

Insulated Panels
Northern Ireland

ROUTES TO COMPLIANCE

Assessing product suitability
for fire safety in warehouse
constructions



ROUTES TO COMPLIANCE

The regulatory landscape for fire safety in the built environment is complex, and it's essential to navigate it diligently to deliver compliant builds and safeguard building users. The specification and product selection process is a vital element in ensuring compliance. This document sets out important information and key questions that should be considered when assessing a product's suitability for different applications and compliance with Technical Booklet E (Fire Safety) October 2012 incorporating The Building Amendment Regulations (NI) 2022 AMD 7.

Under Building Regulations in Northern Ireland, all parties involved in a construction project—including owners, designers, builders, and assigned certifiers—are jointly responsible for ensuring products comply with building regulations. Each must ensure products meet required standards, ensuring overall safety and regulatory compliance.

BUILDING REGULATION COMPLIANCE – ROOFS

KEEPING LIVES SAFE

WHAT IS THE REGULATION?	WHAT DOES IT RELATE TO?	HOW IS THE PRODUCT ASSESSED?
ROOFS		
Technical Booklet E, section 5	Fire safety classification for roofing systems, specifically related to external fire exposure. It indicates a roofing system's ability to resist fire penetration and spread. In Northern Ireland, roofs need a classification to EN 13501-5 based on testing to CEN/TS 1187 Test 4, typically BROOF(t4). This classification ensures the roof can withstand external fire sources, like burning brands and radiant heat, preventing fire spread and penetration.	EN 13501-5* refers to four separate tests; German, French, Nordic and English. The suffix (t4) refers to the English test 4, and GB and Irish building regulations indicate that test t4 must be used. Test 4 evaluates the performance of a roof under the conditions of thermal attack with burning brands, wind and radiant heat. The test gauges external fire spread and penetration by fire. The test will rate products from B to F, with B being the highest performance. To achieve BROOF(t4), a roofing system must not permit fire penetration within 60 minutes and must limit flame spread to less than 0.38m Any other result other than a BROOF(t4) will incur limitations on minimum distances from boundaries. Products that have not been tested must be classed as FROOF(t4) and are not permitted for use on a specified list of building types. See Table 5.7. Limitations of Roof Coverings.
Non-Fragility according to the HSE's health and Safety in Roof Work	Where roof maintenance is likely (e.g. to clean out a valley gutter) the relevant roof assembly must be designed to be class B non-fragile, according to the HSE's health and Safety in Roof Work. This applies to roof panels, insulated gutters and rooflights. ACR[M]001 is a test of an assembly rather than of individual components. Rooflights should therefore be lapped with surrounding panels and fitted in accordance with manufacturers recommendations. The roof assembly into which the rooflight panel is fitted should be demonstrated to be non-fragile (without rooflights) separately.	ACR(M)001-2019 [Sixth edition] "Test for Non-Fragility of Large Element Roofing Assemblies" ACR(M)001 testing consists of a "soft body" impact test to assess whether a roofing assembly can arrest and support a falling person without failing. Impacts are applied at worst case locations, e.g. near centre, close to supports, sheet edges or other vulnerable zones.
Technical Booklet E, Section 3 – Internal Fire Spread – Linings	The choice of materials for the lining of ceilings can significantly affect the spread of a fire, and its rate of growth, even though they are not likely to be the materials first ignited. This is particularly relevant where rapid fire spread would be most likely to prevent occupants from escaping.	Classification* to EN 13501-1 Fire Classification of Construction Products and Building Elements – Part 1: Classification Using Data From Reaction to Fire Tests. Products are categorised using the Euroclass system, which is the standard for fire safety classification of building materials. It categorises products into one of seven reaction to fire classes ranging from A1 down to F. Further classifications are made in regards to the products smoke production (s-rating) and flaming droplets (d-rating). For a full breakdown of classifications please refer to the table in the appendix.

Please note that the information provided above is not an exhaustive list and further reference should be made to Technical Booklet E, Fire Safety October 2012.

Download the current issue at finance-ni.gov.uk/publications/technical-booklet-e

Note that the regulations are subject to review and change, and that it is essential to check that this is the latest version.

