the reveal.

**Grille curtain/ Frames/ Guides:** A range of materials, grades and designs may be offered. Steel, stainless steel, aluminium, PVC and nylon are commonly used. Give brief construction details where the product reference is not definitive.

**Operation:** Select manual or power operation. Control options for electrically operated grilles include constant pressure button, key switch, remote control.

**Ironmongery:** List here items supplied as part of the assembly, e.g. lifting handles, locks, shootbolts. Where these are required for electrically powered doors, suitable interlocking must be provided.

**Other requirements:** Use this item to specify, e.g. a coil casing.

## 610 ROLLER SHUTTERS . . . . .

- Manufacturer: . . . . .
  - Product reference: . . . . .
- Performance: . . . . .
- Arrangement: . . . . .
- Shutter curtain: . . . . .
  - Finish as delivered: . . . . .
- Frame/ Guides: . . . . .
  - Finish as delivered: . . . . .
- Operation: . . . . .
- Ironmongery: . . . . .
- Other requirements: . . . . .

## 612 ROLLER GRILLES . . . . .

- Manufacturer: . . . . .
  - Product reference: . . . . .
- Arrangement: . . . . .
- Grille curtain: . . . . .
  - Finish as delivered: . . . . .
- Frame/ Guides: . . . . .
  - Finish as delivered: . . . . .
- Operation: . . . . .
- Ironmongery: . . . . .
- Other requirements: . . . . .

615

Suitable for a wide range of industrial and commercial applications.

**Clause heading:** Insert. e.g. *TO FIRE APPLIANCE BAY*

**Performance:** Insert specific requirements for fire resistance, wind resistance, thermal insulation, etc. where not evident from the product reference.

**Arrangement:** Various stacking configurations are available, and the system can be designed to suit the building shape and construction. For example, tracks can follow the angle of the roof, or can be raised to clear obstacles such as overhead crane beams. Sectional door panels are normally hinged together. One variation on this is where each panel is individually suspended from chains protected by side tracks. In the open position the panels stack one behind another along a short track system mounted behind the lintel. This may be advantageous where overhead space is limited.

**Door panels:** These are usually double skinned steel or aluminium, profiled for strength, with an insulating core. They can be fully glazed. Give brief construction details where the product reference is not definitive.

**Operation:** Options include:

- Manual operation by pull cord. Normally restricted to doors up to 3 m x 3 m.
- Manual operation by chain hoist.
- Electrical operation. Control options include constant pressure button, key switch, remote control (radio or loop detection).

**Ironmongery:** List here items supplied as part of the assembly, e.g. lifting handles, locks, shootbolts. Where these are required for electrically powered doors, suitable interlocking must be provided. Weatherstripping not supplied with the door should be specified in section P21, in a schedule, or on drawings.

**Other requirements:** Use this item to specify, e.g. pass doors, traffic lights.

617

The main components of a loading bay system are the loading bay door, dock leveller, and dock shelter (retractable) or loading house.

**Loading bay door:** See guidance to clause 615 for help in completing inserts.

– **Operation:** The door must be interlocked with the dock leveller to prevent operation of the door while the leveller is raised, or use of the leveller while the door is closed.

**Dock leveller:** This is a platform that takes up the difference in height between the building and the docked vehicle. They are usually electrohydraulically operated, although mechanical systems are available. The lip can be fixed length or telescopic. Heavy duty rubber buffers are required for all installations.

Complete inserts by reference to manufacturer's technical data sheets.

**Dock shelter/ Load house:** These primarily seal the gap between the building and the vehicle. They may be retractable or permanent, insulated or uninsulated. Seals are formed using reinforced rubber or PVC flaps, fabric covered foam pads, or inflatable cushions.

Give brief details of construction and any optional requirements, e.g. rain channels, wheel guides.

620

These are custom made to suit the opening. Products can be tested to Loss Prevention Standard LPS 1175, giving a range of security ratings – see general guidance 2.

**Clause heading:** Insert. e.g. *ACROSS SHOPPING MALL*

**Arrangement:** Gates can be top hung or bottom rolling, usually with the option of being hinged aside to give clear access across the full opening width.

**Gate leaf:** Give brief construction details where the product reference is not definitive.

**Ironmongery:** List here items supplied as part of the assembly, e.g. locks, shootbolts.

**Fixing:** Manufacturers' fixing recommendations should be followed to ensure that specified security ratings are achieved. ➔

615 SECTIONAL OVERHEAD DOORS . . . . .

- Manufacturer: . . . . .
  - Product reference: . . . . .
- Performance: . . . . .
- Arrangement: . . . . .
  - Track system: . . . . .
- Door panels: . . . . .
  - Finish as delivered: . . . . .
- Operation: . . . . .
- Ironmongery: . . . . .
- Other requirements: . . . . .

