L20Doors/ Shutters/ Hatches

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.

Contents

Reference documents

For a list of documents cited in NBS, refer to the 'Consolidated list of reference documents' in the first binder of your service.

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 citied in this section include:
- BRE Global Limited
- British Standards Institution (BSI)
- Building Research Establishment (BRE)
- Construction Industry Research and Information Association (CIRIA)
- Door and Hardware Federation (DHF)
- Intumescent Fire Seals Association (IFSA)
- National House Building Council (NHBC)
- National Standards Authority of Ireland (NSAI)
- RIBA Publishing (RIBA)
- Timber Research and Development Association (TRADA)
- Warrington Fire Research Certification (WFRC)
- Wood Protection Association (WPA)

BRITISH STANDARDS INSTITUTION (BSI)
BS 459 Specification for matchboarded wooden door leaves for external use [1988 +AMD 8737]

BS 476-22 Fire tests on building materials and structures. Methods for determination of the fire resistance of non-loadbearing elements of construction [1987]

BS 476-31 Fire tests on building materials and structures. Methods for measuring smoke penetration through doorsets and shutter assemblies

BS 476-31.1 Fire tests on building materials and structures. Methods for measuring smoke penetration through doorsets and shutter assemblies. Method of measurement under ambient temperature conditions [1983 +AMD 8366]

BS 3987 Specification for anodic oxidation coatings on wrought aluminium for external architectural applications [1991 +AMD 10944]

BS 4787-1 Internal and external wood doorsets, door leaves and frames. Specification for dimensional requirements [1980 +AMD 4737, AMD 8721, AMD 8963]

BS 4800 Schedule of paint colours for building purposes [2011] (The 1989 version still cited in Building Regulations)

BS 5252 Framework for colour co-ordination for building purposes [1976]

BS 5357 Code of practice for installation and application of security glazing [2007]

BS 6180 Barriers in and about buildings. Code of practice [2011]

BS 6206 Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings [1981 + AMD 4580, AMD 5189, AMD 7589, AMD 8693] (partially replaced by BS EN 12600, but remains current as cited in Building Regulations)

BS 6213 Selection of construction sealants. Guide [2000 + A1 2010]

BS 6262-1 Glazing for buildings. General methodology for the selection of glazing [2005]

BS 6262-2 Glazing for buildings. Code of practice for energy, light and sound [2005]

BS 6262-3 Glazing for buildings. Code of practice for fire, security and wind loading [2005]

BS 6262-4 Glazing for buildings. Code of practice for safety related to human impact [2005]

BS 6262-6 Glazing for buildings. Code of practice for special applications [2005]

BS 6262-7 Glazing for buildings. Code of practice for the provision of information [2005]

BS 6496 Specification for powder organic coatings for application and stoving to aluminium alloy extrusions, sheet and preformed sections for external architectural purposes, and for the finish on aluminium alloy extrusions, sheet and preformed sections coated with powder organic coatings [1984 +AMD 7182]

BS 6949 Specification for bitumen-based coatings for cold application excluding use in contact with potable water [1991 + AMD 7287]

BS 7036-1 Code of practice for safety at powered doors for pedestrian use. General [1996]

BS 7036-2 Code of practice for safety at powered doors for pedestrian use. Straight and curved sliding doors and prismatic and folding doors [1996 + AMD 9375]

BS 7036-3 Code of practice for safety at powered doors for pedestrian use. Swing doors and balanced doors [1996]

BS 7036-4 Code of practice for safety at powered doors for pedestrian use. Low energy swing doors [1996]

BS 7036-5 Code of practice for safety at powered doors for pedestrian use. Revolving doors [1996]

BS 7956 Specification for primers for woodwork [2000]

BS 8214 Code of practice for fire door assemblies [2008]

BS 8220-1 Guide for security of buildings against crime. Dwellings [2000]

BS 8220-2 Guide for security of buildings against crime. Offices and shops [1995]

BS 8220-3 Guide for security of buildings against crime. Storage, industrial and distribution premises [2004]

BS 8233 Sound insulation and noise reduction for buildings. Code of practice [1999]

BS 8300 Design of buildings and their approaches to meet the needs of disabled people. Code of practice [2009 + A1 2010]

BS 9999 Code of practice for fire safety in the design, management and use of buildings [2008]

BS EN 204 Classification of thermoplastic wood adhesives for non-structural applications [2001]

BS EN 301 Adhesives, phenolic and aminoplastic, for load-bearing timber structures: classification and performance requirements [2006]

BS EN 314-2 Plywood. Bonding quality. Requirements [1993]

BS EN 942 Timber in joinery. General requirements [2007]

BS EN 1063 Glass in building. Security glazing. Testing and classification of resistance against bullet attack [2000]

BS EN 1125 Building hardware. Panic exit devices operated by a horizontal bar. Requirements and test methods [2008]

BS EN 1398 Dock levellers [2009]

BS EN 1522 Windows, doors, shutters and blinds. Bullet resistance. Requirements and classification [1999]

BS EN 1634-1 Fire resistance and smoke control tests for door and shutter assemblies. Fire doors and shutters [2000 – withdrawn, but cited in Building Regulations (E&W)]

BS EN 1634-1 Fire resistance and smoke control tests for door and shutter, openable window assemblies and elements of

building hardware. Fire resistance tests for doors, shutters and openable windows [2008]

BS EN 1634-3 Fire resistance and smoke control tests for door and shutter, openable window assemblies and elements of building hardware. Smoke control test for door and shutter assemblies [2004 + AMD 17090]

BS EN 1935 Building hardware. Single-axis hinges. Requirements and test methods [2002 + AMD 15315]

BS EN 1999-1-1 Eurocode 9. Design of aluminium structures. Part 1-1 General structural rules[2007 + A1 2009]

BS EN 12101-1 Smoke and heat control systems. Specification for smoke barriers (incorporating corrigendum November 2009) (2005 (+A1:2006))

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BS EN 14351-1 Windows and doors. Product standard, performance characteristics. Windows and external pedestrian doorsets without resistance to fire and/or smoke leakage characteristics [2004 + AMD A1 2010]

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PAS 24 Enhanced security performance requirements for door assemblies. Single and double leaf, hinged external door assemblies to dwellings [2007 +A2:2011]

BUILDING RESEARCH ESTABLISHMENT (BRE)
Digest:
429 Timbers: their natural durability and resistance to preservative treatment [1998]
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01/05 Impact test standards for glass: comparison of BS 6206 and BS EN 12600 (2005)
16/81 The weatherstripping of windows and doors [1981]
25/81 The selection and performance of sealants [1981]
Report:
334 Automatic doors and windows for use by elderly and disabled people: a specification guide [1997]

BUILDING RESEARCH ESTABLISHMENT GLOBAL LIMITED
Loss Prevention Standard (downloadable from www.brecertification.co.uk/standards.jsp):
LPS 1175 Requirements and testing procedures for the LPCB approval and listing of burglary resistant building components, strongpoints and security enclosures and free-standing barriers [Issue 7, June 2010]
Publication:
LPCB (Loss Prevention Certification Board) Red book Volume 2: List of approved products and services. A specifier's guide [2011]

CONSTRUCTION INDUSTRY RESEARCH AND INFORMATION ASSOCIATION (CIRIA)
Report 178 Sealant joints in the external envelope of buildings: A guide to design, specification and construction [1998

DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT (DCLG)
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DOOR AND HARDWARE FEDERATION (DHF)
CP 101/2 Code of practice for fire resisting metal doorsets (down loadable from www.dhfonline.org.uk) [2008]

INTUMESCENT FIRE SEALS ASSOCIATION (IFSA)
Technical information sheets:
1 The role of intumescent materials in the design and manufacture of timber based fire resisting doorsets [2009]
3 Guide to the use of smoke seals in doorsets [2009]

NATIONAL HOUSE BUILDING COUNCIL (NHBC)
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NATIONAL STANDARDS AUTHORITY OF IRELAND (NSAI)
IS EN 1634-1 Fire resistance and smoke control tests for door and shutter assemblies. Fire doors and shutters [2000 – withdrawn, but cited in Building Regulations (IRL)]

IS EN 1634-3 Fire resistance and smoke control tests for door and shutter, openable window assemblies and elements of building hardware. Smoke control test for door and shutter assemblies [2004 + AMD 17090]

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Accessible sports facilities [2010]

TIMBER RESEARCH AND DEVELOPMENT ASSOCIATION (TRADA)
Technology Report 1/2002 Timber fire resisting doorsets: maintaining performance under the new European test standard [2002]
Wood Information Section 1, Sheet:
13 Performance of fire resisting doorsets [2005]
32 Fire resisting doorsets by upgrading [2005]

WARRINGTON FIRE RESEARCH CERTIFICATION
CERTIFIRE Register of approved products
Fire Installers Registration and Accreditation Scheme (FIRAS)
Register of accredited installers and list of distributors of passive fire protection products [On-line searchable databases]
(Both registers can be searched on the Warrington Fire Research website www.wfrc.co.uk)

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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 (in particular BS 9999) deal with fire precautions, and compliance with some or all of their recommendations is mandatory in the whole of the UK and Ireland.

Both BS 9999 and the Building Regulations set performance levels for integrity of doors when tested to BS 476-22 or to harmonized European standards:

- BS EN 1634-1 (IS EN 1634-1 in IRL) for fire doors, shutters and openable windows. Building Regulations (E&W, IRL) refer to the withdrawn 2000 versions of the standard.
- BS EN 1634-3 (IS EN 1634-3 in IRL) for smoke control doors.

See also RIBA publication 'Approved Document B: Fire safety (volume 2) – Buildings other than dwelling houses. Incorporating insurers' requirements for property protection' for additional recommendations or requirements.

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'.