For Republic of Ireland classification of performance by testing, please contact Kingspan Tech-eXchange team.

*Classification using National Classification is also possible.

BUILDING REGULATION COMPLIANCE – WALLS

KEEPING LIVES SAFE

WHAT IS THE REGULATION?	WHAT DOES IT RELATE TO?	HOW IS THE PRODUCT ASSESSED?
WALLS		
Technical Booklet E – Section 4 – Internal Fire Spread	In Northern Ireland, exterior walls of buildings may need to have a fire resistance rating if they are part of the structural support or if they are close to a boundary with another property. The specific fire resistance requirements depend on factors like the building’s height, occupancy, and proximity to other structures.	Classification* to EN 13501-2. Individual products to be tested in both horizontal and vertical orientation and depends on method of assembly and structure. Tables 4.1 and 4.2 gives the specific requirements for each element in terms of the three following performance criteria. Load-bearing capacity (denoted (R)) the proven ability of a load-bearing element to resist collapse in accordance with the European classification of fire resistance performance; Integrity (denoted (E)) is the proven ability of a fire-separating element to resist fire, smoke and hot-gases penetration, in accordance with the European classification of resistance performance; and Insulation (denoted (I)) is the proven ability of a fire-separating element to the resistance to the transfer of excessive heat, in accordance with the European classification of fire resistance performance. Fire resistance tests carried out by an independent third party accredited to carry out such tests offers a way of ensuring that such certification can be relied upon. As per BCSA guidance from 1st July 2025, the responsibilities for cladding manufacturers are outlined below: 1. Cladding manufacturer is responsible for the fire resistance of the cladding, tested in accordance with BS EN 1364-1. 2. Justification of the cladding hung from the capable member in a fire, including the resistance of the fixings and any necessary load paths within the cladding in the fire limit state. 3. Specification of secondary steelwork support requirements in the fire condition when cladding is installed horizontally.
Technical Booklet E – Section 3 Internal Fire Spread – linings	The choice of materials for the lining of walls can significantly affect the spread of a fire, and its rate of growth, even though they are not likely to be the materials first ignited. This is particularly relevant where rapid fire spread would be most likely to prevent occupants from escaping.	Classification* to EN 13501-1 Fire Classification of Construction Products and Building Elements – Part 1: Classification Using Data From Reaction to Fire Tests. Products are categorised using the Euroclass system, which is the standard for fire safety classification of building materials. It categorises products into one of seven reaction to fire classes ranging from A1 down to F. Further classifications are made in regards to the products smoke production (s-rating) and flaming droplets (d-rating). For a full breakdown of classifications please refer to the table in the appendix.

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WHAT IS THE REGULATION?	WHAT DOES IT RELATE TO?	HOW IS THE PRODUCT ASSESSED?
COMPARTMENT WALLS		
Technical Booklet E Section 4	The spread of fire between adjoining buildings or within a building can be restricted by subdividing the structure into compartments separated from one another by walls and/or floors of fire-resisting construction. Subdivision within a building is achieved using compartment walls and compartment floors.	Classification* to EN 13501-2. Individual products to be tested in both orientation and depends on method of assembly and structure. Refer to Tables 4.1 and 4.2.

Please note that the information provided above is not an exhaustive list and further reference should be made to Technical Booklet E, Fire Safety October 2012.
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The Importance of a Fire Wall

These images illustrate a building that suffered a significant fire on one side of a compartment wall. The second image shows the unaffected interior on the opposite side. Thanks to our insurer-approved roof panels, the fire was effectively contained, preventing it from spreading further. This crucial protection allowed operations to resume quickly on the undamaged side of the building.

