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FINISHES & INTERIORS SECTOR

SPECIFIERS' GUIDE
PARTITIONING

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PARTITIONING

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(Employers correct as of April 2022)

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FOREWORD

Specifying partitioning seems, on the face of it, simple enough: consider the look, performance and cost, and there it is. If only it were that simple there would not be cases where inappropriate glass was used in guarding, or the partition wasn't performing acoustically because the flanking paths hadn't been addressed.

This guide, written by industry specialists, pulls together decades of experience from specification writers who almost instinctively know the questions on all aspects – from performance, material characteristics, sustainability and environmental to conformity marking, installation, maintenance and end of life.

There has never been a time in construction when the specification has been more important. This specification guide from FIS sets out our desire to help everyone involved in the specification of products and systems, and our commitment to improving the safety of residents, occupiers and those who use the built environment.

IAN STRANGWARD, CHAIR,
FIS PARTITIONING AND PODS
WORKING GROUP

FIS is the trade body representing manufacturers, suppliers and installers in the fit-out sector, including drylining. The Partitioning Working Group is an inclusive body with the following objectives:

- Develop technical standards as required
- Promote best practice in the market
- Educate and inform clients and specifiers about (working group) work
- Promote the products and skills of FIS members in this field
- Monitor and support risk on behalf of the community
- Shape the market so that the correct adherence to standards is recognised and adhered to by all, to the benefit of clients.

Frameless double glazed partitioning

"A well written specification not only ensures the installation meets the client's requirements, but it also means the specifier's requirements are less open to interpretation..."

INTRODUCTION

The purpose of this publication is to highlight and guide you through some of the key criteria that should be considered when writing a specification for partitions.

Guidance is provided on the generic types of partitioning and the performance standards and regulations that may apply.

A well written specification not only ensures the installation meets the client's requirements, but it also means the specifier's requirements are less open to interpretation, prices at tender stage are more accurate and performance needs are clear.

Partitions are an integral part of many fit-outs, offering performance attributes where required, such as fire, acoustic, and robustness, as well as making a major contribution to the overall appearance and quality of the finished space.

There are a wide range of partitioning systems available, using a vast range of materials and construction techniques. These provide a huge scope for designers to create optimum solutions to meet clients' specific requirements. However, for the completed partitions to meet the legitimate expectations of the building owner, occupier, design professionals and construction team, the selection and installation process must be carefully considered and understood by all parties.

System manufacturers design and produce partitioning systems, which are then tested to meet the requirements for various environmental and performance levels. The provision of a whole range of design solutions is part of the responsibilities taken by manufacturers, who have a key role to play in partitioning design.

Note: it is in everyone's interest that an accurate and detailed specification is produced and reflects the GIRI principle of 'Getting It Right' first time to eliminate errors.

getitright.uk.com/resources

SCOPE

This guide has been produced to assist the selection and specification of partitioning.

This encompasses non-loadbearing partitioning systems that are proprietary products used to divide and subdivide spaces in commercial, education, manufacturing, healthcare, retail and leisure settings, designed and tested to meet statutory performance, flexibility and aesthetic design requirements for contemporary spaces.

They include

- Integrated glazed and solid partitioning
- Operable walls
- Pods
- Steel partitioning.

Note: drylining systems made from steel stud and plasterboard facings are covered in the FIS Specifier's Guide to Drylining.

Its aim is to help you select a system that will satisfy the performance needs and describe it in a structured way so that anyone reading it will understand it.

It is not a definitive list of standards, regulations or product types. Importantly, it is not a replacement for professional consultation on critical performance requirements or discussions with manufacturers on specific product use.

Partitioning should be specified, procured, supervised, installed and maintained by people who are competent.

This guide is primarily aimed at:

- Architects
- Designers
- Specifiers
- Acousticians
- Interior designers
- Specialist partitioning companies
- Complementary trades
- Building managers/end users.

CONTENTS

RIBA PLAN OF WORK

The RIBA Plan of Work is a document that outlines all stages in the planning, design and building process, from conception to completion on site. It is the most common document used in the UK to describe the stages in construction projects. The plan is often used by architects, yet it may not be easily digestible for all clients.

RIBA
Plan of Work

Under each stage you will find listed a number of issues that should be considered when specifying drylining. This, together with the checklist in the appendix, will help with ensuring that the right questions are being addressed at the right stage of the project.

architecture.com/knowledge-and-resources/resources-landing-page/riba-plan-of-work

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THE SPECIFICATION

WHAT IS A SPECIFICATION?

A specification is a detailed description of the performance requirements, dimensions, construction, workmanship, materials etc. of work done or to be done on a project, prepared by an architect, designer, engineer or manufacturer's specialist specification manager, often referred to as specifiers.

Note: specifications can be either prescriptive, where manufacturers are named, or performance, where the performance parameters are listed. So-called indicative specifications are considered less detailed and may refer to information contained in other strategy documents – this may lead to confusion and risk and, although they may be used as part of a development process, detailed specifications should be fully developed before tender.

TOP TIPS ON SPECIFYING PARTITIONING

On your next project, do not be tempted to cut and paste from the last project, but take a fresh look and see for yourself the benefits of following this simple guidance.

These are the key points that we think will help you write a smart specification:

1 TALK TO THE MANUFACTURER

Manufacturers and system suppliers have the expertise, competence and relevant test evidence to interpret your designs and find the most cost-effective solution to meet all aspects of the brief. They can also help develop solutions to meet specific requirements.

2 PERFORMANCE IS KING

Performance is probably the most important aspect of a specification (fire resistance and reaction to fire, sound insulation, mechanical/structural robustness, moisture resistance and thermal performance). Performance is key to getting a smart specification. A product may look great and be under budget, yet it will be useless if it can't perform in the way you want.

Note: additional performance requirements may be stipulated by the employer, as well as insurance requirements.

Performance should be maintained as part of the 'golden thread', particularly when considering product substitutions.

architecturaltechnology.com/resource/definition-of-golden-thread-approved-by-uk-government.html

It is important that you convey the performance requirement unambiguously, stating the standard to which the product should have been tested, and specifying systems rather than individual products that may not have been tested together.

Note: Building Regulations Approved Document B states that people who are responsible for building work (agent, designer, builder or installer) must ensure that the work complies with all applicable requirements of the Building Regulations in England, Wales and Northern Ireland and the Building Standards in Scotland.

3 CONSIDER THE INTERFACE WITH OTHER ELEMENTS AND JUNCTIONS

It has been said that the edge is the most important element of a construction project, which means interaction and interface are crucial if performance is to be maintained, as well as tolerances between abutting elements.

4 UNDERSTAND THE USE OF THE SPACE NOW AND IN THE FUTURE

Operational and working practices are changing rapidly to accommodate a new, more agile workforce, so a flexible approach may be required to layout and service positions, which should be considered during the specification.

5 UNDERSTAND THE BUDGET

Budgets will vary greatly from project to project depending on the performance levels required on the installation in question. Specifiers can make their budget work harder for them by speaking to manufacturers and specialist contractors and suppliers, who should be able to suggest where cost savings can be made without compromising the result.

6 UNDERSTAND THE PROGRAMME, SERVICE PENETRATIONS, FIXING RESTRICTIONS AND SITE CONDITIONS

Although careful planning and budgeting can account for most things, the selection and availability of the system and the site conditions during installation can impact the programme positively or hold up the completion of the project and have an impact on the final finishes.

7 UNDERSTAND THE VISION AND CLIENT ASPIRATION

Are the tolerances achievable and covered within current tolerance standards?

8 ENSURE THE PERFORMANCE AND WORKMANSHIP REQUIREMENTS AND STANDARDS ARE CLEARLY INCLUDED

Performance standards should not be mixed and should be clearly defined in the specification.

Specifying a product is only halfway there if you don't state the standard of workmanship and quality expected at handover, particularly where you are specifying finishes.

9 UNDERSTAND THE IMPLICATIONS OF MAINTENANCE

A product in a high-traffic area will undoubtedly require a different maintenance regime to, say, a boardroom. Products that can meet the need with minimum maintenance and cost should be a first choice.

10 UNDERSTAND THE ENVIRONMENTAL IMPLICATIONS AND WHAT WILL HAPPEN AT END OF USE

Specification considerations may in some cases be steered by where the partitioning will be installed – for example, partitioning in a high-humidity environment will be different to conditions found in a classroom. There may also be a need to meet a good BREEAM or SKA Rating, which will impact on the initial specification process.

11 DO NOT BE SCARED OF SPECIFYING NEW PRODUCTS

That's how new products are developed.

Note: a specification should state 'any alternative must be equal AND approved' not 'similar/equal OR approved'.

WRITING A SPECIFICATION

In order to provide a clear and unambiguous statement of what is required, a full, structured and detailed specification should be produced by the designer/specifier, ideally with assistance from the manufacturer.

WHAT'S INCLUDED AND WHAT'S NOT INCLUDED IN A SPECIFICATION?

The website of the National Building Specification body NBS says this about specifications:

"Populated by the specifier, a specification document describes in words what cannot be visualised or explained on a drawing or model. This document can be incredibly wide-ranging – covering the establishment of the site, the type of contract to be used, the performance criteria of the asset, the quality of the systems and products, which standards are applicable and how they should be executed, and even the products to be used.

"Specifications do not include information on cost, product availability, quantity or drawn/visualised information, so need to be read in conjunction with documents detailing quantities, schedules and drawings. For this reason, if a product is unavailable and a substitution is required, the specification document should be adhered to when choosing an alternative."

thenbs.com/knowledge/construction-specifications-everything-you-need-to-know

TYPES AND ADVANTAGES OF WRITING A SPECIFICATION

A specification should be produced in tandem with design work, with an ever-greater level of detail added as the design progresses.

Initially, an 'outline specification' serves as a reference guide for clients, and for contractors looking to price the project. Then, by defining what is expected in a 'performance specification', manufacturers can offer similar or more innovative solutions, as well as acting as a design brief for specialist subcontractors involved in the tender process.

THE SPECIFICATION

The 'full specification' should provide a detailed description of the product and/or systems in relation to the specific project and include the performance levels required.

HOW SHOULD SPECIFICATIONS BE STRUCTURED?

The structuring of specifications will vary from project to project but should reflect the work packages on a particular project and any subcontracts. This structuring should make it easier for contractors to price a job and provide a more accurate tender.

The use of a standard classification system, such as Uniclass 2015, or CAWS (Common Arrangement of Work Sections) is encouraged as it should reduce the potential for confusion or ambiguity.
designingbuildings.co.uk/wiki/Common_Arrangement_of_Work_Sections

Leaving specifications until the last minute – when production information is being prepared – is not advised.

NATIONAL BUILDING SPECIFICATION (NBS)

NBS provides libraries of pre-written clauses, guidance on regulations/standards and manufacturer product information. To ensure consistency, these are all written by NBS's in-house team and cover virtually all aspects of building design.

They are accessed through the NBS subscription service and have been developed over a long period of time. Starting out as NBS Clauses, the basic versions have been updated and added to with NBS Chorus.

Each main clause is followed by several subclauses to refine the type of product.

NBS CAWS Partitioning clauses
K10 Gypsum board drylinings/partitions
K30 Panel partitions
See Annex for a list of codes
NBS Chorus (Uniclass 2015)

It is important that manufacturers are consulted on projects. This will help to ensure that what you write in your specification is what will be installed on site. Most will also be more than happy not only to help you write the specification but also to build in performance, regulatory and any other requirements that should be considered when pricing or installing the partitioning system.

Although the manufacturer can draft a specification for consideration, the designer/specifier is ultimately responsible and accountable for ensuring the final specification complies with the project requirements and Building Regulations.

INTERNAL WALL TYPES (IWT)/SYSTEMS (IWS)

Using wall types to differentiate the construction of walls in a specification allows a pattern book approach to scheduling. Performance should take priority when developing the types, rather than finish, which may lead to confusion on site and risk the construction of non-conforming walls.

IWS should be rationalised where possible to reduce the different components on site, minimise waste and reduce the risk of non-compliance in construction.

Manufacturers will be able to assist in this process.

Steel partitioning systems are ideal in industrial settings

DESIGN CONSIDERATIONS

APPLICATION

Identify the achievable main characteristics that your partitioning should provide.

Satisfy performance requirements for specific applications with important requirements such as:

- Commercial offices – where sound insulation, sound absorption and flexibility will be as important as aesthetic design
- Warehousing and industrial partitioning - will have specific requirements for robustness as well as wipe-down capabilities
- Health/clinical - MRI rooms (only non-ferrous products); Pathology (smooth surfaces that can be easily cleaned and disinfected)
- Educational – making sure the robustness aspects and acoustics are fit for purpose
- Swimming pool – ensuring the installation components meet the need for corrosion resistance, moisture resistance and resistance to a high-chlorine environment
- Environmental accreditation schemes – ensuring the project meets the environmental and corporate social responsibility (CSR) standards of the client.

Aesthetics – to make a visual statement.