Under BS 9999, and using BS 476-22 testing, fire doors are designated 'FD' followed by the required performance (in minutes) for integrity, e.g. 'FD 30'. All nonmetallic door assembles 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.

Fire doors tested to European standards are classified in accordance with BS EN 13501-2. In the European standards, integrity is denoted by the letter 'E', e.g. 'E 30'; insulation is denoted by the letter 'I'. See BS EN 13501-2, clauses 5.2.2 and 5.2.3 for depth on interrelationships of these performance characteristics.

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, volume 1, Appendix B, table B1, and volume 2 Appendix B, table B1.
- **IRL** Technical Document B, Appendix B, table B1.
- **NI** Technical Booklet E, Section 3, table 3.5.
- **Scot** Technical Handbook 2, Section 2, Domestic or Non-domestic

Such doors, when successfully tested to BS 476-31.1, have the suffix 'S' added to the designation, e.g. 'FD 60S'. The leakage rate around the door leaf or leaves must be no greater than 3 m^3/m.hour (at head and jambs only) when tested at 25 Pa. Alternatively, the door should meet the additional classification requirement of S_a 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.
- DHF 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.

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.
- BRE Global (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.

Loss Prevention Certification Board (LPCB) – a certification brand of BRE Global Limited – approves fire and security products. LPCB Red Book Volume 2 lists approved fire break doors and shutters and gives installation requirements. The Red Book can be searched or downloaded from the BRE Redbook Live 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).

1.4 Non fire door performance

Performance characteristics of manufactured external, non fire resistant doors can be defined using BS EN 14351-1: see Table 2. Classification is determined by initial type testing, and maintained through factory production control.

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 'opportunist' 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 8 according to their ability to withstand attack, security rating 8 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. PAS 24 is a minimum standard under 'Secured by Design'.

Guidance on the security of buildings against crime is also given in BS 8220; see BS 5357 regarding installation and application of security glazing.

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.

2.5 Safety glazing and resistance to human impact

Building Regulations (E&W) Approved Document N makes reference to 'safe breakage'. It cites BS 6206, 'Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings'. This standard has been partially superseded and now only relates to safety plastics. BS EN 12600 now covers testing of glass.

BS EN 12600 uses a three figure alpha numeric code – $\alpha(\beta)\phi$ – to define safety glazing. The code reflects:

– α, breaking strength, 1, 2 or 3, for drop heights of 1200 mm, 450 mm and 190 mm respectively. See BS 6262-4, Table 1 for recommended values for critical locations. The second and third parts of the BS EN 12600 code are not required under BS 6262-4 'Glazing for buildings. Code of Practice for safety related to human impact'.

– β, mode of breakage, A, B or C. Laminated or wired glass has class B characteristics; toughened glass has class C characteristics. (Class A relates to annealed glass and is unsuitable as safety glass, except at greater thicknesses.)

– ϕ, highest drop height, 1, 2 or 3 at which product either does not break, or is contained with a perforation allowance of up to 76 mm diameter.

For example, BS EN 12600 classification for 12 mm toughened glass might be 1C1; 4 mm toughened glass 1C2; wired glass 3B3; 6.8 mm laminated glass 1B1, etc.

BS 6206 is still widely referred to, however. It specifies the impact performance of three classes of safety glass: A (the highest), B and C. It is generally accepted that BS 6206 classes A, B and C equate to BS EN 12600 α breaking strengths 1, 2 and 3 respectively: see BRE IP 1/05.

Code of practice BS 6262-4 gives minimum recommendations for the use of safety glazing with reference to performance classifications in BS 6206 and BS EN 12600. It does so in relation to critical locations, which include doors and adjacent screens; see Table 1 of the code.

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 Accessibility

See BS 8300, section 6 for recommendations relating to doors and inclusive access. Guidance covers arrangement and dimensions of doorways, including side clearance, ease of operation, threshold design, location of vision panels, differentiation of glazing, as well as visual contrast of the door, door frame, leading edge and relevant fittings.

By enabling greater access to and within buildings, greater consideration needs to be given to fire safety for disabled people. General egress or protection of individuals may be assessed through risk profiling; see:

- BS 9999 'Code of practice for fire safety in the design, management and use of buildings', chapter 46 'Evacuation of disabled people'.
- DCLG publication 'Fire safety risk assessment – supplementary guide – means of escape for disabled people'.

6.1 Doors and door fittings

6.1.1 Effective clear widths and side clearances

BS 8300, clause 6.4, Table 2 gives recommendations for effective clear widths of door leaves and side clearances. Depending on direction of approach for wheelchair users, primary leaf minimum effective clear widths should be:

- Existing buildings:
  - 750, 775 or 800 mm for internal doors (depending on direction of approach).
  - 775 mm for external and internal lobby doors for public access.
- New buildings:
  - 800 or 825 mm for internal doors (depending on direction of approach).
  - 1000 mm for external and internal lobby doors for public access.

Door leaves providing 1000 mm clear width may need power assisted opening devices. Minimum widths apply to sliding doors also.

BS 8300, Figure 11 illustrates means of measuring effective clear width, taking into account door stops, projecting door ironmongery and door opening angle. BS 8300, Figure 12 illustrates the side clearance from leading edge of door to return wall, which must be 300 mm minimum, although 450 mm may be preferable to increase manoeuvrability. It may be beneficial to allow clearance on the push side also although automatic doors may obviate this. These recommendations also relate to doors in common areas of blocks of flats.

For sports facilities, see recommendations in Sport England publication 'Accessible sports facilities' as sports wheelchairs require greater clear widths.

6.1.2 Vision panels and glass doors

BS 8300, clause 6.4.3 makes the following recommendations:

- As a minimum, a 100 mm wide zone of visibility should span from 500 to 1500 mm above floor level, with no more than 350 mm aggregate obstruction within the zone. Zones should be located centrally, or offset towards leading edge of door. See BS 8300, Figure 13 for detail of minimum zones of visibility and acceptable vision panel configurations.
- Glass doors should have permanent manifestation within two zones: from 850–1000 mm and 1400–1600 mm above floor level.
- Glass door edges must be apparent (e.g. 25 mm opaque high contrast strip edges both sides of door).

BS 8300 refers to BS 6262-4, which covers the safety of glazing subject to human impact.

6.1.3 Door ironmongery

See also general guidance to section P21.

BS 8300, clause 6.5 recommends the following in relation to door ironmongery for manual operation:

- Opening and closing ironmongery:
  - One handed operation, no grasp or twist required.
  - Select lever action handles where used in conjunction with locks and latches.
  - No pull handles to push side of door.
  - Other fittings or beading should not reduce operability of, or clearance behind, lever handles.
- Controlled door closing devices:
  - Opening force maximum/ limits: 30 N 0° to 30° open; 22.5 N 30° to 60° open, measured at door leading edge.
  - Select considering 'efficiency of closer, resistance from edge seals, hinge friction, latch resistance and differential air pressure'.
  - Backchecks should not offer undue resistance when opening doors to clear width.
  - Devices should only come into effect 0° to 15° from final closure.
- Hinges:
  - Single axis hinges should conform to BS EN 1935, with locations to BS 4787-1 unless suggested otherwise in fire test reports.
- Locks and latches:
  - Cylinders should be situated above mortice lock/ latch, or 72 mm below, to aid access.
- Door bolts:
  - Should be surface mounted slide bolts.
  - Knobs should be used rather than any key operation. Lever action bolts are acceptable. Espagnolette bolts should be single hand function, with handle 900–1050 mm from finished floor level.

6.2 Visual contrast

See general guidance to section M60.

BS 8300 provides guidance on visual characteristics of surfaces and features to aid perception of space, orientation and distinguishing items. See BS 8300, Annex B which also gives light reflectance values (LRVs) for BS 4800 range of colours (this may be coordinated with BS 5252 'Framework for colour co-ordination for building purposes' if necessary).

BS 8300, clauses 9.1.1 to 9.1.4 recommend:

- Visual contrast between wall and floor to assist wayfinding.
- Avoidance of large areas of reflective or high gloss surfaces to minimize glare.
- Hard, acoustically reflective surfaces should be avoided, as these may disorientate those with hearing or visual impairment. Equally, highly absorbent surfaces should be avoided.
- For three dimensional forms, e.g. door opening ironmongery, a LRV difference of 15 points to the door surface is adequate, but account should be taken of wear and tear, weathering, maintenance, and cleaning.

7 Contractual arrangements

7.1 Subcontracting

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

7.2 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.

112
For further guidance on specifying wood responsibly, see section G20, general guidance 10.

Adapt and/ or extend the clause to meet project specific requirements. Public procurement contracts, under the UK Timber procurement policy, must source a minimum of 70% of wood and wood-based products from legal *and* sustainable sources (with the balance from legal sources), or, when available, sourced using the European Commission's Forest Law Enforcement, Governance and Trade (FLEGT) licensing scheme. (Note: FLEGT is based on voluntary partnership agreements.) Under these policies or schemes performance based criteria should be set, rather than species stipulated.

To avoid repetition, where wood or wood-based products are specified in several sections, this information should be added to Preliminaries section A33.

Certification scheme: Insert, for example, CPET Category A evidence schemes such as:

Canadian Standards Association (CSA).
Forest Stewardship Council (FSA).
Programme for the Endorsement of Forest Certification (PEFC).
Sustainable Forestry Initiative (SFI), with Chain of Custody.

Although the above are Category A evidence under the UK timber procurement policy, for public projects it is not possible under EU law to specifically stipulate which scheme should be adopted. The need to adhere to the policy must therefore be highlighted in the invitation to tender (ITT) documentation. Model specification text, model contract conditions and a model paragraph for inclusion in ITT are given in the Timber Procurement Advice Note (TPAN), which reflects government policy. For guidance see Central Point of Expertise on Timber (CPET) website. CPET advises on UK public procurement of wood and wood-based products. See also BREEAM requirements, if applicable.