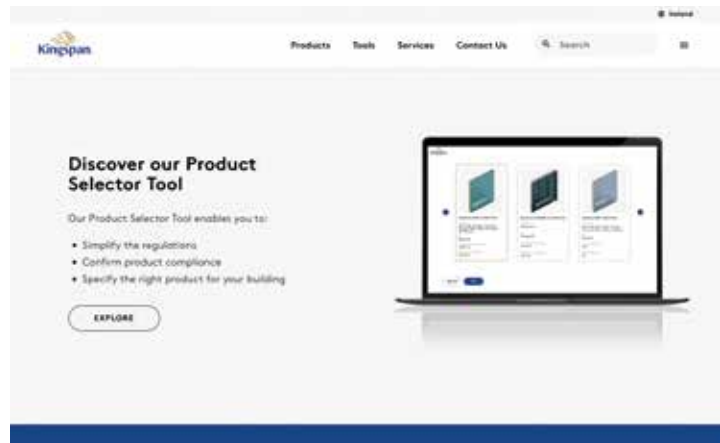
PRODUCT SELECTOR

SPECIFY THE RIGHT PRODUCT FOR YOUR BUILDING

Our new online and free to use Product Selector tool has been developed to help you make the right product choice to meet fire requirements for your building.

Our Product Selector tool enables you to:

- Simplify fire safety regulations
- Confirm product compliance for meeting fire performance requirements
- Specify the right product for your building



Scan the QR to use the new online Product Selector

EN 13823 SBI (Single Burning Item) Fire Test. B-s1,d0 can be achieved to EN 13501-1.



Test set up



During test



End of test showing minimal panel damage

FM 4880. The 50ft test shown below forms part of assessment requirements for approval to Class 1 without height restriction.



Test set up



Fire development



End of test

INSURER APPROVALS PROTECTING YOUR ASSETS THROUGH COMPLIANT INSTALLATIONS.

Whilst Technical Booklet E, Fire Safety, October 2012 focuses primarily on fire and life safety, insurer approval standards approach building performance from an asset protection point of view.

Insurance related bodies such as FM Approvals and the Loss Prevention Certification Board have developed large scale system tests that examine the performance of the entire wall or roof build up rather than that of construction products in isolation.

These large scale testing regimes provide objective third-party testing which is underpinned by quarterly, bi-annual and annual factory surveillance audits (depending on the region), to verify that the products that are being brought to market are the same as what was tested, and that they continue to meet the relevant performance requirements.

THE IMPORTANCE OF INSTALLATION

A product cannot be considered FM Approved if is not installed according to the assembly data specified in the FM Approval. FM Approval certificates specify roofs as assembled, not individual components. The certificate is tied to the entire systems performance, including the specific components and how they are assembled. Please see appendix for an example of assembly data.

UNDERSTANDING INSURER APPROVALS

WHAT IS THE REGULATION?	WHAT DOES IT RELATE TO?	HOW IS THE PRODUCT ASSESSED?
FM Approvals	FM 4880 Approval Standard for Class 1 Fire Rating of Insulated Panels, Interior Finish Materials, or Coatings and Exteriors Wall Systems is designed to assess how a panel could contribute to a fire. It is often considered to be the foundation of the FM Approvals approach to determining the fire performance and assessing the risk of insulated panel systems. The standard involves using a mixture of small and larger scale corner tests, assess the fire performance of these building panels or interior finish materials. Class 1 systems exhibit limited fire spread and fuel contribution in the event of fire. FM 4881 was developed in 1992 following a Category 5 Hurricane in North America. It builds on the fire performance requirements of FM 4880, seeking to establish how well these Class 1 rated panels resist damage when exposed to extreme weather conditions and natural hazards in exterior wall applications. This can help to determine their suitability for almost any geographic area, including those prone to cyclones.	FM 4880 categorises panels into two grades: Class 1 Limited Height (products must pass 25-foot FM Room Corner Test and various other testing). Class 1 No Height Restrictions (products must pass a 50-foot FM Room Corner Test or FM Approvals 16 ft Parallel Panel Test, and various other testing).
	Again, building on the performance requirements of FM 4880, FM 4882 certifies that Class 1 insulated panels do not allow self-propagation of fire and generate significantly less smoke than traditional wall or ceiling panels. This means that they are appropriate for smoke sensitive occupancies, such as facilities used for food or pharmaceutical manufacturing and storage. In addition to presenting a life safety risk, fires in these types of buildings can cause significant product losses and business downtime whilst the area is decontaminated of smoke debris. In fact, in many situations the financial loss caused by smoke damage can be higher than those associated with direct flame damage.	To achieve FM 4881, panels must first pass FM 4880 to determine that they are Class 1 Fire Rated. They are then tested to establish their wind load rating, windborne debris resistance and hail resistance. These tests have been designed to emulate natural weather hazards, with an initial test that includes static and cyclic pressure tests and a second simulated hail resistance test. A product cannot be considered FM Approved if not installed to method described in their associated FM Approval report. FM 4882 tests this performance through a combination of small, medium, and large-scale fire tests designed to mimic real life applications, including a severe 16ft Parallel Panel test.