Wall/partition/ceiling interface – ensure the design intent is clear at specification stage.

Manufacturer-approved standard details should be included where possible.

Where manufacturers' details do not cover project specific interfaces, system suppliers should be consulted, and evidence of compliance approved before specification.

Any such interface details should be confirmed by the project's fire engineer and acoustic consultant to review and confirm the potential performance before specific junction details are approved by the principal designer before being issued.

Integration of services - the integration of service/tech panels beside doors to accommodate room booking and other services may have an impact on the acoustic and fire performance of the wall, and should be checked with the manufacturer.

Safe installation

Whichever selection is made, several key performance criteria should be met – some will ensure the space is fit for its intended purpose; others will be desirable but not essential.

Note: under the Construction (Design and Management) Regulations (CDM), the designer is responsible for ensuring the installation can be delivered and is safe. A designer must take account of pre-construction information the client or principal designer provides when making decisions about the extent to which they can eliminate foreseeable risks through the designs they produce. Where these risks cannot be eliminated, they should set out the steps they take to reduce or control them.

A designer must consider the risks to which people may be exposed through the course of constructing a building and when using it once completed.

PERFORMANCE

This section outlines some of the performance characteristics that partitioning systems can provide.

FIRE

Fire performance includes 'reaction to fire' and 'fire resistance'.

To be valid, reaction to fire and fire resistance tests must be carried out by the national accreditation body UKAS* or a 'notified body'* test laboratory that is authorised to conduct and issue test reports in accordance with the specific test standards.

*EN tests to be carried out by a notified body in the EU or an approved body in the UK.

REACTION TO FIRE

Reaction to fire relates to the degree to which a product will contribute, by its own decomposition, to a fire under specified conditions.

REGIONAL GUIDANCE DOCUMENTS

At the time of writing, guidance from the devolved nations differs by acceptance criteria. The table below summarises the current UK situation.

AD B (England)
assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/937932/ADB_Vol2_Buildings_other_than_dwellings_2019_edition_inc_2020_amendments.pdf

STH (Scotland)
gov.scot/publications/building-standards-technical-handbook-2020-non-domestic/

AD B (Wales)
gov.wales/sites/default/files/publications/2019-05/building-regulations-guidance-part-b-fire-safety-volume-2-buildings-other-than-dwellinghouses.pdf

TB E (Northern Ireland)
buildingcontrol-ni.com/assets/pdf/TechnicalBookletE2012.pdf

Products marketed throughout the UK and into the EU are tested and classified according to BS EN 13501-1 as this is now the only form of classification that satisfies all devolved regional requirements.

The minimum requirement for classification of partition or wall linings is B, C or D depending on the location and floor area of the room space, with additional classifications for production of smoke(s).

The use of the term 'class 0' in relation to BS 476 parts 6 and 7 as defined in earlier editions of the devolved guidance, particularly Approved Document B in England, should be viewed as an indication of performance rather than evidence of compliance.

The European classifications for reaction to fire, according to BS EN 13501-1, are summarised as on the following page.

Acceptance criteria for the UK

Region	Guidance document	European Classification according to BS EN 13501-1	UK National Classification from BS 476-6 and 7 tests
England	Approved Document B	Required for all new products placed on the market	Permitted for products already lawfully on the market with this classification
Scotland	Technical Handbook (section 2)	Required for all products placed on the market	
Wales	Approved Document B	Permitted	Permitted
Northern Ireland	Technical Booklet E	Permitted	Permitted

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Fire reaction classifications

Classification	Definition	Contribution to fire
A1	Non-combustive	None
A2	Limited combustibility	Very limited
B	Combustible	Limited
C		Minor
D		Medium
E		High
F		Easily flammable
These are a simplification of the current and European standards for informative value only.		

The minimum requirements for reaction to fire classification of wall/partition linings differ slightly from region to region. The following minimum classifications will satisfy all requirements:

B s1, d0

B
The main part of a classification is its letter: A1, A2, B, C, D, E or F. A1 represents the highest level of performance. F represents the lowest level of 'No performance determined'.

s1
There is a smoke classification of s1, s2 or s3. s1 represents the highest level of performance. s3 represents the lowest level of performance.

d0
There is a classification for flaming droplets and particles during the tests of d0 to d2. d0 represents the highest level of performance. d2 represents the lowest level of performance.

The classification system under BS EN 13501-1

These classifications are determined by testing to BS EN 11925 part 2 and BS EN 13823.

Testing of linings can be conducted on one of the standard substrates defined in BS EN 13238 if the lining is mounted directly to one of these substrates in practice. Any other condition, ie if the lining has multiple different material layers or is mounted as part of a composite construction (for example, bi-panel) – requires the construction to be tested in its end use form.

GYPSUM-BASED CONSTRUCTIONS

When considering gypsum-based constructions, this attribute is a fundamental requirement of the harmonised manufacturing standard for plasterboards – BS EN 520:2004+A1:2009 (EN 520) – and is stated on a product's declaration of performance (DoP). Most plasterboard products are able to fulfil the requirements of the standard to declare a default reaction to fire of A2-s1,d0, representing a very limited level of potential combustibility.

Note: this classification has replaced class 0 from BS 476-6,7 which should not be used in specifications.

The Gypsum Products Development Association (GPDA) statement – Fire performance contribution of plasterboards manufactured in accordance with EN 520 and used in system constructions/build-ups – provides more information on fire resistance and the reaction to fire of plasterboard.

gpda.com/wp-content/uploads/2021/06/GPDA-Compatibility-Statement-December-2020.pdf

Note: reaction to fire tests and performance claims are based on individual components and not assemblies, as no such test standard exists.

GLASS

Reaction to fire performance must be declared for glass used in buildings and construction works in a declaration of performance (DoP), according to the Construction Products Regulation.

Glass not containing organic material, including glass that is toughened or heat strengthened, is automatically deemed to be classified A1.

Glass that contains a certain amount of organic material, including laminated safety glass, is typically not classified and will have a No Performance Declared (NPD) statement on the declaration of performance.

A statement on reaction to fire classification from Glass for Europe, which represents the principle European glass producers, can be found at gpda.com/wp-content/uploads/2021/06/GPDA-Compatibility-Statement-December-2020.pdf

FIRE RESISTANCE

Fire resistance is a performance characteristic used to assess products used for fire compartmentation.

This performance is not a measure of individual materials such as glass, but of a system or build-up of which the glass forms only a component part and the fire resistance performance is achieved by the combined system in partnership with the construction into which it is installed.

While the criteria for fire resistance tests are also very specific, there are variations in the fire test construction, which can influence the test and installed performance. For example:

- Sample dimensions
- Orientation
- Nature of glazing (individually framed or butt-jointed)
- Inclusion of a door
- Type of supporting construction.

The specifier should examine the available test evidence and satisfy themselves that they are specifying a system that meets performance requirements and can be constructed and installed in accordance with the test evidence and field of application.

The specification should explicitly require that the system is installed strictly in accordance with the system owner's instructions.

The evidence of fire resistance will result from testing to either the UK national or European fire testing standards.

Testing to the UK national standards will be in accordance with:

- BS 476-20: Fire tests on building materials and structures – Part 20: Method of test for resistance test to building material
- BS 476-22: Fire tests on building materials and structures – Part 22: Methods for determination of the fire resistance of non-loadbearing elements of construction.

UK fire resistance tests will be conducted in a vertical furnace of typically 3x3m.

These tests will measure the fire resistance performance in minutes in terms of integrity and insulation. The report will state that no changes may be made to the tested sample when used in practice, although wider field of application assessments can be made by designated competent bodies in accordance with Passive Fire Protection Forum (PFPF) guidance and (EXAP) Extended application reports on the fire performance of construction products and building elements EN 15725.

Testing to the European standards will be in accordance with:

- BS EN 1363-1 Fire resistance tests. General requirements
- BS EN 1364-1 Fire resistance tests for non-loadbearing elements. Walls
- BS EN 1364-3 Fire resistance tests for non-loadbearing elements - Curtain walling.

European fire resistance tests are normally conducted in larger furnaces and samples can be tested up to 5m x 5m.

These tests will again measure the fire resistance in minutes in terms of integrity and insulation, but additionally will record the radiated heat projecting from the unexposed face of the sample. The report will refer to the Direct Field of Application (DIAP) in the fire test standard, which permits some changes to the tested sample, assuming sufficient over-run, without reference to third parties.

Following publication of the test report, the product should be classified in accordance with BS EN 13501-2. This will classify the product in terms of integrity (E), radiated heat (EW) and insulation (EI).

UK regulations require fire-rated partitions (including doors) to satisfy a fire resistance requirement, specified in minutes, in terms of either integrity or integrity and insulation. These can be defined as follows:

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Integrity (E)
Integrity refers to the ability an element or system must stop the flames or hot gases of a fire from physically passing from one side of the element (the fire side) to the other side (the non-fire side) through holes, gaps and cracks that may form during the test or any other types of openings. The element should stop flames and hot gases from passing through the element for the specified fire resistance period.

Failure is deemed to have occurred if flames or hot gases physically pass from one side of the element to the other side during the fire resistance period. For example, E120 denotes that the system will prevent flames and hot gases from physically passing through the element for 120 minutes.

Insulation (I)
Insulation refers to the ability an element or system must limit the surface temperature rise above ambient on the non-fire side of the element to 140°C as an average, or 180°C as a hot-spot maximum, for the specified fire resistance period, during which the fire side is exposed to a fully developed fire. The temperature readings are taken using thermocouples attached to various locations on the element's unexposed surface.

Failure is deemed to have occurred if either the average or the maximum temperature is exceeded during the fire resistance period. For example, I120 denotes that the surface temperature on the non-fire side of the element will not exceed 140°C as an average, or 180°C as a hot-spot maximum, for 120 minutes when the fire side is exposed to a fully developed fire.

Designers and specifiers should ensure that the system selected provides the fire resistance performance that is required in the specified location. It should be remembered that a system providing integrity-only fire resistance will allow extreme levels of heat to pass through it. Therefore, screens/doors that are not fully insulated should not be used in areas where combustible materials may be present. This video demonstrates the difference between the two types of performance. The left-hand screen is fully insulated, whereas the right-hand screen is providing integrity-only performance:
Insulated versus Non-Insulated Glass (Vetrotech)
youtube.com/watch?v=sw_j2i064nk

Particular care should be taken when specifying fire-resistant partitions in relation to the supporting constructions. Partitions must be installed into supporting constructions consistent with their fire test or their respective DIAP or any specific third-party assessment. For example:

Connections to structural secondary steel – Must take account of the fire resistance of that steel structure in making the attachment. Secondary steel must be protected from fire to the extent that it maintains its stability and structural integrity for at least the duration of the specified fire resistance period. This may require encasement.

Lightweight flexible bulkhead constructions – Must have sufficient rigidity to fully support the glazed partition beneath it in general use and in fire conditions to maintain itself and the integrity of the attachment. This is particularly critical where wide partitions are being specified that are in excess of their tested width.

Interface with raised access floors – Must take account of the weight of the partition and the conditions under which they are fire tested. Raised access floors will not have been fire tested under the same conditions as a partition and should not be considered as appropriate supporting constructions unless representative fire test evidence exists.

COMPARTMENTATION

Where compartmentation is required, the partitioning must be capable of satisfying the insulation and integrity requirements of the relevant regulations and guides and the fire strategy document for the stated period. To ensure adequate compartmentation, visible and concealed openings or cavities in raised floors, walls and ceilings, along with any service penetration, must be protected to the required standard to ensure the construction meets the requirement.

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Compartmentation provides a level of performance that is critical to the safety of the building occupants and subdivides the building into areas of manageable risk.

Where compartmentation is required, ensure that suitable evidence is provided showing the partitioning system's suitability. Where the installation varies from the test, professional assessments should be provided.

The interface of compartment walls should be designed in conjunction with the system supplier to ensure the hierarchy of performance requirements is accounted for. The highest performing compartments should be considered first, and the higher performing wall takes precedence.

Where the fire wall is also being used to provide an acoustic performance, the requirements for fire performance must take precedence.

FIRE PERFORMANCE LABELLING SCHEME

The labelling initiative aims to identify fire performance partitions to installers, M&E contractors, building owners and facilities managers, highlighting the risks of cutting service holes through partitions. Such holes negate the fire resistance performance of the partition, allowing smoke and fire to pass from one compartment to another. This could lead to loss of life and extensive damage to the building, as well as having a huge impact on the business.

Fire Performance Partitions Identification and associated guidance can be found in BS EN 13501 and BS 476.