– Other evidence: Insert details of forest source information, chain of custody (may include broken chain) or verification schemes which do not fall within recognized certification schemes, but may contribute to meeting requirements for legality, sustainability or chain of custody, e.g. Category B evidence – see CPET website.

115
See general guidance 1.2.

Other reference(s) cited:
BS 476-22
BS EN 1634-1
BS EN 1634-3.

120
See general guidance 1.4.

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.

112 Timber procurement
- Timber (including timber for wood-based products): Obtain from well managed forests and/ or plantations in accordance with:
  - The laws governing forest management in the producer country or countries.
  - International agreements such as the 'Convention on International Trade in Endangered Species of wild fauna and flora (CITES)'.
- Documentation: Provide either:
  - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
  - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.
- Certification scheme: . . . . . .

Not applicable
Canadian Standards Association (CSA)
Forest Stewardship Council (FSA)
Programme for the Endorsement of Forest Certification (PEFC)
Sustainable Forestry Initiative (SFI), with Chain of Custody
Sustainable Forestry Initiative (SFI), with Chain of Custody/ Programme for the Endorsement of Forest Certification (PEFC)
Contractor's choice, submit proposals

  - Other evidence: . . . . . .

None
CPET Category B evidence: Completed supply chain information within attached proforma ???

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.

120 Non fire resisting doors/ Doorsets/ Assemblies
- Provide certified evidence, in the form of a product conformity certificate or engineering assessment, that each door/ doorset/

Other reference(s) cited:
BS EN 14351-1.

assembly supplied will comply with the specified requirements to BS EN 14351-1. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.

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.

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
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.

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, 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.
For guidance on inclusive access, see general guidance 6.
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.

Other reference(s) cited:
BS 459
NBS section M60.

210 Matchboarded doors . . . . . .
FRAMED AND LEDGED
FRAMED, LEDGED AND BRACED
LEDGED AND BRACED
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
– Product reference: . . . . . .

Contractor's choice
Submit proposals
- Finish as delivered: . . . . . .

Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, as section M60
Basecoat stain and first topcoat, as section M60

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.
For guidance on inclusive access, see general guidance 6.
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*.

215 External matchboarded doors . . . . . .
FRAMED AND LEDGED
FRAMED, LEDGED AND BRACED
LEDGED AND BRACED
- Standard: Generally to BS 459.
- Wood species: . . . . . .

Softwood
Douglas fir
European redwood
European whitewood
- Preservative treatment: . . . . . .

Not required

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.

Other reference(s) cited:
BS 459
NBS section M60.

Required
- Moisture content on delivery: . . . . . .

13–19%
12–16%
9–13%
6–10%
- Finish as delivered: . . . . . .

Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, as section M60
Basecoat stain and first topcoat, as section M60

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.

For guidance on inclusive access, see general guidance 6.

Clause heading: Insert, e.g.
– EXTERNAL
– INTERNAL DOUBLE
– 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 doors, other than flush doors, to be made from a 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 manufacturer's standard treatment is acceptable, otherwise give details of treatment. Alternatively, insert *Not required*.
Finish as delivered: See general guidance 5.
Glazing/ Infill details: Specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4. See general guidance 2.5.

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.

See also general guidance 6.1.2.
– Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors. See general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
– Beading: Insert type of bead, whether external or internal and method of fixing. Where factory glazing is specified, check compliance with BS 6262-1, -2, -3, -6 and -7.
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.

Other reference(s) cited:
NBS section M60.

230 Wood flush doors . . . . . .
EXTERNAL
INTERNAL DOUBLE
FD60 FIRE RESISTING
FD30S FIRE RESISTING AND SMOKE CONTROL
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
  – Product reference: . . . . . .

Contractor's choice
Submit proposals
- Facings: . . . . . .

Crown cut ??? veneer
Quarter cut ??? veneer
Exterior grade plywood
Interior grade plywood
Hardboard
Moulded and embossed hardboard
MDF board
Particleboard
VGS grade laminate
HGS grade laminate
- Lippings: . . . . . .

Concealed lippings to long edges
Exposed lippings to long edges
??? mm hardwood exposed lippings to long edges
??? mm hardwood lipping all round
Unlipped
- Preservative treatment: . . . . . .

Not required
Required
- Finish as delivered: . . . . . .

Full factory finish
Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, as section M60
Basecoat stain and first topcoat, as section M60
- Glazing/ Infill details: . . . . . .

Not applicable
Clear single glazing
Opaque single glazing
Clear fire-resisting glazing
Obscure fire-resisting glazing
Site glazed as section L40
  – Manifestation: . . . . . .

Not applicable
Not required
As drawing
  – Beading: . . . . . .

Not required
External

Internal
- Other requirements: . . . . . .

None

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.

For guidance on inclusive access, see general guidance 6.

Clause heading: Insert, e.g.

– EXTERNAL
– INTERNAL DOUBLE
– 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 doors, other than flush doors, to be made from a 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 manufacturer's standard treatment is acceptable, otherwise give details of treatment. Alternatively, insert *Not required*.

Finish as delivered: See general guidance 5.

Glazing/ Infill details: Specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4. See general guidance 2.5.

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.

See also general guidance 6.1.2.

– Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors. See general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.

– Beading: Insert type of bead, whether external or internal and method of fixing. Where factory glazing is specified, check compliance with BS 6262-1, -2, -3, -6 and -7.

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.

Other reference(s) cited:
NBS section M60.

250 Wood panelled doors . . . . . .
EXTERNAL
INTERNAL DOUBLE
FD60 FIRE RESISTING
FD30S FIRE RESISTING AND SMOKE CONTROL
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
– Product reference: . . . . . .

Contractor's choice
Submit proposals
- Wood species: . . . . . .

Hardwood
Ash
Oak
Mahogany
Softwood
Douglas fir
European redwood
European whitewood
- Preservative treatment: . . . . . .

Not required
Required
- Finish as delivered: . . . . . .

Full factory finish
Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, as section M60
Basecoat stain and first topcoat, as section M60
- Glazing/ Infill details: . . . . . .

Not applicable
Clear single glazing
Clear double glazing
Opaque single glazing
Clear fire-resisting glazing
Obscure fire-resisting glazing
Site glazed as section L40
– Manifestation: . . . . . .

Not applicable
Not required
As drawing
– Beading: . . . . . .

Not required
External
Internal
- Other requirements: . . . . . .

None

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.

For guidance on inclusive access, see general guidance 6.

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

270 Wood doors . . . . . .
- Materials: Generally to BS EN 942.
– Species: . . . . . .

Hardwood as table NA2
American white oak
Ash
European birch
Honduras mahogany
Iroko

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 seven classes of timber:
- J2, J5 and J10 for clear grades of softwood or hardwood i.e. material almost clear of knots.
- J20 and J30 for high quality or specialized joinery.
- J40 and J50 for general purpose joinery.

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, 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.
Not applicable.
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: WPA 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 WPA 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.
Glazing/ Infill details: Specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4. See general guidance 2.5.
Use this item to specify details of vision panels or other glazing/ infill 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.

See also general guidance 6.1.2.
– Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors, see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
– Beading: Insert type of bead, whether external or internal and method of fixing. Where factory glazing is specified, check compliance with BS 6262-1, -2, -3, -6 and -7.
Other requirements: Use this item to specify, e.g. perimeter seals for weatherproofing, fire resistance/ smoke control, sound or light reduction.

Other reference(s) cited:

European oak
Sapele
Softwood as table NA1
Douglas fir
European redwood
European whitewood
Western hemlock
– Appearance class: . . . . . .
J10
J20
J30
J40
• Panels: . . . . . .
Not applicable
6 mm birch faced plywood; Bonding quality to BS EN 314-2: Class 3
70 x 15 mm (PAR) t&g softwood boarding
• Assembly:
– Adhesive: . . . . . .
PVAC to BS EN 204, Class D4
Thermosetting resin to BS EN 12765, class C4
– Joinery workmanship: As section Z10.
– Accuracy: To BS 4787-1.
• Preservative treatment: . . . . . .
Organic solvent as section Z12 and WPA Commodity Specification C5; Desired service life: 30 years
• Moisture content on delivery: . . . . . .
13–19%
12–16%
9–13%
6–10%
• Finish as delivered: . . . . . .
Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, as section M60
Basecoat stain and first topcoat, as section M60
• Glazing/ Infill details: . . . . . .
Not applicable
Clear single glazing
Clear double glazing
Opaque single glazing
Clear fire-resisting glazing
Obscure fire-resisting glazing
Site glazed as section L40
– Manifestation: . . . . . .
Not applicable
Not required
As drawing
– Beading: . . . . . .
Not required
External
Internal
• Other requirements: . . . . . .
None

BS 4787-1
BS EN 204
BS EN 314-2
BS EN 12765
NBS section M60
NBS section Z10
NBS section Z12.

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.
For guidance on inclusive access, see general guidance 6.
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/ Infill details: Specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4. See general guidance 2.5.
Use this item to specify details of vision panels or other glazing/ infill 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.

See also general guidance 6.1.2.
– Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors, see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
– Beading: Insert type of bead, whether external or internal and method of fixing. Where factory glazing is specified, check compliance with BS 6262-1, -2, -3, -6 and -7.
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.

Other reference(s) cited:
BS 3987
BS 6496
NBS section L40.

280 Doors . . . . . .
ALUMINIUM
STEEL
PVC-U
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
– Product reference: . . . . . .

Contractor's choice
Submit proposals
- Finish as delivered: . . . . . .

Polyester powder coated to BS 6496, colour ???
Anodized to BS 3987 AA25, colour/ finish ???
- Glazing/ Infill details: . . . . . .