UNDERSTANDING INSURER APPROVALS

WHAT IS THE REGULATION?	WHAT DOES IT RELATE TO?	HOW IS THE PRODUCT ASSESSED?
FM Approvals	The FM 4471 test standard looks at fire, wind, foot traffic and hail damage resistance of Class 1 Panel Roofs. This includes all the necessary components for the complete panel roof assembly.	FM 4471 tests include examining the potential for fire spread on the interior (FM 4880) and exterior (ASTM E108) of the roof panel, and its ability to resist simulated wind uplift, and maintain adequate strength and durability. FM 4471 must be fixed to RoofNav assembly instruction. A product cannot be considered FM Approved if not installed to method described in their associated FM Approval report.
	FM 4478 states the approval requirements for rigid PV modules that are installed with a roof assembly.	To achieve certification, the assembly must remain intact when subjected to fire from above the structural deck, simulated wind uplift, hail damage, and gravity load resistance.
LPCB certification, provided by the Loss Prevention Certification Board	LPS 1181 Part 1: Issue 1.2 Requirements and tests for built-up cladding and sandwich panel systems for use as the external envelope of buildings LPS 1181 Part 2: Issue 2.3 Requirements and tests for sandwich panel and built-up systems for use as internal constructions in buildings	LPS1181 Part 1 tests fire spread and how much heat/smoke is released when a fire starts outside a building. The main aim is to reduce property damage and limit fire spread across external facades. Products with limited fire growth are graded EXT-B and products with limited fire growth and provide a period of fire resistance through LPS1208, EN or BS standards are graded EXT-A. The number stated within the grading of EXT-A15 or EXT-A30 refers to the period of fire resistance that product offers. LPS1181 Part 2 is similar to LPS1181 Part1 but assesses internal applications such as walls, ceilings, cold room linings etc. LPS1181 Part 2 tests fire spread and how much heat/smoke is released when a fire starts inside a building. Products are graded INT-1, INT-2 or INT-3. Products graded INT-1 provide limited fire spread and ≥ 60 min fire resistance. Products graded INT-2 provide limited fire spread and ≥ 30 min fire resistance. Products graded INT-3 provide limited fire spread only.

FM APPROVAL ASSEMBLY REPORT

These images are excerpts from an FM Approvals assembly details report for Project PR464489.



Table 1. Applicable standards

Title	Number	Issue date
Examination Standard for Class 1 Fire Rating of Building Panels or Interior Finish Materials	4880	November 2022
Approval Standards for Class 1 Exterior Wall Systems	4881	November 2016
Examination Standard for Class 1 Interior Wall and Ceiling Materials or Systems for Smoke Sensitive Occupancies	4882	December 2021

Exterior Installation Requirements and Ratings

Wall Panel	Panel Thickness		Securement	Wall Rating	Wind Pressure Rating and Zone	Max Support Steel Spacing		Min Support Steel Thickness		Min Support Steel Yield Stress	
	mm	(in)				mm	(in)	mm	(in)	MPa	(ksi)
KS1000RW	40-150	(1.6-5.9)	Fastening System A	Severe (SH)	+40/-40 Zone NTC	2000	(78.7)	1.5	(0.06)	450	(65)
KS1000AWP	74-150	(2.9-5.9)	Fastening System B	Severe (SH)	+40/-40 Zone NTC	2000	(78.7)	1.5	(0.06)	450	(65)

Fastening System A: Through-fastened with three Ejot JT3-D-6H-5.5/6.3xL with S19 washer or SFS SXC5-S19-6.3 or Fixfast DF3-SS-HT-A19-5.5 fasteners spaced 333mm (13.1in) on centre in either the valley (valley fixed) or crown (crown fixed). Panels stitched together along edge crown with Ejot JF3-2-5.5xL with S16 washer or SFS SL2-S-S14-5.5 fasteners spaced 500mm (19.7in) oc. Seams include 5.0x6.0mm (0.50x0.24in) butyl strip applied to seal crown.