More information about the fire performance labelling scheme can be found at thefis.org/fire-label

CAVITY BARRIERS

Vertical or horizontal barriers should be installed to restrict the spread of smoke and flames through cavities. See Building Regulations Approved Document B

assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/441669/BR_PDF_AD_B2_2013.pdf

FIRESTOPPING

Detailed guidance can be found in the FIS guide: **FIRESTOPPING OF SERVICE PENETRATIONS – BEST PRACTICE IN DESIGN AND INSTALLATION**

thefis.org/membership-hub/publications/best-practice-guides/firestopping-of-service-penetrations/

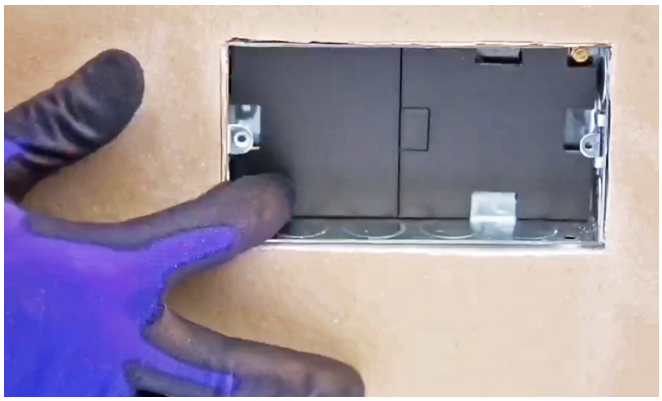
Firestopping is the provision of seals to restrict the passage of fire and smoke through penetrations and fire-resistant elements. See relevant regulations, standards and guides.

The installation of service elements such as pipes, cables ducts and dampers through partitioning without fire continuance measures of the same standard as the partitioning can lead to a breach of the compartmentation line in a fire. If in doubt, speak to the manufacturer or a specialist consultant.

SERVICE OPENINGS

Where services penetrate any partitioning, it will compromise the system's ability to perform (acoustics and fire performance). Therefore, any penetration should be carefully planned and coordinated to ensure that the system's fire performance can be maintained and any implications on sound insulation can be mitigated where possible.

Partial penetration with intumescent lining



PERFORMANCE

PARTIAL PENETRATIONS

Non-loadbearing partitions are fire tested imperforate, so any hole cut into the face of the boarding, either on one side or back-to-back, would have a potential impact on the fire performance.

Unless there is specific fire test evidence to show that no additional fire stopping is required, then this should be provided. This could be putty pads (or variations), baffles, mineral wool or intumescent inserts.

ROBUSTNESS

The designer should select a system that has been tested and classified in accordance with BS 5234-2 to meet robustness performance requirements. The designer should also specify one of the duty ratings from the duty ratings table that are based on the building occupancy type. Each duty rating summarises a set of loading and impact criteria typical to the environment.

For reference, the types of loading and impact that constitute a duty rating are as follows:

- Partition stiffness using a concentrated point load to measure displacement and damage
- Resistance to surface damage and perforation from a small, hard body
- Resistance to surface and structural damage from a large, soft body
- The ability of a partition to withstand forces generated for door slams.

All duty ratings use the same set of criteria, so the differences lie in the performance as measured by displacement and damage incurred.

As an example of how performance varies by duty rating, Annex A has pass limits on maximum and residual deflection as follows:

- Light duty – 25mm maximum, 5mm residual
- Medium duty – 20mm maximum, 3mm residual
- Heavy duty – 15mm maximum, 2mm residual
- Severe duty – 10mm maximum, 1mm residual.

Where a partition system is used as guarding to prevent falls from height, it should also conform with the requirements of BS 6180.

Requirements

Requirement

Protection from falling

K2.— (a) Any stairs, ramps, floors and balconies and any roof to which people have access, and

(b) any light well, basement area or similar sunken area connected to a building

shall be provided with barriers where it is necessary to protect people in or about the building from falling.

Limits on application

Requirement K2 (a) applies only to stairs and ramps which form part of the building.

Extract from BS 5234 Part 2: 1992 Partitions (including matching linings)

Grade	Category of duty	Examples
Light duty (LD)	Adjacent space only accessible to persons with high incentive to exercise care. Small chance of accident occurring or of misuse.	Domestic accommodation
Medium duty (MD)	Adjacent space moderately used primarily by persons with some incentive to exercise care. Some chance of accident occurring and of misuse.	Office accommodation
Heavy duty (HD)	Adjacent space frequently used by the public and others with little incentive to exercise care. Chances of accident occurring and of misuse.	Public circulation areas, industrial areas
Severe duty (SD)	Adjacent space intensively used by the public and others with little incentive to exercise care. Prone to vandalism and abnormally rough use.	Major circulation areas, heavy industrial areas

BARRIER PROTECTION

In partitions acting as a barrier according to BS 6180 and Eurocode EN 1991-1-4, glazing that falls entirely or in part below the 'design level' of 1,200mm Finished Floor Level (FFL) must withstand a unique set of loading criteria, summarised as follows:

- Concentrated point load (CPL) measured in kN (kilo newtons) @ 0.25, 0.5 or 1.5kN
- Uniformly distributed load (UDL) in kN/m^2 (kilo newtons per square metre) at 0.5, 1.0 or 1.5kN/m^2
- Horizontal uniformly distributed line load in kN/m (kilo newtons per linear metre) at 0.36, 0.74, 1.5 or 3.0kN/m.

Unlike the duty ratings from BS 5234, here the magnitude of the loading criteria varies by occupancy and should be specified in full according to occupancy class or subcategory shown in the table below.

There is an additional mandatory 'user comfort' pass criteria that horizontal displacement under loadings should not exceed L/65 or 25mm (whichever is smaller).

In the case of frameless glazing, which is defined as being retained on only two edges, L equals the distance between supports (effectively, the partition height).

In the case of glazing retained on four edges, L equals the longest dimension, so L/65 or 25mm will always need to be calculated according to the relative height x width of glazed panels in order to establish the pass criteria.

BS 6180:2011 makes limited prescriptions regarding suitable glass types in accordance with their associated standards and impact classification in accordance with EN 12600.

Note: monolithic thermally toughened glass is not prohibited in formal guidance, but by consensus among manufacturers, these glass types have undesirable breakage behaviour in the case of a frameless glazed partition acting as a barrier, due to the risk of falling glass in the event of breakage.

Consult with the system manufacturer for advice on the right type of annealed, and/or toughened/heat-strengthened laminates, as well as the benefits of heat soak testing for the specified product and application. But all glass types used should have a Type B safety classification in accordance with BS EN 12600.

See the appendix for more specific guidance on barrier glazing and the specification of the glass.

Glass used in a guarding situation

Summary of UK national Annex to Eurocode EN 1991-1-1

BS 6180 occupancy class	BS EN 1991-1-1 occupancy category (sub-category)	Horizontal uniformly distributed line load (kN/m)	Uniformly distributed load (kN/m^2)	Concentrated point load (kN)
1	A (i)	0.36	0.50	0.25
2	A (ii) B (iii) C3 (vi) C4 (viii)	0.75	1.00	0.50
3	C1 (iv) C2 (v) D1 (viii) D2 (viii) C5 (ix)	1.50	1.50	1.50
4	C5 (x)	3.00	1.50	1.50

MOVEMENT JOINTS

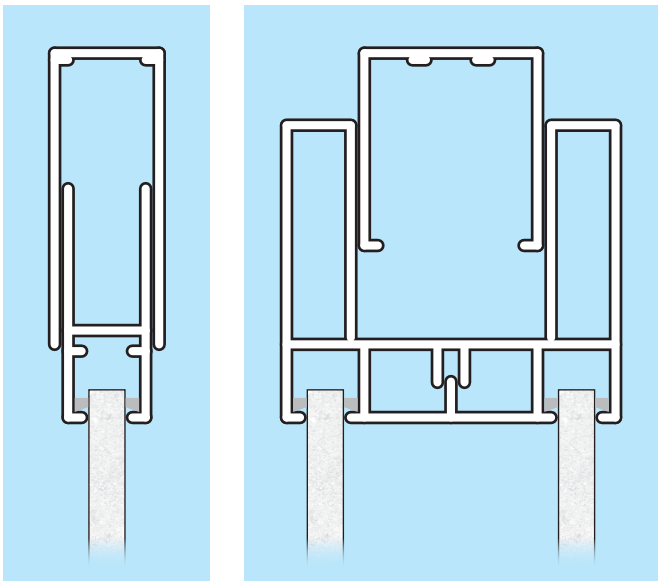
Movement joints should be designed in accordance with the system supplier's details and to coordinate with building movement joints.

DEFLECTION HEADS

Where partitioning will be installed to accommodate movement from live and dead loads, a deflection head should be specified in accordance with the structural engineer's advice.

Deflection heads can accommodate + and – movement expressed as ± in mm, usually in increments of 5mm.

Deflection heads may impact other performance characteristics, so the specifier should ask the manufacturer to provide evidence that deflection head variants (where required) were tested in conjunction with the associated acoustic, fire and robustness evidence.



Fixing anything directly to either the column/beam treated with intumescent paint will impede the intumescent paint from expanding and may allow heat to transfer to the steel.

This may result in localised loss of strength and potential failure in the event of a fire.

MAXIMUM HEIGHTS

The maximum heights that a system can be specified for installation will depend on:

- Partition type
- Stud configuration
- Layers of plasterboard
- Thickness of glass
- Performance
  - Fire (if an extended field of application is available using EN 1364)
  - Acoustic
  - Robustness
  - Wind loading

If the height needs to be increased further, this will require an engineering judgement and should be carried out by an appropriate person such as an accredited fire third-party UKAS-accredited body. They will refer to the 'extended field of application' (EXAP) in EN 15254-3 and then a classification report in accordance with EN 13501-2 should be issued. The accredited body would require the evidence from the actual test and the EI figures to demonstrate the partition stiffness. This process should be carried out at the beginning of the project if the requirement is to EN 1364.

Where test results have been provided from tests using BS 476, the Association for Specialist Fire Protection (ASFP) Advisory Note 17 and the PFPF technical assessment guide 3 should be used when designing.

asfp.org.uk/page/Publicationslist

ACOUSTICS

A GUIDE TO OFFICE ACOUSTICS
thefis.org/membership-hub/publications/guide-office-acoustics/

SOUND INSULATION

Sound insulation is achieved by a reduction in the amount of sound energy that passes between two spaces separated by a dividing element.

Airborne sound insulation is achieved where spaces are separated with products containing mass as well as soft absorbing products and installed so that they are airtight to reduce flanking sound paths through gaps.

The sound insulation of a system such as a partition can be tested in a laboratory to produce a single-figure rating reflecting the number of decibels by which sound reduces as it passes through the system. The figure will depend on the frequency of the sound in the source room, so measurements are generally taken across a range of frequencies between 50Hz and 5,000Hz and are taken at one third octaves.

Test results are then compared with a standardised reference curve to produce a weighted sound reduction index (R_w), where figures across a range of frequencies between 100Hz and 3,150Hz are used, in accordance with BS EN ISO 717-1: 1997.

BUILDING ACOUSTICS

This is the science of controlling noise in buildings, including the minimisation of noise transmission from one space to another, and the control of noise levels and characteristics within a space.

FLANKING TRANSMISSION

This is the indirect transfer of sound energy around an element such as a partition wall, through service penetrations, doors, windows and the building structure.

Sound reduction index - a guide to sound insulation levels for speech privacy

Sound insulation between rooms R_w	Speech privacy
25dB	Normal speech can be overheard
30dB	Loud speech can be heard clearly
35dB	Loud speech can be distinguished under normal conditions
40dB	Loud speech can be heard but not distinguished
45dB	Loud speech can be heard faintly but not distinguished
>50dB	Loud speech can only be heard with great difficulty

SOUND REDUCTION INDEX

The ability of a partition to reduce airborne sound is tested in a laboratory. The measurement is based on the absence of flanking transmission and is measured over a specified range of frequencies to allow professional evaluation.

To allow specifiers to compare the sound insulation performance of a ceiling, a single weighted R_w value is shown in the test report and in the manufacturer's literature.

Note: sound insulation figures are measured in a laboratory where the conditions are controlled to enable specifiers to compare products' performance.

Note: as site conditions will vary, an acoustician should be consulted to interpret the laboratory results and advise on the anticipated on-site performance.

Note: any penetrations in the partitions for services will have an impact on the element's ability to perform and it may lead to significant loss of performance.

PERFORMANCE

FIS ACOUSTIC VERIFICATION SCHEME

In a bid to curb growing incidents of 'passing off', FIS has teamed up with Cundall Acoustics to develop an acoustic test certificate verification scheme.

The scheme takes test data and reports and runs a series of checks to verify information is accurate and genuine. Details can be found at thefis.org/knowledge-hub/specifiers/acoustic-verification-scheme/

STRUCTURAL SOUND TRANSMISSION

Structural sound caused by footfall, machinery such as air conditioning units or lifts is primarily controlled by isolation and/or the absorption of vibration.

Partitioning alone cannot control structural sound transmission.

ROOM ACOUSTICS

To ensure that the room acoustics are fit for purpose, the level of reverberation within the room should be controlled.

REVERBERATION

Acoustic problems and disturbance in a room are often derived from long reverberation times, which give a room an echoey feel.