Not applicable
Clear single glazing
Clear double glazing
Opaque single glazing
Clear fire-resisting glazing
Obscure fire-resisting glazing
Site glazed as section L40
– Manifestation: . . . . . .

Not applicable
Not required
As drawing
– Beading: . . . . . .

Not required
External
Internal
- Ironmongery: . . . . . .

As ironmongery schedule
- Other requirements: . . . . . .

None

310
Use this clause to specify proprietary wood door frames.
For guidance on inclusive access, see general guidance 6.
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 gudiance 5.

310 Wood door frames . . . . . .
AND ARCHITRAVES
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
– Product reference: . . . . . .

Contractor's choice
Submit proposals
- Species: . . . . . .

Hardwood
Ash
Oak
Mahogany
Softwood
Douglas fir
European redwood
European whitewood
- Preservative treatment: . . . . . .

Not required

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.

Other reference(s) cited:
NBS section M60
NBS section Z20.

Required
- Finish as delivered: . . . . . .

Full factory finish
Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, as section M60
Basecoat stain and first topcoat, as section M60
- Perimeter seals: . . . . . .

Not required
EPDM weatherseal
Fire and smoke seal
- Fixing: . . . . . .

Built in with cramps as section Z20
Plugged and screwed as section Z20

330
Use this clause to specify purpose made wood door frames. Specify architraves here or in section P20.
For guidance on inclusive access, see general guidance 6.
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 seven classes of timber:
- J2, J5 and J10 for clear grades of softwood or hardwood i.e. material almost clear of knots.
- J20 and J30 for high quality or specialized joinery.
- J40 and J50 for general purpose joinery.

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: WPA 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 WPA 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,

330 Wood door frames . . . . . .
AND ARCHITRAVES
- Materials: Generally to BS EN 942.
  - Species: . . . . . .

Hardwood as table NA2
American white oak
Ash
European birch
Honduras mahogany
Iroko
European oak
Sapele
Softwood as table NA1
Douglas fir
European redwood
European whitewood
Western hemlock
  - Appearance class: . . . . . .

J10
J20
J30
J40
- Assembly:
  - Adhesive: . . . . . .

PVAC to BS EN 204, Class D4
Thermosetting resin to BS EN 12765, class C4
  - Joinery workmanship: As section Z10.
- Preservative treatment: . . . . . .

Organic solvent as section Z12 and WPA Commodity Specification C5; Desired service life: 30 years
- Moisture content on delivery: . . . . . .

13–19%
12–16%
9–13%
6–10%
- Finish as delivered: . . . . . .

Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, as section M60
Basecoat stain and first topcoat, as section M60
- Perimeter seals: . . . . . .

Not required
Acoustic seal
EPDM weatherseal
Fire and smoke seal
- Fixing: . . . . . .

Built in with cramps as section Z20
Plugged and screwed as section Z20

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.

Other reference(s) cited:

BS EN 204
BS EN 12765
NBS section M60
NBS section Z10
NBS section Z12
NBS section Z20.

370

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

For guidance on inclusive access, see general guidance 6.

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.

EPDM weatherseal, ref WSF123.
Fire and smoke seal, ref FR60ss.
Not required.

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

370 Door frames . . . . . .
ALUMINIUM
PLASTICS
STEEL
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
– Product reference: . . . . . .

Contractor's choice
Submit proposals
- Perimeter seals: . . . . . .

Not required
Acoustic seal
EPDM weatherseal
Fire and smoke seal
- Finish as delivered: . . . . . .

Anodized
Matt
Natural
Polished
Polyester powder coated
- Fixing: . . . . . .

Built in with cramps
Plugged and screwed

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.

For guidance on inclusive access, see general guidance 6.

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.

410 Wood doorsets . . . . . .
BULLET RESISTANT
EXTERNAL
INTERNAL
FD30 FIRE RESISTING
FD60S DOUBLE FIRE RESISTING AND SMOKE CONTROL
40DB SOUND INSULATING
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
– Product reference: . . . . . .

Contractor's choice
Submit proposals
- Door leaf:
  – Facings: . . . . . .

Crown cut ??? veneer
Quarter cut ??? veneer
Exterior grade plywood
Interior grade plywood
Hardboard
MDF board

– 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/ Infill details: Specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4. See general guidance 2.5.

Use this item to specify details of vision panels or other glazing/ infill 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.
- Glazing to overpanels/ side panels.

See also general guidance 6.1.2.
– Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors, see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
– Beading: Insert type of bead, whether external or internal and method of fixing. Where factory glazing is specified, check compliance with BS 6262-1, -2, -3, -6 and -7.
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. See also general guidance 6.1.3.
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.
Additional blockings for letter plate.
Fixing: Insert, e.g. *Frame fixings with colour matching caps supplied by doorset manufacturer.*

Other reference(s) cited:
NBS section M60.

Moulded and embossed hardboard
Particleboard
HGS grade laminate
VGS grade laminate
– Lippings: . . . . . .
Concealed lippings to long edges
Exposed lippings to long edges
??? mm hardwood exposed lippings to long edges
??? mm hardwood lipping all round
Unlipped
– Finish as delivered: . . . . . .
Full factory finish
Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, M60
Basecoat stain and first topcoat, as section M60
• Frame and architraves:
– Wood species: . . . . . .
American white oak
Ash
European birch
Honduras mahogany
Iroko
European oak
Sapele
Douglas fir
European redwood
European whitewood
Western hemlock
– Finish as delivered: . . . . . .
Full factory finish
Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, as section M60
Basecoat stain and first topcoat, as section M60
• Preservative treatment: . . . . . .
Not required
Required
• Glazing/ Infill details: . . . . . .
Not applicable
Clear single glazing
Clear double glazing
Opaque single glazing
Clear fire-resisting glazing
Obscure fire-resisting glazing
Site glazed as section L40
– Manifestation: . . . . . .
Not applicable
Not required
As drawing
– Beading: . . . . . .
Not required
External
Internal
• Ironmongery: . . . . . .
As ironmongery schedule
• Perimeter seals: . . . . . .
Not required
Acoustic seal
EPDM weatherseal
Fire and smoke seal
• Other requirements: . . . . . .
None
• Fixing: . . . . . .
Built in with cramps
Plugged and screwed

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.

For guidance on inclusive access, see general guidance 6.

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/ Infill details: Specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4. See general guidance 2.5.

Use this item to specify details of vision panels or other glazing/ infill 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.
- Glazing to overpanels/ side panels.

See also general guidance 6.1.2.

– Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors, see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.

– Beading: Insert type of bead, whether external or internal and method of fixing. Where factory glazing is specified, check compliance with BS 6262-1, -2, -3, -6 and -7.

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. See also general guidance 6.1.3.

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.

420 Wood doorsets . . . . . .
BULLET RESISTANT
EXTERNAL
INTERNAL
FD30 FIRE RESISTING
FD60S DOUBLE FIRE RESISTING AND SMOKE CONTROL
40DB SOUND INSULATING
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
– Product reference: . . . . . .

Contractor's choice
Submit proposals
- Door leaf:
  – Wood species: . . . . . .

Hardwood
Ash
Oak
Mahogany
Softwood
Douglas fir
European redwood
European whitewood
– Panel details: . . . . . .
– Finish as delivered: . . . . . .

Full factory finish
Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, as section M60
Basecoat stain and first topcoat, as section M60
- Frame and architraves:
  – Wood species: . . . . . .

Hardwood
Ash
Oak
Mahogany
Softwood
Douglas fir
European redwood
European whitewood
– Finish as delivered: . . . . . .

Full factory finish
Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, as section M60
Basecoat stain and first topcoat, as section M60
- Preservative treatment: . . . . . .

Not required
Required
- Glazing/ Infill details: . . . . . .

Not applicable
Clear single glazing
Clear double glazing
Opaque single glazing
Clear fire-resisting glazing
Obscure fire-resisting glazing
Site glazed as section L40
– Manifestation: . . . . . .

Not applicable
Not required
As drawing
– Beading

Not required
External

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.
Additional blockings for letter plate.
Fixing: Insert, e.g. *Frame fixings with colour matching caps supplied by doorset manufacturer.*

Other reference(s) cited:
NBS section M60.

Internal
- Ironmongery: . . . . . .

As ironmongery schedule
- Perimeter seals: . . . . . .

Not required
EPDM weatherseal
Fire and smoke seal
- Other requirements: . . . . . .

None
- Fixing: . . . . . .

Built in with cramps
Plugged and screwed

430
Use this clause for generic specification of wood doorsets.
For guidance on inclusive access, see general guidance 6.
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 seven classes of timber:
- J2, J5 and J10 for clear grades of softwood or hardwood i.e. material almost clear of knots.
- J20 and J30 for high quality or specialized joinery.
- J40 and J50 for general purpose joinery.

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: WPA 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 WPA 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/ Infill details: Most doorset glazing/ infill will be factory

430 Wood doorsets . . . . . .
FIRE RESISTING
FIRE RESISTING AND SMOKE CONTROL
SOUND INSULATING
- Fire resistance rating: . . . . . .

Not applicable
To BS 476-22, 30 minutes integrity
To BS EN 1634-1, 30 minutes integrity
- Sound insulation rating: . . . . . .

Not applicable
30dBA
- Door leaf:
  - Core: . . . . . .

Flaxboard
Hollow cellular
Particleboard
Solid laminated softwood
Manufacturer's choice
  - Facings: . . . . . .

Crown cut ??? veneer
Quarter cut ??? veneer
Interior grade plywood
Exterior grade plywood
Hardboard
Moulded and embossed hardboard
MDF board
Particleboard
VGS grade laminate
HGS grade laminate
  - Lippings: . . . . . .

Concealed lippings to long edges
Exposed lippings to long edges
??? mm hardwood exposed lippings to long edges
??? mm hardwood lipping all round
Unlipped
  - Finish as delivered: . . . . . .

Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, as section M60
Basecoat stain and first topcoat as section M60
- Frame and architraves:
  - Wood species: . . . . . .

American white oak
Ash
European birch
Honduras mahogany
Iroko
European oak
Sapele
Douglas fir
European redwood
European whitewood
Western hemlock

installed. If required, specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4. See general guidance 2.5.

Use this item to specify details of vision panels or other glazing/ infill 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.

See also general guidance 6.1.2.

– Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors, see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.

– Beading: Insert type of bead, whether external or internal and method of fixing. Where factory glazing is specified, check compliance with BS 6262-1, -2, -3, -6 and -7.

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*. See also general guidance 6.1.3.

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 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.*

Other reference(s) cited:

BS 476-22
BS EN 1634-1
NBS section M60
NBS section Z12
NBS section Z20.

– Appearance class to BS EN 942: . . . . . .
J10
J20
J30
J40
– Finish as delivered: . . . . . .
Full paint system, as section M60
Prepared and primed, as section M60
Primer and undercoat, as section M60
Full stain system, as section M60
Basecoat stain, as section M60
Basecoat stain and first topcoat, as section M60
• Preservative treatment: . . . . . .
Organic solvent as section Z12 and WPA Commodity Specification C5; Desired service life: 30 years
• Glazing/ Infill details: . . . . . .
Not applicable
Clear single glazing
Clear double glazing
Opaque single glazing
Clear fire-resisting glazing
Obscure fire-resisting glazing
Site glazed as section L40
– Manifestation: . . . . . .
Not applicable
Not required
As drawing
– Beading: . . . . . .
Not required
External
Internal
• Moisture content on delivery: . . . . . .
13–19%
12–16%
9–13%
6–10%
• Ironmongery: . . . . . .
As ironmongery schedule
• Perimeter seals: . . . . . .
Not required
EPDM weatherseal
Fire and smoke seal
• Fixing: . . . . . .
Built in with cramps as section Z20
Plugged and screwed as section Z20

460
For guidance on inclusive access, see general guidance 6.

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

Door leaf: 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. See general guidance 2.5.

Where the glass door leaf is more than 900 mm wide, BS 6262-4 recommends that the glass should conform to at least class 2(β)Φ of BS EN 12600 (class B of BS 6206). For door leaves less than 900 mm wide, glass conforming to at least class 3(β)Φ of BS EN 12600 (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 1(β)Φ (class A), in all cases. Insert, e.g. 1(β)Φ.

– 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. Care must be taken not to contradict BS EN 12600 classification parameters.

– Colour: Insert, e.g.
Clear.

460 Frameless glass doors . . . . . .
• Manufacturer: . . . . . .
Contractor's choice
Submit proposals
– Product reference: . . . . . .
Contractor's choice
Submit proposals
• Door leaf: Safety glass to BS EN 12600, class . . . . . .
1(β)Φ
1C1
– Thickness: . . . . . .
10
12
– Colour: . . . . . .
Body tinted bronze
Blue
Clear
Green
Grey
• Decoration: . . . . . .
Not required
As drawing
– Manifestation: . . . . . .

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*.
– Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors. See general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
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 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.

Not required
As drawing
- Door rails/ Patch fittings: . . . . . .

Bottom Rail + Top Patch with pivot
- – Material/ Finish: . . . . . .

Anodized aluminium
Polished brass
Polished stainless steel
Polyester powder coated aluminium
- Peripheral fixings: . . . . . .

Not applicable
Concealed channel
Surface mounted
- Lock: . . . . . .

Profile double cylinder
- – Position: . . . . . .

Centrally in opening edge of door
Door top rail
Door bottom rail
- Floor springs: . . . . . .

Double swing with 90° retention
Single swing with 90° retention
- Pull handles: . . . . . .
- – Size: . . . . . .
- – Material/ Finish: . . . . . .
- Additional ironmongery/ accessories: . . . . . .

Door stop
Letter plate

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.

For guidance on inclusive access, see general guidance 6.
Clause heading: Insert, e.g.
TO FRONT ENTRANCE – ALUMINIUM

480 Doorsets . . . . . .
ALUMINIUM
PVC-U
STEEL
FD30 FIRE RESISTING
FD60S FIRE RESISTING AND SMOKE CONTROL
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
- – Product reference: . . . . . .

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/ Infill details: Most doorset glazing/ infill will be factory installed. If required, specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4. See general guidance 2.5.
Use this item to specify details of vision panels or other glazing/ infill 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.

See also general guidance 6.1.2.
– Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors, see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
– Beading: Insert type of bead, whether external or internal and method of fixing. Where factory glazing is specified, check compliance with BS 6262-1, -2, -3, -6 and -7.
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. See also general guidance 6.1.3.
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*.

Other reference(s) cited:
NBS section Z20.

Contractor's choice
Submit proposals
- Door leaf: . . . . . .
  - Finish as delivered: . . . . . .

Anodized
Galvanized
Factory applied primer
Polyester powdercoated
- Frame and architraves: . . . . . .
  - Finish as delivered: . . . . . .

Anodized
Galvanized
Factory applied primer
Polyester powdercoated
- Glazing/ Infill details: . . . . . .

Not applicable
Clear single glazing
Clear double glazing
Opaque single glazing
Clear fire-resisting glazing
Obscure fire-resisting glazing
Site glazed as section L40
  - Manifestation: . . . . . .

Not applicable
Not required
As drawing
  - Beading: . . . . . .

Not required
External
Internal
- Ironmongery: . . . . . .

As ironmongery schedule
- Perimeter seals: . . . . . .

Not required
Acoustic seal
EPDM weatherseal
Fire and smoke seal
- Other requirements: . . . . . .

None
- Fixing: . . . . . .

Built in with cramps
Plugged and screwed

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

490 Automatic doors . . . . . .
- Type: . . . . . .

Folding
Pivot
Two wing revolving
Three wing revolving
Four wing revolving
Sliding
Circular automatic sliding
Swing
Low energy swing
Telescopic
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
  - Product reference: . . . . . .

Contractor's choice
Submit proposals
- Materials/ finishes:
  - Doors: . . . . . .

disabled users – see BS 7036-4, clause 1 and BS 8300, section 6.5.
For further guidance, see BS 7036 and BRE Report 334.
For guidance on inclusive access, see general guidance 6.
Clause heading: Insert location, e.g. *TO MAIN ENTRANCE*
Type: Insert, e.g. *Bi-parting curved sliding doors.*
Glazing/ Infill details: Most doorset glazing/ infill will be factory installed. If required, specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4. See general guidance 2.5.
Use this item to specify details of vision panels or other glazing/ infill 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.

See also general guidance 6.1.2.
– Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors, see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
– 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.
– Breakout 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. See also general guidance 6.1.3.
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.

– Frames: . . . . . .
– Screens: . . . . . .
- Glazing/ Infill details: . . . . . .

Not applicable
Clear single glazing
Clear double glazing
Opaque single glazing
Clear fire-resisting glazing
Obscure fire-resisting glazing
Site glazed as section L40

– Manifestation: . . . . .

Not applicable
Not required
As drawing

- Activation and control system: . . . . . .

Automatic, infra-red controlled
Automatic, microwave controlled
Automatic, radar controlled
Manual
Remote; infra-red controlled
Remote; microwave controlled
Remote; radar controlled

– Safety devices: . . . . . .

Emergency stop
Presence sensor
Pressure sensitive strip
Safety mat

– Breakout facility: . . . . . .

Not required
Required

- Locking mechanism: . . . . . .

Mechanical or Electro-mechanical

- Signs: . . . . . .

'Keep clear', 250 mm high x 150 mm wide
'No entry', 150 mm diameter

- Barriers: . . . . . .
- Other requirements: . . . . . .

None

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. Both manual and automatic revolving doors can be problematic for disabled users and the recommendations of BS 8300 should be taken into account; see BS 8300 section 6.5.
For guidance on inclusive access, see general guidance 6.
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.
Glass manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors. See general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
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*.

495 Automatic revolving doors . . . . . .

- Manufacturer: . . . . . .

Contractor's choice
Submit proposals

– Product reference: . . . . . .

Contractor's choice
Submit proposals

- Materials/ finishes:
  - Doors: . . . . . .
  - Drum walls: . . . . . .
  - Canopy: . . . . . .
- Glass manifestation: . . . . . .

Not required
As drawing

- Activation and control system: . . . . . .

– Safety devices: . . . . . .

- Locking mechanism: . . . . . .

Mechanical
Electro-mechanical

- Breakout facility: . . . . . .

Not required
Required

- Other requirements: . . . . . .

None

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.

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. Both manual and automatic revolving doors can be problematic for disabled users and the recommendations of BS 8300 should be taken into account; see BS 8300 section 6.5.

For guidance on inclusive access, see general guidance 6.

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.
Glass manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors. See general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
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.

500 Manual revolving doors . . . . . .
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
  – Product reference: . . . . . .

Contractor's choice
Submit proposals
- Materials/ finishes:
  – Doors: . . . . . .
  – Drum walls: . . . . . .
  – Canopy: . . . . . .
- Glass manifestation: . . . . . .

Not required
As drawing
- Locking mechanism: . . . . . .

Mortice espagnolet lock with profile cylinder
- Breakout facility: . . . . . .

Not required
Required
- Other requirements: . . . . . .

None

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.*

510 Strong room door
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
  – Product reference: . . . . . .

Contractor's choice
Submit proposals
- . . . . . .

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. See general guidance 2.4.

515 Blast resistant door
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
  – Product reference: . . . . . .

For guidance on inclusive access, see general guidance 6.
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/m².*
– 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: Insert requirements or *Not required.*
– Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors, see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
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. See also general guidance 6.1.3.
Locking mechanism: See general guidance 6.1.3. 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.