Fastening System B: Secret-fastened every panel joint/girt interface with two Ejot JT3-D-6H-5.5/6.3xL with S16 washer or SFS SXC5-S16-6.3 fasteners.



ASSESSING PRODUCT SUITABILITY

When assessing products for application suitability, you should consider the following questions:

DOES YOUR ROOF MEET BROOF(T4) REQUIREMENTS?

- ☐ No
- ☐ Yes, EN13501-5 classification* report(s) received from supplier.

IS YOUR ROOFING ASSEMBLY CONSIDERED NON-FRAGILE?

- ☐ No
- ☐ Yes, ACRM[001] test report received from supplier.

DO YOUR INTERNAL LININGS MEET YOUR SURFACE SPREAD OF FLAME REQUIREMENTS?

- ☐ No
- ☐ Yes, EN13501-1 reaction to fire classification* report(s) received from supplier.

IS A PERIOD OF FIRE RESISTANCE REQUIRED FOR YOUR BOUNDARY WALLS?

- ☐ No
- ☐ Yes, EN1364-1/EN13501-2 fire resistance test/classification* report(s) received from supplier.

FOR BOUNDARY WALL CONSTRUCTION, CAN THE CLADDING SUPPLIER PROVIDE FIXING DETAILS AND QUANTITIES SHOWING LOAD PATH IN FIRE CONDITION BACK TO THE CAPABLE MEMBER AS PER BCSA GUIDANCE?

- ☐ No
- ☐ Yes, received from supplier.

HAVE YOU RECEIVED A VALID EN 13501-2 FIRE RESISTANCE TEST REPORT FOR THE SELECTED WALL PANEL, TESTED IN THE SAME ORIENTATION AS YOUR INTENDED INSTALLATION (HORIZONTAL OR VERTICAL)?

- ☐ No
- ☐ Yes, received from supplier.

IS COMPARTMENTATION REQUIRED WITHIN YOUR BUILDING?

- ☐ No
- ☐ Yes, EN1364-1/EN13501-2 fire resistance test/classification* report(s) received from supplier.

DOES YOUR SELECTED PRODUCTS MEET ALL INSURER APPROVAL STANDARDS?

- ☐ No
- ☐ Yes, approval document(s) with installation requirements received from supplier.



Note the lack of fire spread due to the use of insurer approved products.

*Classification using National Classification is also possible.

APPENDIX

Table 5.7 Limitations on roof coverings					
Designation of covering of roof or part of roof		Minimum distance from any point on relevant boundary			
		Less than 6 m	Not less than 6 m	Not less than 12 m	Not less than 20 m
National Class	European Class				
AA, AB or AC	B _{ROOF} (t4)	✓	✓	✓	✓
BA, BB or BC	C _{ROOF} (t4)	X	✓	✓	✓
CA, CB or CC	D _{ROOF} (t4)	X	✓ (1)(2)	✓ (1)	✓
AD, BD or CD	E _{ROOF} (t4)	X	✓ (1)(2)	✓ (1)	✓ (1)
DA, DB, DC or DD	F _{ROOF} (t4)	X	X	X	✓ (1)(2)

✓ Acceptable.

X Not acceptable.

(1) Not acceptable on any of the following buildings:

- (i) a dwellinghouse in a terrace of three or more dwellinghouses;
- (ii) a building of Purpose Group 6 or 7 of any size; and
- (iii) a building of any other purpose group with a cubic capacity greater than 1500 m³.

(2) Acceptable on buildings not listed in Note 1 but only where that part of the roof is –

- (i) not more than 3 m² in area;
- (ii) not less than 1.5 m from any similar part; and
- (iii) the roof covering between any such parts is a material of limited combustibility.