The acoustic quality of a room can be expressed by measuring the reverberation time (**RT**) – the length of time it takes for reverberation to die down. If a room has a long reverberation time, one spoken word does not have time to die out before the next reaches the listener. With this overlapping of sound, speech intelligibility is poor. Generally, the shorter the **RT**, the better the speech intelligibility.

The optimum **RT** for a room or space depends on its intended use, be it office, conference room, classroom, cafeteria, cinema or library.

Measured in seconds, **RT** is defined as the time taken for a generated sound to decay by 60dB once the sound source has been stopped.

Measurement of the room's **RT** and any subsequent calculations will depend on several physical attributes – the dimensions and shape of the room, the construction and materials used for the interior surfaces, and the type and position of any other materials or objects used in the room. Surface materials and objects with good, proven levels of sound absorption will reduce **RT**.

As well as providing the right balance between reflection and absorption, the selection, quantity and positioning of sound absorbing materials are key factors in achieving the correct **RT** for the room's intended use. Acoustic products in the ceiling and upper parts of the walls provide a more consistent level of absorption/reflection as they are free from obstructions such as desks, chairs and furniture.

For more guidance see the FIS **SPECIFIERS GUIDE - CEILINGS AND ACOUSTIC ABSORBERS**
thefis.org/membership-hub/publications/specifiers-guides/ceilingsandacousticabsorbers/

PERFORMANCE

Sound absorption classification

Class	A	B	C	D	E	Not classified
α_w value	0.90, 0.95, 1.00	0.80, 0.85	0.60, 0.65, 0.70, 0.75	0.30, 0.35, 0.40, 0.45, 0.50, 0.55	0.15, 0.20, 0.25	0.00, 0.05, 0.10

SOUND ABSORPTION

The sound absorbing properties of products are described in sound absorption classes A to E, class A being the highest level of sound absorption.

Materials are tested for their ability to absorb sound by being placed in a reverberation chamber and tested in accordance with EN ISO 354. The test is carried out over 18 separate frequencies, from 100Hz to 5,000Hz, and the results reported individually as sound absorption coefficients (**αs**) between 0.00 (total reflection) and 1.00 (total absorption).

The equivalent sound absorption area (**A**) is the amount of a chosen product or object that would be required to equal 1m2 of a notional material (or open window) that has a sound absorption coefficient (**α**) of 1.00 (100% absorption) at all frequencies.

Note: as there is no single weighted figure for these results, the best comparison is to calculate the reverberation time for each room or consult an acoustician, who will compare products and calculate the quantity you require to achieve the optimum reverberation time in each room. They can also advise on the optimum positioning of the absorbers.

INTELLIGIBILITY

It is important that speech can be understood, so in addition to working towards achieving a reverberation time, some additional acoustic engineering may be required by adding reflective and absorbent surfaces in strategic places.

ELECTRICAL SAFETY

Poor electrical installations can pose a risk of electrocution and a serious fire risk.

Although aimed at the domestic market, this publication provides an overview of areas of risk in many construction projects: electricalsafetyfirst.org.uk/media/1199/best-practice-guide-5-issue-2.pdf

OTHER MATERIAL CHARACTERISTICS

VOLATILE ORGANIC COMPOUNDS (VOCs)

Products that release very low levels of formaldehyde are required to achieve credits in most environmental schemes. The current method of assessing formaldehyde content is described in BS EN 13964 and is based on EN 717-1, which has two classifications E1 release ≤ 0.124 mg/m^3 and E2 release >0.124 mg/m^3.

Note: some plaster and plasterboard products and gypsum fibre board products are designed to absorb VOCs.

CORROSION RESISTANCE

It is important to identify any environmental conditions, such as high humidity in leisure facilities or exposure to sea air in canopies, to ensure that the materials specified are robust in these conditions.

A dew point/condensation study should be produced during the design stage, where different temperature or humidity levels will exist, to establish where further mitigating measures are required.

During the design process, the specifier should consider any environment within the project scope that may cause the corrosion of metal components and systems. Examples include swimming pools, commercial kitchens and laundries. EN 12944 provides more guidance and outlines the range of environments, both internal and external, that can lead to the corrosion of steel components. The corrosive categories range from C1 (very low) to C5 (very high). For example, an indoor swimming pool has a rating of C4.

Extract from BSEN 12944

Corrosivity category	Low carbon steel thickness loss µm	Examples of typical environments (informative only)	
		Exterior	Interior
C1 very low	≤1.3	–	Heated buildings with clean atmospheres eg offices, shops, schools, hotels
C2 low	>1.3 to 25	Atmospheres with low levels of pollution; mostly rural areas	Unheated buildings where condensations can occur eg depots, sports halls
C3 medium	>25 to 50	Urban and industrial atmospheres, moderate sulphur dioxide pollution; coastal area with low salinity	Production rooms with high humidity and some air pollution eg food-processing plants, laundries, breweries, dairies
C4 high	>50 to 80	Industrial areas and coastal areas with moderate salinity	Chemical plants, swimming pools, coastal ship and boatyards
C5 very high	>80 to 200	Industrial areas with high humidy and aggressive atmosphere, and coastal areas with high salinity	Buildings or areas with almost permanent condensation and high pollution
CX extreme	>200 to 700	Offshore areas with high salinity, and industrial areas with extreme humidity and aggressive atmosphere, and sub-tropical and tropical atmospheres	Industrial areas with extreme humidity and aggressive atmosphere

OTHER MATERIAL CHARACTERISTICS

The specifier should then seek guidance from the relevant manufacturers to ensure the components are adequately protected to meet the demands of the location/scenario. It is also recommended that the designer engages with a corrosion specialist at an early stage to review which elements of the design need protecting, to what degree and for what length of time. This includes items such as fixings, welds, metal studs and ceiling components.

Extreme environments require specialist stainless steels. And advice should be sought.

Overhead and in semi-enclosed ceiling voids, chloride attack can seriously damage even A4 stainless steels, so 1.4529 steels – A5 or high corrosion resistant (HCR) steels – should be used.

AIR PERMEABILITY

The ability of a product or system to resist the passage of air can be a requirement between operating theatres, clean rooms and laboratories, where rooms may require a positive or negative room pressure. It is also important where airborne sound insulation is required.

WIND LOADING/AIRTIGHTNESS

Air pressure variations can be caused by the normal opening and closing of doors and windows, so the move to airtight buildings may increase the pressure exerted on ceilings and walls. It is important to identify if the risk could occur and, if so, to what extent.

Where dominant opening occurs – for example, in warehouses – specific advice should be sought from structural engineers and manufacturers to ensure that the system will still meet the specified performance.

Note: wind load/pressure differential data will be required to provide a specification to meet the requirements.

RESISTANCE TO BACTERIAL/ FUNGAL GROWTH HYGIENE

Clinical, laboratory and food preparation areas will have specific requirements to resist bacterial and fungal growth, which must be considered at the specification stage.

SUSTAINABILITY

The sustainability of partitioning can be measured using an Environmental Product Declaration (EPD) using ISO 14025 or BS EN 15804 to understand the embodied carbon and environmental impacts, as well as understanding how manufacturers are actively engaged in recycling and reducing their carbon footprint.

There are number of environmental schemes, such as the Well Building Standard, SKA Rating and BREEAM, whose goal is to assess the impact on our wellbeing and the environment of both construction and use of the project when completed. Some of these also assess the impact of refurbishment and refit of older projects.

standard.wellcertified.com/well

.rics.org/uk/about-rics/responsible-business/ska-rating

breeam.com

PRECYCLE AGREEMENTS

Some manufacturers can provide an agreement either to take back materials for recycling or reuse, or to signpost recycling routes to ensure that materials do not end up in landfill.

CONFORMITY MARKS

UKCA MARKING (FOR PRODUCTS PLACED ON THE MARKET IN ENGLAND, WALES AND SCOTLAND)

The UK has adopted current (2021) harmonised Europe norms as designated standards, requiring products placed on the market in England, Scotland and Wales to have a Declaration of Performance (DOP) produced by a designated body in the UK and to affix a UKCA mark.

gov.uk/guidance/prepare-to-use-the-ukca-mark-after-brexit

UKNI marking is for products produced in the UK and placed on the market in Northern Ireland.

CE marking is for products placed on the market in the EU or produced in the EU and put on the market in Northern Ireland.

Where a designated standard or a UK technical assessment exists for a product, the Construction Products Regulation (CPR) places obligations on the manufacturers, distributors

and importers (known collectively as economic operators) of that product when it is placed on the market. The product must have a declaration of performance and have been affixed with CE/ UKCA marking.

To improve transparency in terms of product performance, CE-marked construction products are covered by a DOP to enable customers and users to easily compare the performance of products available on the European market.

There is currently no designated or harmonised standard for partitions that allows for CE or UKCA marking of partition kits.

Some individual components such as door hardware or glass panels can be conformity marked.

MATERIALS

GYPSUM PLASTERBOARD

Plasterboards are manufactured in accordance with BS EN 520:2004+A1:2009 Gypsum plasterboards, which specifies the characteristics and performance of gypsum plasterboards intended to be used in building construction works and covers the following product performance characteristics: reaction to fire, water vapour permeability, flexural strength (breaking load), impact resistance and thermal resistance.

Gypsum plasterboards are manufactured from a gypsum core encased in and bonded to paper liners. Gypsum is obtained from several sources: mining in quarries; manufactured using DS (desulphogypsum), a by-product of flue gas desulphurisation from coal-fired power stations; and recycled from old gypsum products.

Plasterboard can have a high recycled content and is a recyclable, sustainable product.

GLASS

Regulations covering the use of glass in partitions are comprehensive and specifically detail the performance requirements in relation to fire, impact and visibility in partitions and doors.

The glass type and finish specified should therefore be capable of complying with the regulations in all respects.

GLASS TYPES

BS EN 572 covers glass types used in the interiors sector.

Toughened glass

Float glass that is heat treated (tempered) and is used as safety glass. When broken, it shatters into small pieces, so any edgework drilling or surface decoration – etching or sandblasting – must be carried out prior to the toughening process, as the glass cannot be reworked after treatment. Tends to be used for frameless partitioning and glass doors but can be vulnerable at the edges.

Nickel sulphide inclusions

The presence of nickel sulphide (NiS) inclusions may cause toughened glass to spontaneously break after installation. This is a rare but naturally occurring phenomenon in the float glass manufacturing process. The risk of toughened glass spontaneously breaking due to the presence of critical NiS can be reduced (but not eliminated) by subjecting the glass to heat soaking testing (HST). The contractor is not liable for any losses, claims, damages, liabilities, cost or expense incurred by the client or by any end user because of any defects existing in toughened glass (whether heat treated or not) caused by its manufacturing process.

Laminated glass

Two or more sheets of float glass that are bonded together using a special interlayer and is used as safety glass. If broken, the pieces are retained by the interlayer and, if properly supported, will remain within the partition without shattering. Cut-outs, notches and mitred edges should be carried out under workshop conditions, but unlike toughened glass, laminated glass can be reworked if necessary.

Switchable LCD privacy glass/film

Normally has a diffused white appearance, which acts as a screen but can be made transparent simply by passing an electric current through it. The liquid crystal film is sandwiched by two layers of conductive film, which is then laminated between two pieces of glass. Available in 10mm, 12mm and 14mm thicknesses, the system is operated by electrical switch or remote control via a transformer.

Glass thickness type should be specified by the system owners as a function of the required performance.

Best practice in all partitioning situations would be to always use safety glass to BS EN 12600.

PARTITIONING SYSTEMS

Non-loadbearing partitioning systems are proprietary products used to divide and subdivide spaces in commercial, education, manufacturing, healthcare, retail and leisure settings. They are designed and tested to meet statutory performance, flexibility and aesthetic design requirements for contemporary spaces.

TYPES OF PARTITIONING

DEMOUNTABLE/RELOCATABLE

All non-loadbearing partitions are demountable; that is, they can be demolished and removed. Demountable partitions cannot be taken down without damaging or destroying some or all components.

Relocatable partition systems are designed so that they can be demounted and re-erected.

A relocatable or reusable modular partition system can be removed and relocated reusing a minimum of 80% of the components again, measured by weight. It should be capable of reinstallation within a tolerance of ±10mm of the original installed height.

Relocatable partitions can be financially accounted for as plant and machinery allowances (PMA), meaning that they are eligible for tax relief against corporation tax, either under the annual investment allowance (AIA) or writing down allowance (WDA). An accountant should be consulted to advise on the best option.

Note: the partition must be specified as relocatable/moveable and the case law is Jarrold v John Good and Sons 1958 gov.uk/hmrc-internal-manuals/capital-allowances-manual/ca21120

STUD AND BOARD

Stud and board systems form demountable, non-loadbearing, lightweight performance partitioning systems.

The overall system thickness is approximately 75mm, 100mm or 125mm, with the aluminium profiles available in satin anodised or colour coated, generally to BS or RAL colour ranges.