Contractor's choice
Submit proposals
- Configuration: . . . . . .

Bi-folding
Folding
Side-hinged
Sliding
- Design parameters:
  - Blast duration: . . . . . .

??? milliseconds
??? seconds
  - Pressure mode: . . . . . .

Continuous static
Dynamic
  - Maximum overpressure: . . . . . .

10 kN/m²
100 kN/m²
1000 kN/m²
10 000 kN/m²
  - Rebound pressure (maximum): . . . . . .

20% of maximum overpressure
50% of maximum overpressure
100% of maximum overpressure
Manufacturer to determine
- Fire rating: . . . . . .

Not applicable
30/30 Integrity/ insulation
- Materials/ finishes:
  - Door: . . . . . .
  - Frame: . . . . . .
- Glazing: . . . . . .

Not required
  - Manifestation: . . . . . .

Not applicable
Not required
As drawing
- 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.
For guidance on inclusive access, see general guidance 6. Note that sliding doors can cause considerable confusion for those with learning or mobility difficulties.
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

520 Sliding doors . . . . . .
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
  - Product reference: . . . . . .

Contractor's choice
Submit proposals
- Performance: . . . . . .

Acoustic control: ???
Fire resistance: ???
Thermal insulation: ???
Wind resistance: ???
- Arrangement: . . . . . .

Single leaf top hung
Single leaf bottom rolling
Paired leaf top hung
Paired leaf bottom rolling
Multi leaf top hung
Multi leaf bottom rolling
  - Track system: . . . . . .
- Door leaf: . . . . . .
  - Finish as delivered: . . . . . .
  - Glazing/ Infill details: . . . . . .

Not applicable
Not required
As drawing ???
Manifestation: . . . . . .

available.
Door leaf: Give brief construction details where the product reference is not definitive. For glazing, see general guidance 2.5.
– Finish as delivered: Select from manufacturer's options. Specify site painting in section M60.
– Glazing/ Infill details: Specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4. See general guidance 2.5.
Use this item to specify details of vision panels or other glazing/ infill 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.
- Glazing to overpanels/ side panels.

See also general guidance 6.1.2.
Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors, see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
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 details here of operational and safety controls/ devices, e.g. constant pressure button control, electrical interlocking for power operated doors incorporating pass doors. See also general guidance 6.1.3.
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. See also general guidance 6.1.3.
Other requirements: Use this item to specify, e.g. vision panels, personnel doors.

Not applicable
Not required
As drawing
- Operation: . . . . . .

Manual
Powered, with constant pressure button control
- Ironmongery: . . . . . .

As ironmongery schedule
- Other requirements: . . . . . .

None

525
Use this clause for doors which move in their own plane across an opening but which retract into a ‘pocket’ within the associated partition thickness. Pocket doors come with a counter frame which is built into the stud wall construction. Doors may be single or double, flush or curved and may have fire resisting properties. Telescopic doors are also possible.
For guidance on inclusive access, see general guidance 6. Note that sliding doors can cause considerable confusion for those with learning or mobility difficulties.
Clause heading: Insert, e.g. *TO CONFERENCE ROOM 002*
Performance: Insert specific requirements for fire resistance, etc. where not evident from the product reference. Sliding fire doors have a self-closing mechanism usually incorporating a counterweight.
For guidance on specifying fire resisting/ smoke control doors, see general guidance 1 and clause 115.
Arrangement: State, e.g. whether single or paired leaf, and whether curved or telescopic.
– Track system: Give details where options are available. Cross reference any fire performance criteria, especially where the door and frame are effectively a doorset and are fire assessed as such.
Door leaf: Give brief construction details where the product reference is not definitive. For glazing, see general guidance 2.5.
– Finish as delivered: Select from manufacturer's options. Specify site painting in section M60.
– Glazing/ Infill details: Specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4. See general guidance 2.5.
Use this item to specify details of vision panels or other glazing/ infill 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.
- Glazing to overpanels/ side panels.

See also general guidance 6.1.2.

525 Sliding pocket doors . . . . . .
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
– Product reference: . . . . . .

Contractor's choice
Submit proposals
- Performance: . . . . . .

As standard
Fire resistance: FD30 UKAS certified
- Arrangement: . . . . . .

Single leaf
Single leaf, curved
Paired leaf
Paired leaf, curved
Telescopic
Telescopic, curved
– Track system: . . . . . .

As supplied
- Door leaf: . . . . . .
  - Finish as delivered: . . . . . .
  - Glazing/ Infill details: . . . . . .

Not applicable
Not required
As drawing ???
Manifestation: . . . . . .

Not applicable
Not required
As drawing ???
- Operation: . . . . . .

Manual
Manual, synchronized
Powered, with constant pressure button control
Powered, with constant pressure button control, synchronized
- Ironmongery: . . . . . .

As ironmongery schedule

Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors, see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
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 details here of operational and safety controls/ devices, e.g. constant pressure button control, self-closing mechanism, synchronisation (coordinated opening of double doors). See also general guidance 6.1.3.
Insert, e.g. *Powered, with constant pressure button control, synchronized.*
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. See also general guidance 6.1.3.
Other requirements: Use this item to specify, e.g. jamb kits (architraves specified separately), etc.

- Other requirements: . . . . . .

None
Jamb kit

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.
For guidance on inclusive access, see general guidance 6.
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. For glazing, see general guidance 2.5.
– Finish as delivered: Select from manufacturer's options. Specify site painting in section M60.
– Glazing/ Infill details: Specify site glazing in section L40. Ensure compliance with the safety requirements of BS 6262-4. See general guidance 2.5.
Use this item to specify details of vision panels or other glazing/ infill 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.
- Glazing to overpanels/ side panels.

See also general guidance 6.1.2.
Manifestation: Visual marking may be needed for glass doors or large areas of glazing in doors, see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
Operation: Doors may be manual or power operated. Include here details of operational and safety controls/ devices, e.g. safety edges, photosensors. See also general guidance 6.1.3.
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. See also general guidance 6.1.3.
Other requirements: Use this item to specify, e.g. vision panels, personnel doors.

530 Sliding folding external doors . . . . . .
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals

– Product reference: . . . . . .

Contractor's choice
Submit proposals

- Performance: . . . . . .

Acoustic control: ???
Fire resistance: ???
Thermal insulation: ???
Wind resistance: ???

- Arrangement: . . . . . .

Bottom rolling
Side hung
Top hung
one way bunching
biparting opening
face fixed to inside of opening
mounted in reveal

– Track system: . . . . . .
- Door leaf: . . . . . .

– Finish as delivered: . . . . . .
– Glazing/ Infill details: . . . . . .

Not applicable
Not required
As drawing ???

Manifestation: . . . . . .

Not applicable
Not required
As drawing ???

- Operation: . . . . . .

Manual
Powered

- Ironmongery: . . . . . .
- Other requirements: . . . . . .

None

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 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. For glazing, see general guidance 2.5.

– 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. See also general guidance 6.1.3.

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. See also general guidance 6.1.3.

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

535 Sliding folding shutter doors . . . . . .

- Manufacturer: . . . . . .

Contractor's choice
Submit proposals

– Product reference: . . . . . .

Contractor's choice
Submit proposals

- Performance: . . . . . .

Acoustic control: ???
Fire resistance: ???
Thermal insulation: ???
Wind resistance: ???

- Arrangement: . . . . . .

Bottom rolling
Top hung
one way bunching
biparting opening
face fixed to inside of opening
mounted in reveal

– Track system: . . . . . .

- Door leaf: . . . . . .

– Finish as delivered: . . . . . .

- Operation: . . . . . .

Manual
Powered, with constant pressure button control

- Ironmongery: . . . . . .
- Other requirements: . . . . . .

None

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.

For guidance on inclusive access, see general guidance 6. Note that sliding or folding doors and panels can cause considerable confusion for those with learning or mobility difficulties.

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, surface spread of flame, smoke resistance, thermal or acoustic control, etc. where not covered by product reference; or insert, e.g. *Unrated*.

Operation: Indicate if system operation is manual or powered. Give supply details in section V90 or appropriate NBS Engineering section.

Arrangement: Give details of head and/ or floor track, including

540 Sliding folding . . . . . .
DOORS
PARTITIONS

- Manufacturer: . . . . . .

Contractor's choice
Submit proposals

– Product reference: . . . . . .

Contractor's choice
Submit proposals

- Performance: . . . . . .

Acoustic control: ???
Fire resistance: ???
Smoke control: ???
Surface spread of flame: ???
Thermal insulation: ???
Wind resistance: ???
Unrated

finish, of hangers/ rollers/ guides where options are available. State, e.g. whether one way stacking or biparting opening.
Panels:
– Construction: Give brief 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 sections or panels are in the closed position. For glazing, see general guidance 2.5.
– Finish as delivered: Select from manufacturer's options. Give details of panel-to-panel joints where not defined by product reference and options exist. Specify site painting in section M60.
– Vision panels: See general guidance 6.1.2. Insert *Not required* or provide details.
Pass doors: Indicate if required, ensuring system performance is not compromised. Give details where the product reference is not definitive, noting (for example) sizes and whether full height or not, any variation in finish, vision panels and manifestation.
Ironmongery: List here items supplied as part of the assembly, including those to pass doors. Specify items to be supplied from other sources in section P21, in a schedule, or on drawings. See also general guidance 6.1.3.
Glass manifestation: Visual marking may be needed for glass panels, glass doors or other large areas of glazing, see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
Other requirements: Use this item to specify further features, e.g. footbolts.

- Operation: . . . . . .

Manual

- Arrangement: . . . . . .

Bottom rolling on floor track
Side hung
Top hung on head track
One way stacking
Biparting opening
Face fixed to inside of opening
Mounted in reveal
As drawing ???