EN13501-1 Reaction to Fire Classification

EN13501-1 Classification System	
Class	Description
Euroclasses (A1, A2, B, C, D, E, F)	
A1	Non-combustible
A2	Limited combustibility
B	Very limited fire growth
C	Limited contribution to fire
D	Acceptable fire growth, moderate hazard
E	Accepts a small flame, high contribution to fire
F	No performance determined
Additional Ratings – Smoke Production (s)	
s1	Little or no smoke
s2	Moderate smoke
s3	Substantial smoke
Additional Ratings – Flaming Droplets (d)	
d0	No droplets
d1	Some droplets
d2	High amount of droplets

APPENDIX

Table 4.1 Specific provisions of test for fire resistance of elements of structure and other components of a building

Part of building	Minimum provisions when tested to the relevant part of BS 476 (minutes) ⁽¹⁾			Minimum provisions when tested to the relevant European standard (minutes) ⁽¹⁰⁾⁽¹¹⁾	Method of exposure
	Loadbearing capacity ⁽¹⁾	Integrity	Insulation		
1 Structural frame, beam or column	See Table 4.2	Not applicable	Not applicable	R see Table 4.2	Exposed faces
2 Loadbearing wall (which is not also a wall described in any of the following items)	See Table 4.2	Not applicable	Not applicable	R see Table 4.2	Each side separately
3 Floors –					
(a) in upper storey of two storey dwellinghouse (but not over a garage)	30 ⁽²⁾	15 ⁽²⁾	15 ⁽²⁾	REI 30 ⁽⁷⁾	From underside
(b) between a shop and flat above	60 or see Table 4.2 (whichever is greater)	60 or see Table 4.2 (whichever is greater)	60 or see Table 4.2 (whichever is greater)	REI 60 or see Table 4.2 (whichever is greater)	
(c) any other floor	See Table 4.2	See Table 4.2	See Table 4.2	REI see Table 4.2	
4 Roofs –					
(a) any part forming an escape route	30	30	30	REI 30	From underside
(b) any roof that performs the function of a floor	See Table 4.2	See Table 4.2	See Table 4.2	REI see Table 4.2	
5 External walls –					
(a) any part less than 1 m from any point on the relevant boundary	See Table 4.2	See Table 4.2	See Table 4.2	REI see Table 4.2	Each side separately
(b) any part 1 m or more from the relevant boundary	See Table 4.2	See Table 4.2	15	REI see Table 4.2 ⁽⁸⁾	From inside
(c) any part required to have fire resistance to protect an external escape route	30	30	No provision ⁽³⁾	RE 30 ⁽³⁾	From inside
6 Compartment wall separating occupancies	60 or see Table 4.2 (whichever is less)	60 or see Table 4.2 (whichever is less)	60 or see Table 4.2 (whichever is less)	REI 60 or see Table 4.2 (whichever is less)	Each side separately

APPENDIX

Table 4.1 Specific provisions of test for fire resistance of elements of structure and other components of a building (cont'd)					
Part of building	Minimum provisions when tested to the relevant part of BS 476 (minutes) ⁽¹¹⁾			Minimum provisions when tested to the relevant European standard (minutes) ⁽¹⁰⁾⁽¹¹⁾	Method of exposure
	Loadbearing capacity ⁽¹⁾	Integrity	Insulation		
7 Compartment wall other than in item 6 above	See Table 4.2	See Table 4.2	See Table 4.2	REI see Table 4.2	Each side separately
8 Protected shafts, excluding any firefighting shafts –					
(a) any glazing described in paragraph 4.26	Not applicable	30	No provision ⁽³⁾	E 30 ⁽³⁾	Each side separately
(b) any other part between the shaft and a protected lobby or protected corridor described in paragraph 4.26	30	30	30	REI 30	
(c) any part not described in (a) or (b) above	See Table 4.2	See Table 4.2	See Table 4.2	REI see Table 4.2	
9 Enclosure (which does not form part of a compartment wall or a protected shaft) to a –					
(a) protected stairway	30	30	30 ⁽⁴⁾	REI 30 ⁽⁴⁾	Each side separately
(b) lift shaft	30	30	30	REI 30	
(c) service shaft	30	30	30	REI 30	