Systems are generally based on 1,200mm modules and are constructed with a framework of nominal 48/50mm or 70/75mm galvanised studs, faced on both sides with one or two layers of 12.5mm plasterboard.

The cavity formed can be used to incorporate insulation material to enhance the acoustic and fire performance of the partition.

Fire performance: stud and board systems can offer fire resistance of up to 30 minutes in most elevations and up to 60 minutes on 100mm double skin construction. Increased performance may be achieved by using thicker performance boards (refer to system manufacturer).

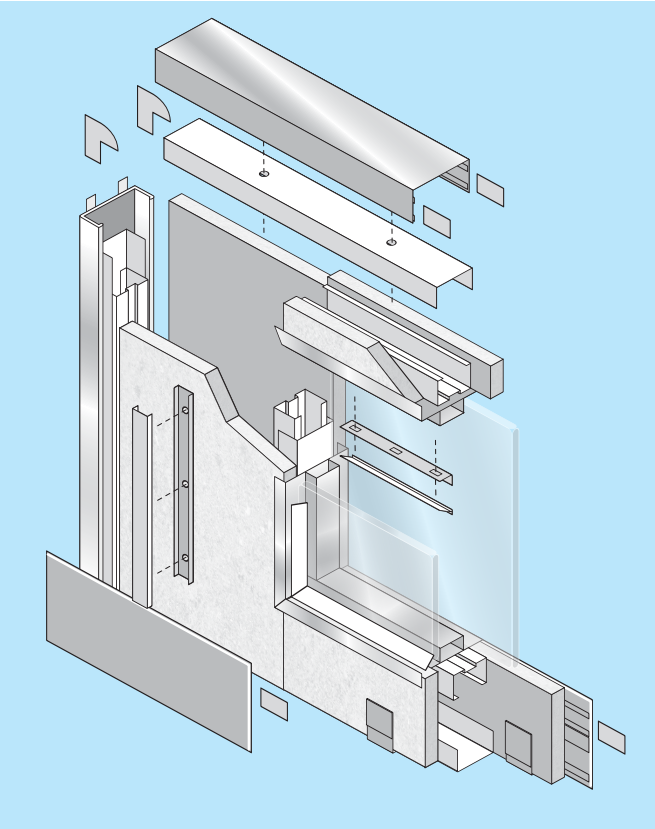
Acoustic performance: through solid elevations, up to 52dB (R_w) can be achieved, while glazed modules can achieve up to 42dB (R_w).

Structural performance: solid elevations including doors, when using correct detailing from the manufacturer, can provide medium duty performance levels. Heavy duty can be achieved on 100mm double skin construction.

Note: when any performance is required from a system, it must be installed in accordance with the manufacturer's instructions.

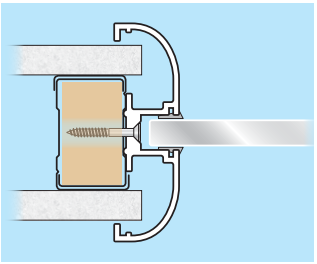
For more guidance see the FIS **SPECIFIERS GUIDE - DRYLINING**
thefis.org/membership-hub/publications/specifiers-guides/drylining/

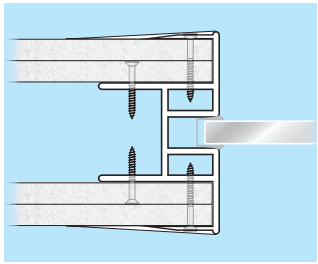
PARTITIONING SYSTEMS



INTEGRATION WITH GLAZING SYSTEMS

Most partitioning systems will have single, double, full-height, mid, half, top, framed and frameless glazing elevations as part of their system solutions. However, increasingly a range of aluminium extrusions are available to provide a wide choice of stud and board to glass junction details.





FRAMELESS GLASS PARTITIONS

Frameless glass partitions comprise 10mm to 25mm safety glass, or in excess of 50mm for specialist fire screens, installed between head and floor tracks.

The edges of the glass are polished to accept a jointing method to provide a frameless glass partition.

The glass can be installed in module sizes of up to 1,500mm wide (subject to access into and around the site) or can be equalised along the partition run.

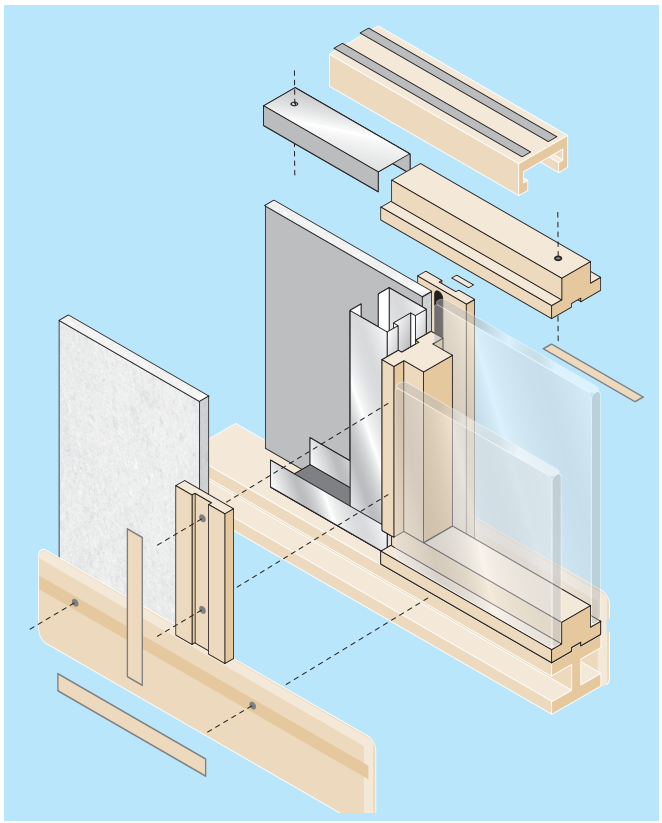
Fire performance: up to 120 minutes integrity and 120 minutes insulation is possible.

Aluminium and steel framed systems are typically integrity only; insulation can be achieved using modified and tested solutions.

Note: test evidence should be checked at specification stage.

Insulated glass is a laminated safety glass that includes an interlayer containing a reactive coating that goes opaque and expands to provide thermal insulation during the appropriate fire test.

Acoustic performance: single-glazed systems, up to 40dB ($\boldsymbol{R}_w$); double-glazed, up to 54dB ($\boldsymbol{R}_w$).



TIMBER SYSTEMS

Pre-lacquered timber or veneered MDF (V-MDF) partition systems can offer fire resistance, good acoustic performance, a wide range of veneers and generally an option of double or offset glazing. As a natural product, there will be differences in shade and grain. Solid timber components are likely to be less similar than veneered components.

PARTITIONING SYSTEMS

BI-PANEL SYSTEMS

Bi-panel systems are relocatable partitions made up of two single factory-produced panels, usually in 1,200mm or 1,500mm module widths, hooked onto an upright stud section. Some systems offer a varying stud thickness to provide an accessible service void.

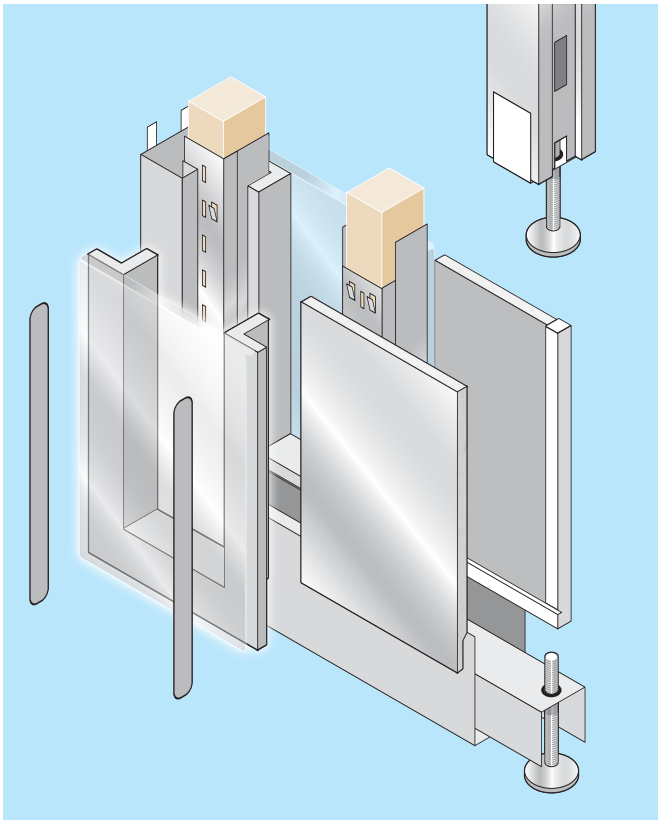
Panels can be manufactured from steel-faced plasterboard, veneered, painted and laminated MDF panels, as well as glazed panels.

The systems offer great flexibility, with the ability to relocate, change module type and have different finishes on each side of a module.

Both the head and floor track will become recessed profiles when the panels are fitted. No skirting sections are required with the systems.

Fire performance: 30 minutes is achievable and up to 60 minutes in solid module format.

Acoustic performance: up to 50dB (R_w) in solid modules and 45dB (R_w) in glazed modules can be achieved.



MONOBLOC SYSTEMS

Monobloc systems are relocatable partitions manufactured and assembled in factory conditions to either specific or standard dimensions. Each panel will arrive on site with its pre-finished face, which can be solid, glazed, glazed with integral blinds or half glazed. This enables a fast installation time on site, flexibility of design and simple relocation benefits.

Monobloc systems divide into three categories:

Monobloc: generally full height, very good fire and acoustic specification, bespoke design, possibilities to accommodate working wall, usually installed by the manufacturer.

Steel panel: standard and bespoke products, single or double skin, full or partial height, predominantly steel or glazed modules, installed either by the manufacturer or the specialist contractor.

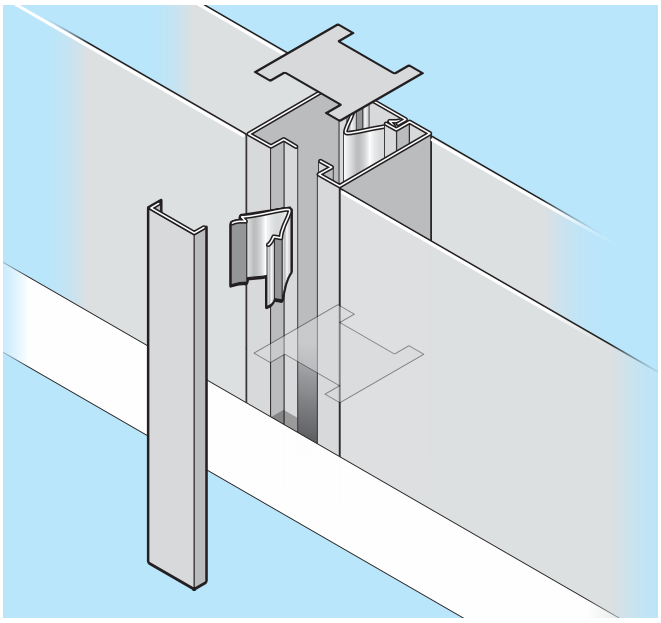
Cleanroom: technical solutions for the medical/high-tech environment, installed either by the manufacturer or the specialist contractor.

PARTITIONING SYSTEMS

DOUBLE-SKIN STEEL SYSTEMS

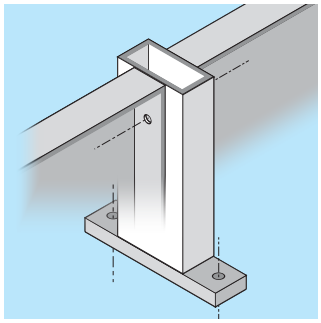
Double-skin steel partitions are relocatable factory-assembled modules in a variety of elevations, including all steel, mid-glazed, top-glazed and fully glazed.

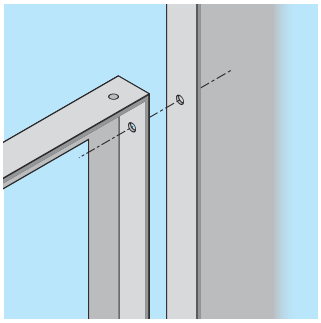
The glass can be single or double-glazed.

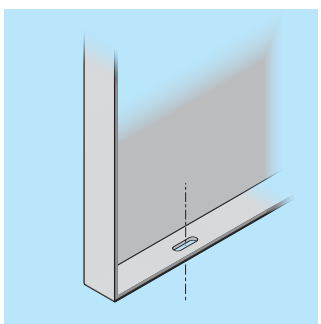


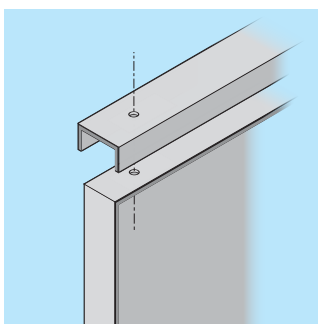
SINGLE-SKIN STEEL SYSTEMS

Single-skin steel partitions are relocatable factory-assembled modules in a variety of elevations, including all steel, all mesh, mid-mesh/glazed, top-glazed.