- Panels:
  - Construction: . . . . . .
  - Finish as delivered: . . . . . .
  - Vision panels: . . . . . .

Not required
As drawing ???

- Pass doors: . . . . . .

Not required
Double, full height
Double, inset
Single, full height
Single, inset
As drawing ???

- Ironmongery: . . . . . .

As section P21
As supplied

- Glass manifestation: . . . . . .

Not applicable
Not required
As drawing ???

- Other requirements: . . . . . .

None
Coordinated cupboard doors
Footbolts

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. A bottom track is not usually 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 (e.g. panels offering 52 dB Rw may weigh 55 kg/ m²), with considerable increases in mass relative to sound reduction values. This should be carefully considered in the structural design especially when considering point loads when parking/ stacking, and any floor loads in addition to seal pressure.

Ensure adequate consultation between structural engineer and product manufacturer regarding loads and forces exerted by the system, particularly in relation to raised floors. Site and product tolerances, including deflections, must also be clearly understood in advance.

For guidance on inclusive access see general guidance 6. Note that sliding or folding doors and panels can cause considerable confusion for those with learning or mobility difficulties.
Clause heading: Insert location, e.g. *TO STUDIO 4*
Performance: Insert specific requirements for fire resistance, surface spread of flame, smoke resistance, thermal or acoustic control, etc. where not covered by product reference; or insert, e.g. *Unrated*. Note that performance certificates will usually only apply to full panels and not to panels with apertures such as pass doors or vision panels.
Operation: Indicate if system operation is manual or powered. Powered systems operate the action of seals and abutments; fully automatic systems also operate the movement of the panels, but these are rare. See also general guidance 6.1.3.

Powered systems are usually mains fed via transformer. Give supply details in section V90 or appropriate NBS Engineering section.

545 Sliding stacking panel partitions . . . . . .

- Manufacturer: . . . . . .

Contractor's choice
Submit proposals

  - Product reference: . . . . . .

Contractor's choice
Submit proposals

- Performance: . . . . . .

Acoustic control: ???
Fire resistance: ???
Smoke control: ???
Surface spread of flame: ???
Thermal insulation: ???
Wind resistance: ???
Unrated

- Operation: . . . . . .

Manual
Powered, existing 240 V single phase supply to transformer, fully automatic
Powered, existing 240 V single phase supply to transformer, semi automatic
Powered, as section V90

  - Seal pressure: . . . . . .

- Dimensions (nominal):
  - Structural opening size: . . . . . .
  - Panel:
    Width: . . . . . .
    Height: . . . . . .
    Thickness: . . . . . .
- Track system:
  - Head track: . . . . . .

Single point suspension, single parking
Single point suspension, biparting (split parking) as drawing ???

– **Seal pressure:** Give details of pressure values where options are available.
Dimensions (nominal): Where not indicated on drawings or a schedule, give details of the approximate overall opening size and panel widths, heights, and thickness (where this does not contradict performance criteria: discuss with manufacturer). Cross reference abutment requirements regarding end panels.
Track system: Panels may be single or twin point suspension from a head track, usually with no floor track. Twin point suspension gives better panel support and distributed load to superstructure, but also allows parking to be offset from the track centre through the use of sections of tandem track. Parking (stacking) options are greatly increased, and panels may be parked in reveals or separate rooms. Discussions should be held at an early stage with client/ building user, structural engineer and panel manufacturer to ensure the optimum solution is reached and limitations fully understood. Drawings should be used to indicate proposals wherever possible.
– **Head track:** Indicate if single or twin point suspension, and state whether single parking (all panels parked to one side) or biparting opening (split parking), or use drawings to indicate other permutations.
Indicate if the head track needs to incorporate a flange to receive false ceilings. Also give details of head track finish.
– **Floor track:** Although floor tracks are rare, they may be used where there are structural limitations to carrying load at the head. Systems with floor track are generally manually operated.
– **Parking position:** Indicate where panels will be parked and how this relates to track; this may be best indicated on a drawing. It is important to cross reference the head track/ suspension selection as not all are mutually compatible; discuss with system manufacturer.
– **Wall jamb/ Abutments:** Give details where not dictated by product reference or refer to detail drawing or schedule.
Panels:
– **Construction:** Give brief details where the product reference is not definitive. Give weights of panels where allowed for in, or critical to, structural design. For glass panels and glazing see general guidance 2.5.
– **Finish as delivered:** Select from manufacturer's options.
– **Joint detail:** Give details of panel-to-panel joints where options exist. Insert *Manufacturer's standard* or provide details, including finish.
– **Vision panels:** See general guidance 6.1.2. Insert *Not required* or provide details.
Pass doors: Indicate if required, ensuring system performance is not compromised. Give details where the product reference is not definitive, noting, for example, sizes and whether full height or not, any variation in finish, vision panels and manifestation.
Ironmongery: Most ironmongery is supplied by the panel manufacturer. List here items supplied as part of the assembly, including pass doors. Specify items to be supplied from other sources in section P21, in a schedule, or on drawings. See also general guidance 6.1.3.
Junctions/ Corners: Indicate any special items not determined by product reference. Insert, e.g. *Ref Corn XYZ123*, or *Not applicable*.
Glass manifestation: Visual marking may be needed for glass panels, glass doors or other large areas of glazing; see general guidance 6.1.2, Building Regulations and BS 8300, clause 9.1.5. Insert *Not required* or provide details.
Other requirements: Use this item to specify further features, e.g. curved layout, coordinated cupboard doors, integral blinds, integral winding handle, footbolts, etc.

Other reference(s) cited:
BS 4800.

Twin point suspension, single parking
Twin point suspension, single parking as drawing ???
Twin point suspension, biparting (split parking) as drawing ???
Ceiling flange: . . . . . .
Required
Not required
Finish: . . . . . .
RAL ???
BS 4800 ???
Floor track: . . . . . .
Required
Not required
– Parking position: . . . . . .
End stacked, centred on track
End stacked, offset from centreline of track
Stacked behind reveal
As drawing ???
– Wall jamb/ Abutments: . . . . . .
Telescopic final panel
Telescopic wall abutment
As drawing ???
- Panels:
  – Construction: . . . . . .
  – Finish as delivered: . . . . . .
  – Joint detail: . . . . . .

As supplied
Finish: . . . . . .
Satin anodized aluminium
Powder coated, BS 4800 ref ???
Powder coated, RAL ref ???
Not applicable
– Vision panels: . . . . . .
Not required
As drawing ???
- Pass doors: . . . . . .

Not required
Double, full height
Double, inset
Single, full height
Single, inset
As drawing ???
- Ironmongery: . . . . . .

As section P21
As supplied
- Junctions/ Corners: . . . . . .

Not applicable
- Glass manifestation: . . . . . .

Not applicable
Not required
As drawing ???
- Other requirements: . . . . . .

None
Coordinated cupboard doors
Curved layout
Integral blinds
Integral winding handle

550
Sometimes described as 'crash doors', these doors are made from rubber, PVC, clear polycarbonate or a combination, in various

550 Flexible doors . . . . . .
- Manufacturer: . . . . . .

Contractor's choice

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. See also general guidance 6.1.3.

Submit proposals
- Product reference: . . . . . .

Contractor's choice
Submit proposals
- Performance: . . . . . .

Acoustic control: ???
Fire resistance: ???
Thermal insulation: ???
Wind resistance: ???
- Arrangement: . . . . . .

Jamb fixed
Soffit fixed
- Door leaf: . . . . . .
  - Colour: . . . . . .
- Frame: . . . . . .
  - Finish as delivered: . . . . . .
- Operation: . . . . . .

Automatic, pneumatic, photobeam controlled
Automatic, pneumatic, push button controlled
Automatic, pneumatic, radar controlled
Automatic, electrical, photobeam controlled
Automatic, electrical, push button controlled
Automatic, electrical, radar controlled
Manual

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.

560 PVC strip curtains . . . . . .
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
- Product reference: . . . . . .

Contractor's choice
Submit proposals
- Arrangement: . . . . . .

Face fitted across opening
Fitted into reveal
- Hanging system: . . . . . .

Bolt on
Hook over
Sliding track
- Overlap: . . . . . .

No overlap
Partial overlap
Full overlap
- Strips: . . . . . .

Polar grade
Self-extinguishing grade
Welding grade
- Size: . . . . . .

200 mm x 2 mm
300 mm x 3 mm
400 mm x 4 mm
- Colour: . . . . . .

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*.

570 High speed doors . . . . . .
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
- Product reference: . . . . . .

Contractor's choice
Submit proposals
- Type: . . . . . .

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

Roll up
- Arrangement: . . . . . .

Face fitted across opening
Fitted into reveal
- Curtain: . . . . . .

Canvas
PVC
Woven polyester
- Frame/ Guides: . . . . . .
  - Finish as delivered: . . . . . .
- Operation: . . . . . .

Induction loop
Movement sensor
Pull cord
Push button
Remote control
- Other requirements: . . . . . .

None

610

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

Roller shutters or curtains are suitable for a range of applications including entrances to industrial/ commercial premises, shop front protection, internal separation/ compartmentation (e.g. hatches, escalator closures). Roller curtains may be specified for wider openings, and where security is not an issue; however, means of escape and access for fire fighters must not be jeopardized when the curtain is deployed.

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

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

Fire resistance of up to 240 minutes is possible for solid lath shutters, while 120 minutes smoke and fire resistance is possible for fabric blinds. For guidance on specifying fire resisting/ smoke control doors, see general guidance 1 and clause 115. Smoke barriers may be categorized using BS EN 12101-1. See also NBS Engineering section U14.

Insert, e.g.

Fire resistance: 120 minutes.
Smoke and fire resistance: 120 minutes.