APPENDIX

Table 4.1 Specific provisions of test for fire resistance of elements of structure and other components of a building (cont'd)					
Part of building	Minimum provisions when tested to the relevant part of BS 476 (minutes) ⁽¹¹⁾			Minimum provisions when tested to the relevant European standard (minutes) ⁽¹⁰⁾⁽¹¹⁾	Method of exposure
	Loadbearing capacity ⁽¹⁾	Integrity	Insulation		
10 Firefighting shafts –					
(a) construction separating firefighting shafts from remainder of building	120	120	120	REI 120	From side remote from shaft
	60	60	60	REI 60	From shaft side
(b) construction with a firefighting shaft separating firefighting stairway, firefighting lift shaft and firefighting lobby	60	60	60	REI 60	Each side separately
11 Enclosure (which is not a compartment wall or described in item 8) to a –					Each side separately
(a) protected lobby or refuge	30	30	30 ⁽⁴⁾	REI 30 ⁽⁴⁾	
(b) protected corridor	30	30	30 ⁽⁴⁾	REI 30 ⁽⁴⁾	
12 Subdivision of a corridor	30	30	30 ⁽⁴⁾	REI 30 ⁽⁴⁾	Each side separately
13 Wall separating an attached or integral garage from a dwellinghouse	30	30	30 ⁽⁴⁾	REI 30 ⁽⁴⁾	From garage side
14 Fire-resisting construction –					Each side separately
(a) in dwellings not described elsewhere	30	30	30 ⁽⁴⁾	REI 30 ⁽⁴⁾	
(b) enclosing places of special fire hazard	30	30	30	REI 30	
(c) between retail areas in a shop and store rooms ⁽⁵⁾	30	30	30	REI 30	
(d) fire-resisting subdivision described in Note (4) to Table 4.6	30	30	30	REI 30	

APPENDIX

Table 4.1 Specific provisions of test for fire resistance of elements of structure and other components of a building (cont'd)

Part of building	Minimum provisions when tested to the relevant part of BS 476 (minutes) ⁽¹⁾			Minimum provisions when tested to the relevant European standard (minutes) ⁽¹⁰⁾⁽¹¹⁾	Method of exposure
	Loadbearing capacity ⁽¹⁾	Integrity	Insulation		
15 Cavity barrier	Not applicable	30	15	EI 30 ⁽⁹⁾	Each side separately
16 Ceiling shown in Diagram 4.6 or 4.7	Not applicable	30	30	EI 30	From underside
17 Fire-resisting duct referred to in paragraph 4.42(e)	Not applicable	30	No provision	E 30	From outside
18 Casing around a drainage system as shown in Diagram 4.11	Not applicable	30	No provision	E 30	From outside
19 Flue walls described in paragraph 4.45	Not applicable	See Table 4.2 ⁽⁶⁾	See Table 4.2 ⁽⁶⁾	EI see Table 4.2 ⁽⁶⁾	From outside
20 Fire doors	See Table 4.5			See Table 4.5	

Notes

- (1) Applies to loadbearing elements only.
- (2) This standard of fire resistance is referred to as modified 30 minutes.
- (3) Except for any limitations on glazed elements given in Table 2.8.
- (4) See Table 2.8 for permitted extent of uninsulated glazed elements.
- (5) Applies only to store rooms where their siting prejudices means of escape.
- (6) At least one half of the period of fire resistance required for the compartment wall or floor.
- (7) Floors under item 3a, may be considered to have met the minimum provision provided that they achieve at least 30 minutes loadbearing capacity and at least 15 minutes integrity and insulation.
- (8) External walls under item 5b may be considered to have met the minimum provision provided that they achieve the relevant provisions for loadbearing capacity and integrity given in Table 4.2 and at least 15 minutes insulation.
- (9) Cavity barriers under item 15 may be considered to have met the minimum provision provided that they achieve at least 30 minutes integrity and at least 15 minutes insulation.
- (10) 'R' is the European classification of the resistance to fire performance in respect of loadbearing capacity; 'E' is the European classification of the resistance to fire performance in respect of integrity; and 'I' is the European classification of the resistance to fire performance in respect of insulation.
- (11) The National classifications do not automatically equate with the equivalent classifications in the European column, therefore products cannot typically assume a European class unless they have been tested accordingly