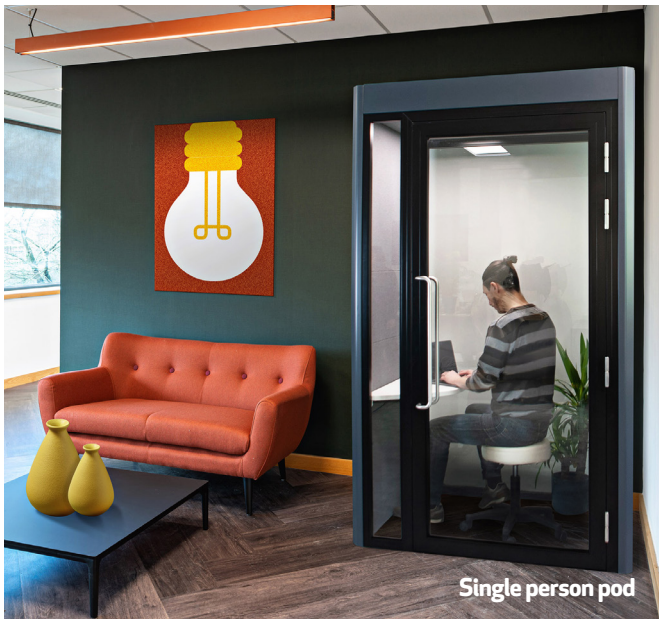








Mesh partitioning



Single person pod

PODS

Pods are demountable and relocatable free-standing objects, comprising solid or glazed panels with and without doors or ceilings, configured to accommodate individuals or groups of people for concentrated or collaborative work.

Office pods are flexible and adaptable meeting room solutions and usually comprise acoustic panels, glass panels and either hinged or sliding doors and ceilings/roofs. Seating can be manufactured to follow the pod lines to create a defined space.

PARTITIONING SYSTEMS

Pod acoustics

Acoustic insulation in small pods and kiosks can be tested and specified in accordance with ISO 23351-1 Acoustics — Measurement of speech level reduction of furniture ensembles and enclosures — Part 1: Laboratory method.

Larger pods cannot be tested in accordance with this standard, and thus do not have an established comparative unit of measurement, so FIS is co-operating with Sandy Brown and Cundall Acoustics to produce a standardised methodology for testing and certifying acoustic insulation of larger pods. This methodology will necessarily fall within the remit of the FIS Acoustic Verification Scheme.

Large meeting room pod

Classification

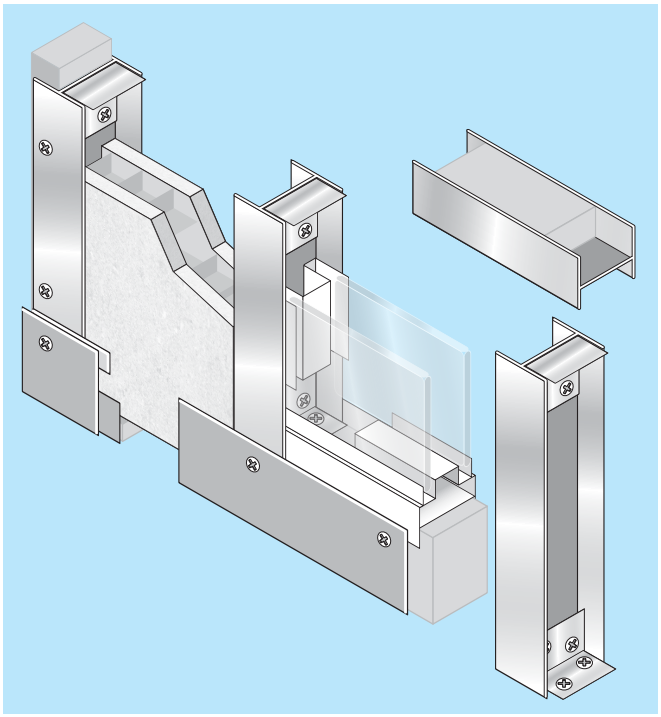
Specifiers should refer to the fire engineer and designers on the classification requirement for the lining of a pod.

ALUMINIUM FRAMED PARTITIONING SYSTEMS

These systems are designed to construct a demountable, lightweight, economical and easily erected office partitioning.

Modules can be solid or glazed. Overall thickness is 50mm, with all extruded aluminium profiles available either in satin anodised or colour coated, generally to BS or RAL colour ranges.

The system is based on a nominal 1,200mm module and standard components provide for junctions, corners or changes of direction. A service post can accommodate wiring or control cables for integrated blinds.



Door frames are generally designed to accommodate standard-height hollow core doors.

The extrusions accommodate standard 46mm honeycomb or flaxcore panels for solid elevations and UPVC or aluminium glazing profiles for glazed elevations.

Fire performance: the system does not offer any fire resistance.

Acoustic performance: through solid honeycomb panels an acoustic performance of circa 29dB (R_w), single-glazing 32-35dB (R_w), double-glazing 37-40dB (R_w), depending on glass types and thicknesses.

Aluminium framed composite partitioning

PARTITIONING SYSTEMS

OPERABLE WALLS

Operable walls are generally divided into four product types:

Moveable walls

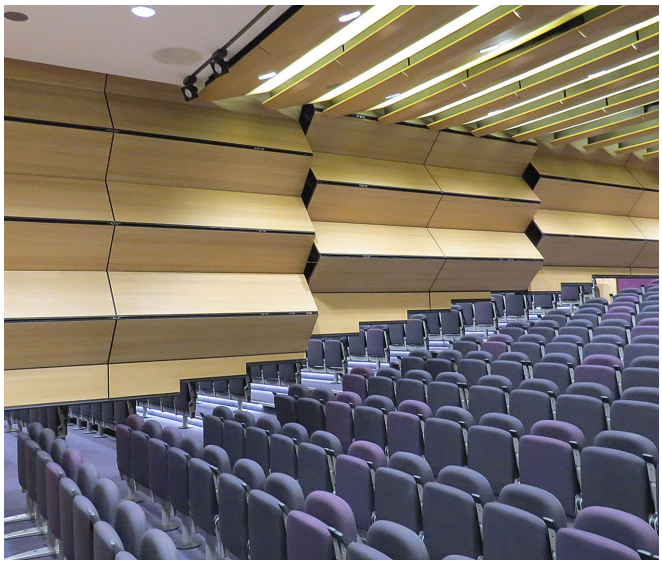
Top-hung panels with various finish options including veneer, vinyl, melamine, paint, laminate fabric and sound-absorbing boards, but can also be made up of single- or double-glazed panels (with the option of integral blinds).

Folding walls

A sliding and folding wall system with similar finishes can be hung from a ceiling track or supported by a low-profile surface-mounted or recessed floor track.

Vertically rising folding walls

Fully automated, these partitions can be retracted into the ceiling void with no wall or floor tracks and are available in vinyl, glass, fabric, stainless steel, veneer and fabric.



Folding screens

Operable walls can be manually operated using a locking handle to set the acoustic seals; semi-automatic systems where the seals set automatically but the elements are moved manually; or a fully electric automated system.

Specification
Writing a specification for an operable wall has different and defined parameters to consider.

The floor to ceiling and ceiling to slab height could determine if the space in the building is suitable for an operable wall, as could access for the off-site manufactured panels.

Points to consider:

What is being divided? A classroom in a school will have different design considerations than a conference suit in a hotel.

What is the use of the room? Should the area be simply divided in two or able to create complete flexible environments? There may also be a requirement to secure an area and prevent access when not in use.

What is the size of the wall? Some systems have limits on the heights and widths they can accommodate.

How will the systems be fixed? Generally, the best performing, most flexible walls are top-hung from ceiling tracks, supported from a structural member in the ceiling void.

What is the head track fixed to? For example, structural concrete soffit, existing steelwork, dedicated steel structure. It is important to ensure that what the head track is fixed to can accommodate the load applied by the track, panels and any void baffles that use the head track to support it. If there is no suitable support for the head track, it may be necessary to consider a floor support system.

Deflection - two points to consider:
- Will there be any deflection in the soffit from live loads above before adding the load from the operable wall? This is particularly important where a construction programme requires the head tracks to be installed before any predicted deflections occur as it may be necessary to install the tracks with a camber or to re-adjust them once the deflection has been deemed to have stabilised. This can often be overlooked and when added to the deflection that the moveable wall system may create (see next point), could lead to a situation where the total deflection exceeds the tolerance that can be accommodated by the height adjustment/seal clearances of the panels.
- Deflection to the support structure due to the imposed load of the moveable wall system.

What is the ceiling detail? And how will the ceiling interface with the head track of the operable wall?

Is there any deviation in floor levels where the operable wall be installed used and stored? Operable wall systems can accommodate some variation in floor levels, but they do have a limit of adjustment. It may be necessary to consider using a system that can accommodate bigger variations by using deeper seals. If the floor levels vary, a floor-supported system may not be suitable.

What surface material/panel finish is required?

Is there a requirement for the operable wall to have a fire rating?

What acoustic performance is required? Note the risks of flanking sound.

Where are the panels to be stored?

Note: passdoors will compromise the acoustic performance of the wall.

Detailed guidance on selecting moveable wall criteria based on the NBS Uniclass code Pr_25_71_57_80 – Sliding Stacking Panel Partitions.

Note: Operable walls are often still specified under the NBS L20 clause.

PARTITIONING SYSTEMS

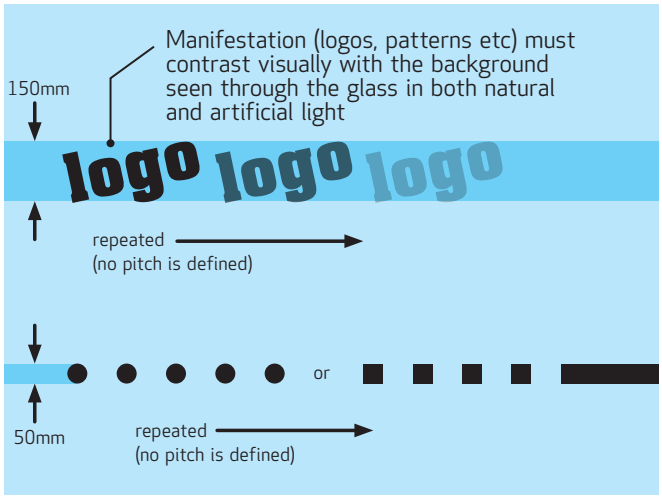
Type	Fire performance	Acoustic performance
Moveable walls	30 minutes but reference to the manufacturer must be made and clear evidence of a test report or third party certification must be provided	Solid panels - up to 60dB R_w * Double glazed systems - up to 52dB R_w
Folding walls	30 and 60 minutes can be achieved but reference to the manufacturer must be made and clear evidence of a test report or third party certification must be provided	Solid panels - up to 48dB R_w * Double glazed systems - up to 32dB R_w
Vertically rising folding walls	Up to 59dB R_w *	
Folding screens	Flame retardant materials should conform to BS 6868	Between 15-32dB R_w *

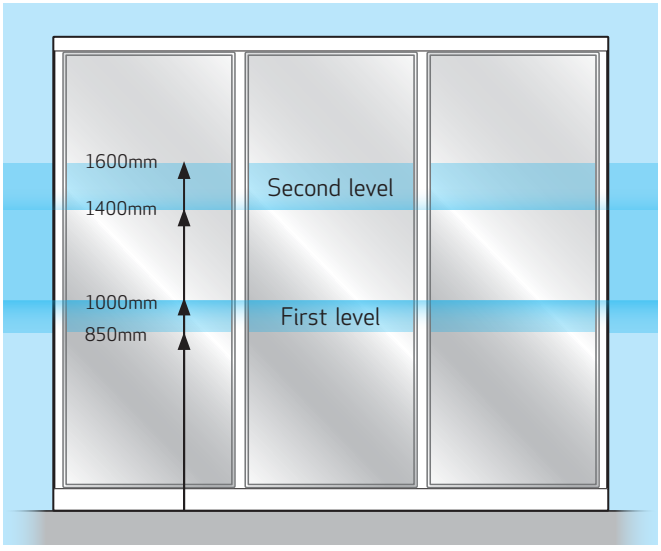
* All acoustic performance data given relates to laboratory tests and not on-site performance.