617 LOADING BAY DOOR AND DOCKING SYSTEM

- Manufacturer: . . . . .
- Loading bay door:
  - Manufacturer's reference: . . . . .
  - Performance: . . . . .
  - Arrangement: . . . . .
    - Track system: . . . . .
  - Door panels: . . . . .
    - Finish as delivered: . . . . .
  - Operation: . . . . .
  - Ironmongery: . . . . .
  - Other requirements: . . . . .
- Dock leveller:
  - Standard: To BS EN 1398.
  - Manufacturer's reference: . . . . .
  - Type: . . . . .
  - Platform size: . . . . .
  - Gradient length: . . . . .
  - Single axle load capacity: . . . . .
  - Colour: . . . . .
  - Buffers: . . . . .
  - Other requirements: . . . . .
- Dock shelter/ Load house:
  - Manufacturer's reference: . . . . .
  - Construction: . . . . .
  - Other requirements: . . . . .

620 COLLAPSIBLE GATES/ GRILLES . . . . .

- Manufacturer: . . . . .
  - Product reference: . . . . .
- Arrangement: . . . . .
- Gate leaf: . . . . .
  - Finish as delivered: . . . . .
- Ironmongery: . . . . .
- Fixing: . . . . .
- Other requirements: . . . . .

**Other requirements:** Use this item to specify, e.g. plated leading edge for strength and security, floating gates (top hung only).

630

Standard sizes are obtainable and special designs are available for large openings. Doors may be flush, or recessed to accept wall, floor or ceiling finishes.

Horizontal access hatches are available with rise up or drop down doors. Rise up doors should be fitted with a hold open arm, and larger doors may be spring assisted and counterbalanced.

**Clause heading:** Insert, e.g. *TO LOFT*

**Blank bullet item:** Insert descriptions of requirements under appropriate headings, e.g. *Finish: Recessed to accept ceiling tile.*

680

Usually for domestic scale situations, these are available in wood, steel, aluminium and GRP. Sizes are from 1.98 to 2.4 m high, 1.98 to 5.5 m wide. The larger sizes are usually electrically operated.

**Type:** Insert, e.g.

*One piece canopy up and over.*

*One piece fully retracting.*

**Operation:** State whether manual or power operated (constant pressure button or remote control), and specify any safety features required.

**Other requirements:** Use this item to specify, e.g. louvres, vision panels, weatherstripping.

730

Specify priming and sealing in section M60.

740

In external or damp locations, copper alloys should not be in direct contact with aluminium, iron, steel or zinc (including galvanizing), and aluminium alloys should not be in direct contact with:

- Timber treated with copper, zinc or mercury based preservatives.
- Oak, sweet chestnut, Douglas fir and western red cedar, unless well seasoned.
- Iron and steel unless galvanized.
- Copper or copper alloys and rainwater that has run over them.
- Concrete, mortar, plasters or soil, especially when embedded.
- Paints containing copper or mercury based fungicides, graphite or lead.
- Lead and stainless steel in heavily polluted atmospheres.

Anodizing will not protect the alloy when in contact with the above materials. Aluminium is not affected by contact with zinc or cadmium but contact will accelerate their rate of corrosion. For additional information about the protection of aluminium against corrosion see BS 8118-2.

760

If the contractor is permitted to build in components ensure that clause F30/830 is included in the specification, if appropriate.

780

Where components are not to be built in it is highly desirable that templates are used – see clause F30/840.

630 HATCHES . . . . .

- Manufacturer: . . . . .
- Product reference: . . . . .
- . . . . .

680 UP AND OVER GARAGE DOORS

- Manufacturer: . . . . .
- Product reference: . . . . .
- Type: . . . . .
- Finish as delivered: . . . . .
- Operation: . . . . .
- Other requirements: . . . . .

## EXECUTION

710 PROTECTION OF COMPONENTS

- General: Do not deliver to site components that cannot be installed immediately or placed in clean, dry, floored and covered storage.
- Stored components: Stacked on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

730 PRIMING/ SEALING

- Wood surfaces inaccessible after installation: Primed or sealed as specified before fixing components.

740 CORROSION PROTECTION

- Surfaces to be protected: . . . . .
- Protective coating: Two coats of bitumen solution to BS 6949 or an approved mastic impregnated tape.
- Timing of application: Before fixing components.

750 FIXING DOORSETS

- Timing: After associated rooms have been made weathertight and the work of wet trades is finished and dried out.

760 BUILDING IN

- General: Not permitted unless indicated on drawings.

770 DAMP PROOF COURSES ASSOCIATED WITH BUILT IN WOOD FRAMES

- Method of fixing: To backs of frames using galvanized clout nails.

780 DAMP PROOF COURSES IN PREPARED OPENINGS

- Location: Correctly positioned in relation to door frames. Do not displace during fixing operations.

## 790

Fixing centres should ideally be specified or shown on drawings but this clause may be used where the number of component types is limited and where the specifier considers it reasonable to generalize.