APPENDIX

Table 4.2 Minimum periods of fire resistance

Purpose group of building	Minimum period (minutes) for elements of structure and other components of the building forming part of					
	Basement storey* including floor over		Ground or upper storey			
	Depth (m) of basement		Height (m) of top floor above ground in building or separated part of building ⁽¹⁾			
	More than 10	Not more than 10	Not more than 5	More than 5 not more than 18	More than 18 not more than 30	More than 30
1 Residential (dwellings) –						
(a) flats	90	60	30*	60 ^{(2)**}	90**	120**
(b) and (c) dwellinghouses	Not relevant	30*	30*	60 ⁽²⁾	Not relevant	Not relevant
2 Residential –						
(a) institutional	90	60	30* ^{##}	60	90	120 [#]
(b) other residential	90	60	30*	60	90	120 [#]
3 Office –						
not sprinklered	90	60	30*	60	90	Not permitted
sprinklered ⁽³⁾	60	60	30*	30*	60	120 [#]
4 Shop and commercial –						
not sprinklered	90	60	60	60	90	Not permitted
sprinklered ⁽³⁾	60	60	30*	60	60	120 [#]
5 Assembly and recreation –						
not sprinklered	90	60	60	60	90	Not permitted
sprinklered ⁽³⁾	60	60	30*	60	60	120 [#]
6 Industrial –						
not sprinklered	120	90	60	90	120	Not permitted
sprinklered ⁽³⁾	90	60	30*	60	90	120 [#]
7 Storage and other non-residential –						
(a) any building or part not described elsewhere –						
not sprinklered	120	90	60	90	120	Not permitted
sprinklered ⁽³⁾	90	60	30*	60	90	120 [#]

APPENDIX

Table 4.2 Minimum periods of fire resistance (cont'd)

Purpose group of building	Minimum period (minutes) for elements of structure and other components of the building forming part of					
	Basement storey* including floor over		Ground or upper storey			
	Depth (m) of basement		Height (m) of top floor above ground in building or separated part of building ⁽¹⁾			
	More than 10	Not more than 10	Not more than 5	More than 5 not more than 18	More than 18 not more than 30	More than 30
7 (b) car park for light vehicles –						
(i) open sided car park ⁽⁴⁾	Not applicable	Not applicable	15* ^{§(5)}	15* ^{§(5)}	15* ^{§(5)}	Not applicable
(ii) any other car park	90	60	30*	60	90	120 [#]

Notes:

- + The floor over a basement (or if there is more than one basement, the floor over the topmost basement) should meet the provisions for the ground and upper storeys if that period is higher.
 - * Increased to a minimum of 60 minutes for compartment walls separating buildings.
 - ** Reduced to 30 minutes for any floor within a flat with more than one storey, but not if the floor contributes to the support of the building as a whole.
 - @ Reduced to 30 minutes for a dwellinghouse having not more than three storeys and for the wall or floor separating a dwellinghouse from an attached or integral garage.
 - ## Multistorey hospitals designed in accordance with Northern Ireland Firecode documents should have a minimum of 60 minutes.
 - \$ Increased to a minimum of 30 minutes for elements protecting the means of escape.
 - # Reduced to 90 minutes for elements not forming part of the structural frame.
 - (1) A single storey building or a single storey separated part of a building should be subject to the period given under the heading "Not more than 5" and where it has a basement storey or storeys they should be subject to the period appropriate to their depth.
 - (2) Reduced to 30 minutes where an existing building of not more than three storeys is being converted.
 - (3) "Sprinklered" means that the building is fitted throughout with an automatic sprinkler system complying with the relevant requirements of BS 53062 or BS EN 12845 in respect of occupancy rating and additional requirements for life safety.
 - (4) Car parks which comply with paragraphs 4.49 and 4.50.
 - (5) For the purposes of this technical booklet the following types of steel elements are deemed to have satisfied the minimum period of fire resistance of 15 minutes when tested to the European test method –
 - (i) Beams supporting concrete floors, maximum $A_m/V = 230 \text{ m}^3$ operating under full design load.
 - (ii) Free standing columns, maximum $A_m/V = 180 \text{ m}^3$ operating under full design load.
 - (iii) Wind bracing and struts, maximum $A_m/V = 210 \text{ m}^3$ operating under full design load.
- The meaning of ' A_m/V ' is given in BS 59508 Structural use of steel work in building Code of practice for fire resistant design and is in line with European terminology. (This section factor was previously known as H_p/A_s .)

NOTES

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