For fire and smoke heat assemblies, ensure the performance characteristics of the surrounding structure are adequate.

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 material: Where shutters comprise laths, these may be made from galvanized or stainless steel, aluminium, wood, GRP or PVC. They may be flat or curved, and can be perforated for ventilation or vision. For flexible curtains, the material might be fire, smoke or light resistant or a combination of these (materials may be patent protected). Check third party certification of any such performance claims.

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. Can be released via audio visual warning unit which allows for delay to activation.
- Fusible link. Soldered link fuse release at a given temperature (e.g.

610 Roller shutters/ curtains . . . . . .
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
  - Product reference: . . . . . .

Contractor's choice
Submit proposals
- Performance: . . . . . .

Acoustic control: ???
Fire resistance: ???
Smoke resistance: ???
Surface spread of flame: ???
Thermal insulation: ???
Wind resistance: ???
Unrated
- Arrangement: . . . . . .

Horizontal
Lateral, face fitted across opening
Lateral, fitted into reveal
Vertical, face fitted across opening
Vertical, fitted into reveal
- Shutter/ curtain material: . . . . . .

Aluminium
Fire resistant fabric
Galvanized steel
GRP
PVC
Stainless steel
Wood
  - Finish as delivered: . . . . . .
- Frame/ Guides: . . . . . .
  - Finish as delivered: . . . . . .
- Operation: . . . . . .

Chain
Electrical, with constant pressure button control
Electrical, with key switch
Electrical, controlled release, with remote control (induction loop)
Electrical, controlled release, with remote group control (induction loop)
Electrical, controlled release, with remote control (radio)
Electrical, manual solenoid controlled release, activated by fire alarm link
Electrical, auto solenoid controlled release, activated by fire alarm link
Electrical, controlled release activated by fire alarm link via audio visual warning unit (FDI)
Fusible link, controlled release
Self coiling, push up/ pull down (spring assisted)
- Ironmongery: . . . . . .
- Other requirements: . . . . . .

None

64°C), usually with controlled release. Used where there is no fire alarm.
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. See also general guidance 6.1.3.
Other requirements: Use this item to specify, e.g. vision panels, pass doors, battery back-up, emergency hand chain, etc.

Battery back up unit
Emergency hand chain

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, servery 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. See also general guidance 6.1.3.
Other requirements: Use this item to specify, e.g. a coil casing.

612 Roller grilles . . . . . .
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
- – Product reference: . . . . . .

Contractor's choice
Submit proposals
- Arrangement: . . . . . .

Lateral, face fitted across opening
Lateral, fitted into reveal
Vertical, face fitted across opening
Vertical, fitted into reveal
- Grille curtain: . . . . . .

Aluminium
Nylon
PVC
Mild steel
Stainless steel
- – Finish as delivered: . . . . . .
- Frame/ Guides: . . . . . .
- – Finish as delivered: . . . . . .
- Operation: . . . . . .

Electrical, with constant pressure button control
Electrical, with key switch
Electrical, with remote control (induction loop)
Electrical, with remote control (radio)
Self coiling, push up/ pull down
- Ironmongery: . . . . . .
- Other requirements: . . . . . .

None

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.

615 Sectional overhead doors . . . . . .
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
- – Product reference: . . . . . .

Contractor's choice
Submit proposals
- Performance: . . . . . .

Acoustic control: ???
Fire resistance: ???
Thermal insulation: ???
Wind resistance: ???
- Arrangement: . . . . . .

Folding
Vertical lift
Vertical sectional folding/stacking
- – Track system: . . . . . .

Heavy gauge cold rolled galvanized steel
Self-supporting
- Door panels: . . . . . .

Lightweight aluminium sandwich panels
Galvanized steel inner and outer face infilled with high density polyurethane foam

• 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. See also general guidance 6.1.3.

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

– Finish as delivered: . . . . . .
Plastisol
Polyester primer coating and stucco embossed coating on both sides
Polyester resin
PVF2
• Operation: . . . . . .
Electrical, with constant pressure button control
Electrical, with key switch
Electrical, with remote control (induction loop)
Electrical, with remote control (radio)
Manual operation by pull cord
Manual operation by chain hoist
• Ironmongery: . . . . . .
Pull handles
Shoot locking bolt
• Other requirements: . . . . . .
None
Electrical wiring to Client supplied isolator
Emergency chain opener
Side pass door
Ventilation louvre
Ventilation grating
Vision panels
Wicket door

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.

Other reference(s) cited:
BS EN 1398.

617 Loading bay door and docking system
• Manufacturer: . . . . . .
Contractor's choice
Submit proposals
• Loading bay door:
– Manufacturer's reference: . . . . . .
– Performance: . . . . . .
Acoustic control: ???
Fire resistance: ???
Thermal insulation: ???
Wind resistance: ???
– Arrangement: . . . . . .
Folding
Vertical lift
Vertical sectional folding/stacking
Track system: . . . . . .
Heavy gauge cold rolled galvanized steel
Self-supporting
– Door panels: . . . . . .
Lightweight aluminium sandwich panels
Galvanized steel inner and outer face infilled with high density polyurethane foam
Finish as delivered: . . . . . .
Plastisol
Polyester primer coating and stucco embossed coating on both sides
Polyester resin
PVF2
– Operation: . . . . . .
Electrical, with constant pressure button control
Electrical, with key switch
Electrical, with remote control (induction loop)
Electrical, with remote control (radio)
Manual operation by pull cord
Manual operation by chain hoist
– Ironmongery: . . . . . .
Pull handles
Shoot locking bolt
– Other requirements: . . . . . .
None
Electrical wiring to Client supplied isolator
Emergency chain opener
Side pass door
Ventilation louvre
Ventilation grating

Vision panels
Wicket door
- Dock leveller:
  - Standard: To BS EN 1398.
  - Manufacturer's reference: . . . . . .
  - Type: . . . . . .

Counterbalanced drawbridge
Manual mechanical – free standing
Manual mechanical – pit installation
Spring loaded, hinged ramp
Track mounted – sliding
Track mounted – fixed
Hinged lip
Telescopic lip
  - Platform size: . . . . . .

2500 x 1800 mm
2500 x 2000 mm
3000 x 1800 mm
3000 x 2000 mm
3500 x 1800 mm
3500 x 2000 mm
4000 x 1800 mm
4000 x 2000 mm
4500 x 1800 mm
4500 x 2000 mm
  - Gradient length: . . . . . .

2500 mm
3000 mm
3500 mm
4000 mm
4500 mm
  - Single axle load capacity: . . . . . .

4 000 kg
6 000 kg
9 000 kg
10 500 kg
  - Colour: . . . . . .

Paint finish ??? RAL ???
  - Buffers: . . . . . .

??? x ??? x ??? mm rubber bumpers
  - Other requirements: . . . . . .

Pit edge angles
Platform insulation
- Dock shelter/ Load house:
  - Manufacturer's reference: . . . . . .
  - Construction: . . . . . .

Insulated
Uninsulated
Neoprene curtain material with flexible stays
Permanent
PVC curtain material with flexible stays
Retractable
  - Other requirements: . . . . . .

None
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. See also general guidance 6.1.3.

620 Collapsible gates/ Grilles . . . . . .
- Manufacturer: . . . . . .

Contractor's choice
Submit proposals
  - Product reference: . . . . . .

Contractor's choice
Submit proposals
- Arrangement: . . . . . .

Bottom rolling
Hinge aside
Top hung
- Gate leaf: . . . . . .

Fixing: Manufacturers' fixing recommendations should be followed to ensure that specified security ratings are achieved.
Other requirements: Use this item to specify, e.g. plated leading edge for strength and security, floating gates (top hung only).

– Finish as delivered: . . . . . .
Galvanized
Polyester powder coated
Standard grey hammer finish
• Ironmongery: . . . . . .
2 point lock with single key operation
Hook lock bolt
Shoot bolt
• Fixing: . . . . . .
Face fixed externally
Face fixed internally
Fitted between jambs
Fitted beneath lintel
• Other requirements: . . . . . .
None
Parallel bunch
Plated leading edge

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.*

630 Hatches . . . . . .
• Manufacturer: . . . . . .
Contractor's choice
Submit proposals
– Product reference: . . . . . .
• . . . . . .

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.

680 Up and over garage doors
• Manufacturer: . . . . . .
Contractor's choice
Submit proposals
– Product reference: . . . . . .
Contractor's choice
Submit proposals
• Type: . . . . . .
One piece canopy up and over
One piece fully retracting
• Finish as delivered: . . . . . .
Factory base stain
Galvanized
Polyester powder coated
• Operation: . . . . . .
Electrical, with constant pressure button control
Electrical, with key switch
Electrical, with remote control
Manual
• Other requirements: . . . . . .
None
Garage door frame
Remote control gear

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
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 EN 1999-1-1, Annex D.

Other reference(s) cited:
BS 6949.

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.

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

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 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/ Roller shutters/ curtains
- 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.

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.

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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.

810 Fire resisting/ smoke control doors/ Doorsets/ Roller shutters/ curtains

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

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.

820 Sealant joints

- Sealant:
  - Manufacturer: . . . . . .

Contractor's choice
Submit proposals

Product reference: . . . . . .

Contractor's choice
Submit proposals

  - Colour: . . . . . .

Black
Brown
Grey
White

  - Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.

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

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.

appearance. Factory fixing of ironmongery is likely to avoid many of these problems, although protection is still essential.

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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 ≥ 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 . . . . . .

on centre line of door leaf
with centre line 250 mm below centre line of top hinge

- Hinges for fire resisting doors: Positioned in accordance with door leaf manufacturer's recommendations.

860
Other reference(s) cited:
BS EN 1125.

860 Installation of emergency exit devices
- Standard: Unless specified otherwise, install panic bolts/ latches in accordance with BS EN 1125.