## 809, 810

Clauses 809 and 810 are alternatives.

The specification of certified products installed by a third party accredited firm (clause 809) should ensure that doorsets, or doors and separate frames, are installed correctly with compatible components. The installation instructions give frame to wall details and specify sealing requirements.

Use clause 810 where fire doors are to be fitted by other than an accredited installer. Given the severe consequences of incorrect installation, it may be prudent to use clause 809 for all but very small projects with only one or two fire doors.

**Gap between frames and supporting construction (clause 810):**

There is often a gap between the back of a frame and the reveal into which it is fitted. This gap should be within tolerances set by the door/ doorset manufacturer.

## 820

Oil based sealants are commonly specified and are usually adequate when of good quality. However, they are not suitable for use with PVC-U components or wood finished with microporous paints.

Solvent based acrylic sealants are especially suitable for refurbishment work since they will adhere to surfaces that are difficult to clean. Water based acrylics may be used externally if early exposure to rain is avoided. Where weather conditions are severe high grade sealants such as polysulfides and silicones should be used.

BS 6213 and BRE Information Paper 25/81 give guidance on types of joint sealant, their selection and application. See also CIRIA publication 'Sealant joints in the external envelope of buildings' and NBS section Z22.

Where the joint is deep in comparison to its width a backing strip should be used to fill the inner portion of the joint leaving the correct joint depth to accommodate the sealant. The sealant should have a minimum depth of 6 mm. The locations of backing strips should be shown on drawings if they are not required for all joints.

Mastic sealants are not recommended for vertical joints between wood frames and the adjacent reveals: there is a risk that any moisture penetrating behind the seal may be trapped at the back of the frame and absorbed into the wood.

An alternative method, recommended by TRADA, is to replace the sealant with a precompressed impregnated foam tape. The tape expands to fill the joint, forming a waterproof but vapour permeable seal. A minimum 5 mm gap is generally required for such tapes. They can be concealed using a cover bead if desired.

## 830, 840

Ironmongery supplied separately, usually for fixing on site, should be specified in section P21.

Overcutting of mortices can adversely affect the performance of fire resisting doors. If this occurs, the door leaf manufacturers advice should be sought.

Greater care is required in fixing ironmongery than with most other joinery operations, to avoid damage to either the hardware or the door leaf or frame, as even minor scratches can mar the finished appearance. Factory fixing of ironmongery is likely to avoid many of these problems, although protection is still essential.

## 790 FIXING OF WOOD FRAMES

- Spacing of fixings (frames not predrilled): Maximum 150 mm from ends of each jamb and at 600 mm maximum centres.

## 800 FIXING OF LOOSE THRESHOLDS

- Spacing of fixings: Maximum 150 mm from each end and at 600 mm maximum centres.

## 809 FIRE RESISTING/ SMOKE CONTROL DOORS/ DOORSETS

- Installation: By a firm currently registered under a third party accredited fire door installer scheme in accordance with instructions supplied with the product conformity certificate, test report or engineering assessment.

## 810 FIRE RESISTING/ SMOKE CONTROL DOORS/ DOORSETS

- Gaps between frames and supporting construction: Filled as necessary in accordance with requirements for certification and/ or door/ doorset manufacturer's instructions.

## 820 SEALANT JOINTS

- Sealant:
  - Manufacturer: . . . . .
  - Product reference: . . . . .
  - Colour: . . . . .
  - Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.

## 830 FIXING IRONMONGERY GENERALLY

- Fasteners: Supplied by ironmongery manufacturer.
  - Finish/ Corrosion resistance: To match ironmongery.
- Holes for components: No larger than required for satisfactory fit/ operation.
- Adjacent surfaces: Undamaged.
- Moving parts: Adjusted, lubricated and functioning correctly at completion.

## 840 FIXING IRONMONGERY TO FIRE RESISTING DOOR ASSEMBLIES

- General: All items fixed in accordance with door leaf manufacturer's recommendations ensuring that integrity of the assembly, as established by testing, is not compromised.
- Holes for through fixings and components: Accurately cut.
  - Clearances: Not more than 8 mm unless protected by intumescent paste or similar.
- Lock/ Latch cases for fire doors requiring  $\geq 60$  minutes integrity performance: Coated with intumescent paint or paste before installation.

850

See section P21, general guidance 2 and guidance to clauses P21/310, 315 and 320. Insert either *on centre line of door leaf* or *with centre line 250 mm below centre line of top hinge*.

## 850 LOCATION OF HINGES

- Primary hinges: Where not specified otherwise, positioned with centre lines 250 mm from top and bottom of door leaf.
- Third hinge: Where specified, positioned . . . . .
- Hinges for fire resisting doors: Positioned in accordance with door leaf manufacturer's recommendations.

## 860 INSTALLATION OF EMERGENCY EXIT DEVICES

- Standard: Unless specified otherwise, install panic bolts/ latches in accordance with BS EN 1125.