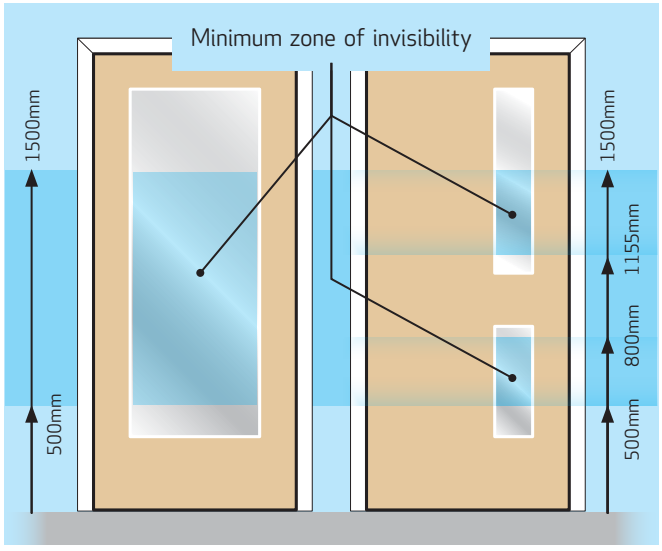
MANIFESTATIONS

Glass films are applied within partitions for several reasons.

Manifestation is necessary in critical locations where people may not be aware of the presence of glazing and may collide with it. Document K in England and Wales provides guidance on the type, position and finish of manifestation (in Scotland, refer to the Scottish handbook; in Northern Ireland, Technical Booklet V).







PARTITIONING SYSTEMS

Vertical narrow reeded manifestation added for privacy

DOORS

Doors are an integral part of a partition system and are the one element with which users interact daily. It is important that doors and ironmongery are coordinated with the partition manufacturer, especially where acoustic and fire performance is required.

Many partition manufacturers also manufacture doors, so can supply doors in structural openings as part of a coordinated interior. Doors that are used in the interiors sector include veneer, laminate, continuous pressure laminate, paint grade, steel or glass and aluminium and steel-framed glass doors.

Doors are made to order. Care should be taken when ordering doors, particularly attention to door handing and the correct ironmongery, as required to meet the fire test evidence.

Steel doors are available from the manufacturer either plain or with vision panels and or mesh panels.

FIRE DOORS

Fire doors are an important consideration in the specification process. Specifiers should look for evidence that the doorsets/assemblies have been tested in a partitioning system (flexible wall). The doorsets should have test evidence using BS EN 1634-1 – Fire resistance and smoke control tests for door, shutter and openable window assemblies and elements of building hardware.

Fire doors can be constructed from:

- Timber
- Glass
- Steel
- Steel frame
- A composite of all or some of the above.

The designer should ensure that the ironmongery has been tested in the type of door construction being considered for the project.

Due to the significant number of partition systems (flexible wall solutions) offering a range of fire resistance periods and wall thicknesses, it is important that fire door assemblies can demonstrate and provide the necessary range of fire resistance data, including the interface of the aperture – lined or unlined openings in stud and board systems.

Designers and contractors should collaborate and coordinate the interface between the partition system and fire door assembly and discussions should be had early in the process (RIBA stage 2) to ensure that the partitioning can accommodate the weight and opening size and maintain the required performance. This should be addressed before the final draft of the partitioning specification.

The specifier should establish the weight of the door, the required opening for the door assembly, and the opening and closing force of the doors to ensure that the door frame jamb and opening can be designed in tandem with the partitioning and doorset suppliers.

The fire resistance of the partition and the doorset should be designed in collaboration with all parties to meet the required performance.

SLIDING DOORS

Sliding doors can be incorporated in partition systems, either on the external to the face or as a pocked door where the door opens into a recessed pocket within the partition system. This can be within a solid faced stud and board system or a double frameless glass system.

Note: additional support is required above double sliding doors.

PARTITIONING SYSTEMS

IRONMONGERY

Ironmongery should be specified by a competent person specialising in ironmongery.

The Guild of Architectural Ironmongers (GAI) has published a set of Specifier's Guides relating to ironmongery and access control product for the construction industry. These are aimed at assisting all who are involved in the specification process, from the architect, architectural technician, interior designer and M&E consultant right through to the specifying architectural ironmonger.

Of the 10 guides available, many are based on the RIBA-approved GAI CPD presentations of the same names, addressing subjects such as:

- Ironmongery for fire and escape doors
- Ironmongery and accessibility
- Access control.

gai.org.uk/GAI/Knowledge-Base/AI-Specifier-Guides/GAI/Knowledge/Specifiers-Guide.aspx?hkey=714b01eb-c66d-47fb-b755-ffd49538629f

FIXINGS

Fixing partitioning systems to the structure is the responsibility of the designer and should consider any restrictions on what can be fixed to the permitter or structural elements.

CIRIA (Construction Industry Research and Information Association) has produced guidance on construction fixings in its publication General fixings – selection and whole-life management (C777). This includes a fixings rating system based on the consequences of failure, called RAG.

ciria.org/ItemDetail?iProductCode=C777D&Category=DOWNLOAD&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91

RAG stands for:	
RED	Critical fixing
AMBER	Less critical
GREEN	Important but not critical

SER Scotland – Structural Engineers Registration has been appointed by the Scottish Government's Building Standards Division to administer a scheme for the certification of design of building structures.

ser-ltd.com/ser-scotland/resources/certification-performance-criteria/b6-1-internal-partitions-and-ceilings

SER Jersey – has been appointed by the Government of Jersey Planning and Environmental Department to administer a scheme for the certification of design of building structures.

ser-ltd.com/ser-jersey/resources/procedures-and-planning/b6-1-internal-partitions-and-ceilings

PROJECT PLANNING

Sufficient time should be allocated for the procurement, delivery and installation of materials.

Meetings with specialist contractors should be held as early as practical to ensure all aspects of the specification are understood and the programming is achievable.

SITE CONDITIONS/ PROJECT ENVIRONMENT

Partitioning is essentially a finishing trade, so the building should be in a suitable condition before systems are installed.

The manufacturer's recommended site conditions for the installation of its materials should be followed. This may include a dust-free environment when closing up double-glazed systems and when installing manifestation.

See the **FIS SITE GUIDE FOR PARTITIONING**
thefis.org/membership-hub/publications/site-guides/

SUPPORTING STRUCTURE

It is the responsibility of the designer to ensure that the supporting structure can accommodate any load from the partitioning, including crowd load, internal wind load and door opening, closing and slamming.

INSTALLATION TO THE UNDERSIDE OF A PLASTERBOARD DOWN STAND/BULKHEAD

The specifier should coordinate the construction of a plasterboard down stand or bulkhead where partition systems are installed to the underside to ensure that sufficient fixing points and bracing are included to allow for the horizontal load transferred from the opening and closing force of a door and imposed loading of the partition system.

SCHEDULING

Early commitment to the specialist contractors is key to ensuring the contractor can schedule resources and allocate enough time to plan the installation of the partitioning.

There must be an allowance to set out all works prior to construction as this will highlight any issues with clashes or coordination with the structural elements.

These might include ensuring the fixed points of the building are aligned with the grid lines set by the engineers.

Fixed points to be taken into consideration include:

a Concrete structure – The tolerances allowed in the construction of the structure will be greater than those expected for the partitioning.

b Mullions/columns to external façade – Where partitions have fixed points determined by the location of the mullions, the tolerance differences may affect the final layout.

c SFS – Mitigating measures in the external wall systems using light gauge steel framing systems (SFS) to address flanking sound/fire and details can be impacted by points a and b, and should be considered to ensure the performance of the partitions where they interface with the external wall.

d Early engagement with the M&E consultants and firestopping specialists is essential to ensure the locations of all services are confirmed and firestopping products are compatible.

e Ensure there is a robust quality assurance system in place.

BENCHMARKING

The specification should include a requirement to produce a 'benchmark' in an area that will be available for the duration of the contract, which can be signed off before work commences and used to compare ongoing work in the event of a dispute.

MATERIAL HANDLING

Meetings should be held with the main contractor and specialist contractors as early as practical to ensure that preparation is made for the safe ingress of materials and storage of materials on site in accordance with the manufacturer's recommendations.

PROJECT PLANNING

For recommendations designed to reduce the risk of injury and damage to the materials, see **FIS BEST PRACTICE GUIDE: RECOMMENDATIONS FOR THE SAFE INGRESS OF PLASTERBOARD**
thefis.org/membership-hub/publications/best-practice-guides/recommendations-for-the-safe-ingress-of-plasterboard

MANUFACTURER'S RECOMMENDATIONS

The manufacturer's (system owner's) installation instructions should always be followed. This is especially important where the partitioning is expected to satisfy performance criteria.

Note: if components in systems are changed, or the recommended installation methods not adhered to, the design and performance levels become the responsibility of the person or organisation that changed them.

The manufacturer or system owner should be consulted if you are considering changing any aspect of the installation or design.

MANUFACTURER INSTALLER SCHEMES

Many system owners can provide a list of contractors who are trained in installing their systems. Where possible, and where warranties are required, these contractors should be approached to provide a cost to supply and install the system.

FIS is the trade body representing the sector. Its members are vetted before joining and then every three years. Members agree to comply with the code of conduct and install products in accordance with FIS good practice guides.

A list of vetted members who supply and install partitioning can be found at thefis.org/member-directory/?businesstype=contractors-specialist

INSTALLATION CONSIDERATIONS

Although this guide provides guidance on the specification of partitioning, specifiers should ensure that the systems selected can be safely and correctly installed and will achieve the required performance.

For further guidance please refer to:

- BS 8000-8:2021 Workmanship on construction sites – Part 8: Design and installation of dry lining systems – Code of Practice
- FIS Best Practice Guide - Installation of Partitioning
  thefis.org/membership-hub/publications/best-practice-guides/installation-of-partitioning/
- FIS Site Guide for Drylining
  thefis.org/wp-content/uploads/2016/03/FIS-site-guide-drylining.pdf

COMPETENCE

It is important that organisations and operatives can demonstrate their competence to meet the quality and performance required. This can be demonstrated by FIS membership, relevant training from the chosen system supplier, relevant National Vocational Qualification (NVQ) and relevant CSCS cards.
thefis.org/members-directory
citb.co.uk/courses-and-qualifications/check-a-card-training-record/online-card-checker/

COMPETENCY FRAMEWORK

A competency framework based on skills, attitude, knowledge and experience (SAKE) was referenced in the CIC Raising the Bar report. Working Group 12 (WG12) has identified that there are four factors that come together to describe competence – known as SKEB:

- Skills
- Knowledge
- Experience
- Behaviour.

These factors – defined, attained, acknowledged and verified – create a formal framework for product competence.
cic.org.uk/admin/resources/raising-the-barinterimfinal-1.pdf

These factors – defined, attained, acknowledged and verified – create a formal framework for product competence.

CHECKLIST

The following checklist has been compiled to help you check that the key issues have been addressed when specifying drylining. It is not exhaustive but a guide to the key issues only.

1 Engage with the manufacturer

2 Read and understand the fire strategy drawing

3 Read and understand the acoustician's requirements for sound insulation, sound absorption and sound diffusion

4 Check all layouts and sections against the requirements for the project and of the Building Regulations, building standards and technical books

5 Check that the specification will meet the requirements for healthcare and education

6 Understand requirements for fire resistance and fire protection

7 Read evidence of compliance for any performance requirements

8 Coordinate the requirements for the prepared service openings

9. Coordinate the requirements for deflection under live loads

10 Address any issues where sound flanking might occur

11 Address any issues where air leakage might occur

12 Check that the specified system can be installed to the specified height and still meet all performance characteristics required

13 Check that any partitioning being installed to the underside of exposed beams and columns will accommodate deflection, address fire insulation and have no impact on the passive fire protection

14 Ensure that the doors and frames are tested within the partition systems

15 Ensure the specified ironmongery has been tested in the proposed doorset

16 Ensure the specification meets the sustainability requirements from the client

17 Address any requirements where design for security is required

18 Coordinate the installation of door openings to ensure that size, weight and slamming force can be accommodated

19 Provide a specification to address any environmental issues such as humidity, wind loading, bacterial and fungal infection

20 Allow for any loads that will be imposed on partitioning, such as furniture, and decorative surfaces

21 Ensure that where applicable there is a declaration of performance, and products are UKCA marked

22 Ensure that the requirement to install a benchmark is included in the specification

23 Ensure that tolerances are clearly stated

24 Ensure that all performance requirements can be achieved using the selected product and performance is compatible

25 Ensure the specified system can be delivered and installed to meet the construction programme

26 Firestopping of Service Penetrations – ensure the sheet sizes of panels and glass can be safely and logistically carted to the required position for installation thefis.org/membership-hub/publications/best-practice-guides/firestopping-of-service-penetrations/

APPENDIX

REGULATIONS AND GUIDANCE DOCUMENTS

ENGLAND – APPROVED DOCUMENTS

B Fire Safety: Volume 1: Dwellings

B Fire Safety: Volume 2: Buildings other than dwellings

E Resistance to the passage of sound

L2A Conservation of fuel and power in new buildings other than dwellings

L2B Conservation of fuel and power in existing buildings other than dwellings

SCOTLAND - TECHNICAL HANDBOOKS

Building standards technical handbook 2019: non-domestic
gov.scot/publications/building-standards-technical-handbook-2019-non-domestic/

NORTHERN IRELAND - TECHNICAL BOOKLETS

E Fire safety

G Resistance to the passage of sound

F2 Conservation of fuel and power in buildings other that dwellings

buildingcontrol-ni.com/regulations/technical-booklets

WALES – APPROVED DOCUMENTS

B Fire Safety: Volume 1: Dwellings

B Fire Safety: Volume 2: Buildings other than dwellings

E Resistance to the passage of sound

L2A Conservation of fuel and power in new buildings other than dwellings

L2B Conservation of fuel and power in existing buildings other than dwellings

labc.co.uk/professionals/building-regulations-guidance-documents/approved-documents-and-technical-guidance-wales

EDUCATION

Building Bulletin 93: Acoustic Design of schools – performance standards
gov.uk/government/publications/bb93-acoustic-design-of-schools-performance-standards

Building Bulletin 100: Design for fire safety in schools (under review)

HEALTHCARE

Health Building Note: HTN 00-10 Part B: Walls and ceilings

Health Technical Memorandum: HTM 08-01: Acoustics

Health Technical Memorandum: HTM 05-02: Firecode

Health Building Memorandum HBM

ADDITIONAL RESOURCES

FIS Best Practice Guides
thefis.org/membership-hub/publications/best-practice-guides/

Installation of Drylining

Installation of Partitioning

Firestopping of Service Penetrations
thefis.org/membership-hub/publications/best-practice-guides/firestopping-of-service-penetrations/

A Guide to Office Acoustics
thefis.org/membership-hub/publications/guide-office-acoustics/

Guarding with Frameless Glazing – Technical note

FIXINGS

CIRIA (Construction Industry Research and Information Association)

General fixings – Selection and whole life management (C777)
ciria.org

APPENDIX

STANDARDS

BS EN 15254-3:2019
Extended application of results from fire resistance tests. Non-loadbearing walls. Lightweight partitions

BS EN ISO 9001
Quality management systems. Requirements

BS EN ISO 14001
Environmental management systems. Requirements with guidance for use

BS ISO 45001
Occupational health and safety management systems. Requirements with guidance for use

FIRE

BS 9999
Fire safety in the design, management and use of buildings. Code of practice

FIRE TESTS ON BUILDING MATERIALS AND STRUCTURES

BS 476-4
Non-combustibility test for materials

BS 476-6
Method of test for fire propagation for products

BS 476 - 7
Method of test to determine the classification of the surface spread of flame of products

BS 476-11
Method for assessing the heat emission from building materials

BS 476-20
Method for determination of the fire resistance of elements of construction (general principles).

BS 476-21
Methods for determination of the fire resistance of loadbearing elements of construction

BS 476-22
Method for determination of the fire resistance of non-loadbearing elements of construction

BS 476-23
Methods for determination of the contribution of components to the fire resistance of a structure

BS EN 1182
Reaction to fire tests for products. Non-combustibility test

BS EN 1716
Reaction to fire tests for products. Determination of the gross heat of combustion (calorific value)

BS EN 11925-2
Reaction to fire tests. Ignitability of products subjected to direct impingement of flame. Single-flame source test

BS EN 13823
Reaction to fire tests for building products. Building products excluding floorings exposed to the thermal attack by a single burning item

BS EN 13501-1
Fire classification of construction products and building elements. Classification using data from reaction to fire tests

BS EN 1365-1
Fire resistance tests for loadbearing elements. Walls

BS EN 1365-2
Fire resistance tests for loadbearing elements. Floors and roof

BS EN 13501-2
Fire classification of construction products and building elements. Classification using data from fire resistance tests, excluding ventilation services

APPENDIX

ACOUSTICS

BS EN 12354-6
Estimation of acoustic performance of buildings from the performance of elements. Sound absorption in enclosed spaces

BS EN ISO 717-1
Rating of sound insulation in buildings and of building elements

BS EN ISO 354
Measurement of sound absorption in a reverberation room

BS EN ISO 11654
Sound absorbers for use in buildings. Rating of sound absorption

BS EN ISO 10140-3
Measurement of sound insulation in buildings and of building elements. Laboratory measurement of airborne sound insulation of building elements

BS EN ISO 10848-2
Laboratory and field measurement of flanking transmission for airborne, impact and building service equipment sound between adjoining rooms. Application to Type B elements when the junction has a small influence

BS EN ISO 140-18
Measurement of sound insulation in buildings and of building elements. Laboratory measurement of sound generated by rainfall on building elements

COLOUR / GLOSS / LIGHT REFLECTANCE

ISO 12944-3
Paints and varnishes. Corrosion protection of steel structures by protective paint systems. Design considerations

BS EN ISO 2813
Paints and varnishes. Determination of gloss value at 20 degrees, 60 degrees and 85 degrees

BS 8493
Light reflectance value (LRV) of a surface. Method of test

THERMAL

BS EN ISO 10456
Building materials and products. Hygrothermal properties. Tabulated design values and procedures for determining declared and design thermal values

BS EN ISO 10211
Thermal bridges in building construction. Heat flows and surface temperatures. Detailed calculations

BS EN ISO 6946
Thermal bridges in building construction. Heat flows and surface temperatures. Detailed calculations

BS EN 13162
Thermal insulation products for buildings. Factory made mineral wool (MW) products. Specification

BS EN 13171
Thermal insulation products for buildings. Factory made wood fibre (WF) products. Specification

BS EN 12664
Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Dry and moist products of medium and low thermal resistance

BS EN 12667
Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Products of high and medium thermal resistance

BS EN 12939
Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Thick products of high and medium thermal resistance

APPENDIX

BS EN 10456
Building materials and products. Hygrothermal properties. Tabulated design values and procedures for determining declared and design thermal values

UPVC

BS EN 13245-1
Plastics. Unplasticized poly(vinyl chloride) (PVC-U) profiles for building applications. Designation of PVC-U profiles

BS EN 13245-2
Plastics. Unplasticized poly(vinyl chloride) (PVC-U) profiles for building applications. PVC-U profiles and PVC-UE profiles for internal and external wall and ceiling finishes

METAL

BS EN 573-3
Aluminium and aluminium alloys. Chemical composition and form of wrought products. Chemical composition and form of products

BS EN 1396
Aluminium and aluminium alloys. Coil coated sheet and strip for general applications. Specifications

BS EN 10143
Continuously hot-dip coated steel sheet and strip. Tolerances on dimensions and shape

BS EN 10152
Electrolytically zinc coated cold rolled steel flat products for cold forming. Technical delivery conditions

BS EN 10169
Continuously organic coated (coil coated) steel flat products. Technical delivery conditions

BS EN 10346
Continuously hot-dip coated steel flat products for cold forming. Technical delivery conditions

BS EN 10211
Chemical analysis of ferrous materials. Determination of titanium in steels and cast irons. Flame atomic absorption spectrometric method

TIMBER / PARTICLE / FIBRE BOARDS

BS EN 622-1
Fibreboards. Specifications. General requirement

BS EN 312
Particleboards. Specifications

BS EN 335
Durability of wood and wood-based products. Use classes: definitions, application to solid wood and wood-based products

BS EN 350
Durability of wood and wood-based products. Testing and classification of the durability to biological agents of wood and wood-based materials

BS EN 351-1
Durability of wood and wood-based products. Preservative-treated solid wood. Classification of preservative penetration and retention

BS EN 351-2
Durability of wood and wood-based products. Preservative-treated solid wood. Guidance on sampling for the analysis of preservative-treated wood

BS EN 460
Durability of wood and wood-based products. Natural durability of solid wood. Guide to the durability requirements for wood to be used in hazard classes

BS EN 1912
Structural Timber. Strength classes. Assignment of visual grades and species

APPENDIX

BS EN 599-1
Durability of wood and wood-based products. Efficacy of preventive wood preservatives as determined by biological tests. Specification according to use class

BS EN 599-2
Durability of wood and wood-based products. Efficacy of preventive wood preservatives as determined by biological tests. Labelling

BS EN 1912
Structural Timber. Strength classes. Assignment of visual grades and species

BS EN 1991-1-6
Eurocode 1. Actions on structures. General actions. Actions during execution

BS EN 1995-1-2
Eurocode 5. Design of timber structures. General. Structural fire design

ENVIRONMENTAL

BS EN ISO14025
Environmental labels and declarations. Type III environmental declarations. Principles and procedures

BS EN 15804
Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products

BS EN 12460-5
Wood based panels. Determination of formaldehyde content. Extraction method called the perforator method

BS EN 717
Wood-based panels. Determination of formaldehyde release. Formaldehyde emission by the chamber method

BS EN 16000-9
Indoor air. Determination of the emission of volatile organic compounds from building products and furnishing. Emission test chamber method

OTHERS

BS 8000-0
Workmanship on construction sites. Introduction and general principles

NA to BS EN 1998-1
UK National Annex to Eurocode 8. Design of structures for earthquake resistance. General rules, seismic actions and rules for buildings

BS EN ISO 14644-1
Cleanrooms and associated controlled environments. Classification of air cleanliness by particle concentration

BS 8539
Code of practice for the selection and installation of post-installed anchors in concrete and masonry

BS7671:2018+A1:2020
Requirements for Electrical Installations. IET Wiring Regulations

NBS SPECIFICATIONS

NBS CLAUSES
Individual clause numbers applicable to partitioning (in this section) are:

UNICLASS CODES FOR PARTITIONING

Ss_25_10_30_35	Gypsum board partition systems
Ss_25_10_30_35	Gypsum board partition systems
Ss_25_12_65_60	Plasterboard laminated partition systems
Ss_25_12_65_65	Panel partition systems

APPENDIX

Standard method of publishing performance data for suspended ceiling and absorbers

MANUFACTURER				PRODUCT NAME		REFERENCE	
				Specification requirement			
	Parameter	Value	Standard	Regulation	Other	Test report number	Assessment report number and expiry
1	**Acoustics**	R_w single pass	**Attenuation** (sound insulation) BS EN 140-3 BS EN ISO 10140 BS EN ISO 717-1 BS EN ISO 10848-2	Education BB93 Health HTM 0801	LEED, SKA Rating, BREEAM, Well Building standard		
2	**Fire**		**Reaction to Fire** EN13501-1	Approved Document B CPR CE marking	BS 9999 BS 9991		
		In minutes **R** Resistance / load bearing capacity **E** Integrity **I** insulation	**Resistance to fire** BS476-20-21-22-23 BS EN 13501 EN1365-2 EN13381 EN 1364-2	Approved Document B CPR CE marking	BS 9999 BS 9991		
3	**Robustness**	Light, medium and severe duty	BS 5234				
4	**VOC**	E1 rating	BS EN 717	CPR CE marking	LEED, SKA Rating, BREEAM, Well Building standard		
5	**Sustainability**		Environmental Product Declaration (EPD) ISO 14025 BS EN 15804	LEED, SKA Rating, BREEAM, Well Building standard			
6	**Recycled content**		Environmental Product Declaration (EPD) ISO 14025 BS EN 15804	LEED, SKA Rating, BREEAM, Well Building standard			
7	**LRV**	%	ISO 7724-2-3 BS 8493		LEED, SKA Rating, BREEAM, Well Building standard		
8	**Humidity**	% RH Class A, B, C, D	BS EN 13964				
9	**Hygiene**	Class 1-12	ISO 14644:1		Health HTM 0801		
10	**Clean room**	Class 1-12	ISO 14644:1	Euro codes			
11	**Corrosion**	A, B, C, D	BS EN 13964 BS EN ISO 12944-2(1) Note: needs more clarification		SCI		
12	**Thermal conductivity**	(W/Mk)	BS EN 12664 BS EN 12667 BS EN 12939	Building Approved document L			

GLOSSARY

Manufacturer is defined as "any natural or legal person who manufactures a construction product, or has a construction product designed or manufactured and places it on the market under their own name or trademark". Further, the responsibility of the manufacturer is placed on any person who changes the intended use of a construction product in such a way that different essential or other legal requirements will become applicable, or substantially modifies or re-builds a construction product (thus creating a new construction product), with a view to placing it on the market or for putting it into service.
cpicode.org.uk/wp-content/uploads/2021/09/Code-for-Construction-Product-Information-v1-0.pdf

System owner - person or organisation that owns the performance evidence of a system BS8000-8

Proprietary system - in the context of this statement, a proprietary system is a system from a system owner where a direct technical claim of performance is made.

The system's performance depends on the complete system using components supplied by one organisation. The substitution of any system component may prejudice the system's performance.

Doorsets are door leaves and door frames that are factory prepared and fitted with the hinges, latches, locks, seals and, when required, closers and intumescent strips needed for the door to perform.

Door kits are effectively doorsets but supplied in two or more parts to be assembled on site. Both doorsets and door kits are supplied from a single source. Where the final assembly created on site is formed from components from more than one source then this is a 'door assembly'.

FINISHES & INTERIORS SECTOR

SPECIFIERS' GUIDE
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