



Tipperary Fire & Rescue Service



Review of TGD B Vol. 2 2017 & Supp. Guidance
Webinar

Opening

Chief Fire Officer - Dave Carroll BE CEng MIEI





Tipperary Fire & Rescue Service



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Webinar

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Part 1 – Regulatory Advice by ACFO John Hoctor

Part 2 – Technical Advice by ACFO Martin Moore

Q & A





Tipperary Fire & Rescue Service



Review of TGD B Vol. 2 2017
& Supp. Guidance

REGULATORY ADVICE

John Hctor BE CEng MIEI
Assistant Chief Fire Officer



Construction Sector



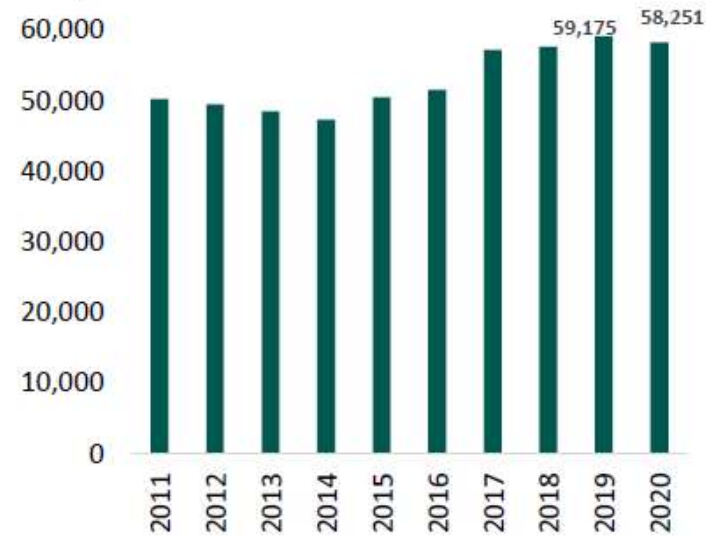
Riailtas na hÉireann
Government of Ireland

Project Ireland 2040
BUILD 2022:
Construction Sector
Performance and
Capacity



159,300 construction sector employees

Figure 5.11: Number of Construction Enterprises



History



- **1212** After a major fire in 1212, thatched roofs were banned in London
Timber construction fuelled the Great Fire of London in 1666, which wiped out 80% of the city.
- **1667** London Building Act of 1667. all houses were to be built in brick/stone The number of storeys and width of walls were carefully specified. Streets should be wide enough to act as a fire break.
In the early Victorian period , outbreaks of cholera created alarm. Problems of overcrowding, lack of water and sanitation.
- **1858** The Local Government Act of 1858 extended the powers of these local authorities to regulate the structure of buildings through bye-laws.
- **1966** UK Building Regulations came into operation in 1966
Grenfell Tower – 72 fatalities in June 2017
- **2022** The Building Safety Act 2022 with myriad of statutory instruments (SIs) and guidance,



Managing Risks for a Safer Built Environment **in Kenya**



- Set against Kenya's growing economy and urbanization, this report follows the [Building Regulation for Resilience \(BRR\) Program's](#) Building Regulatory Capacity Assessment (BRCA) methodology.
- The assessment is broken down into the following components:
 - Drivers of risk in the built environment
 - National-level legislative framework and institutions
 - Building code development and maintenance
 - Local government capacity and implementation of building regulations
 - A summary of recommendations
- **Add additional functions to the Nairobi e-platform to support more efficient building code administration such as digital signatures and mechanisms to coordinate and document inspections.**
- <https://www.gfdrr.org/en/kenya-brca>



Ireland

Building Control Act, 1990 and 2007

Building Control Regulations

<https://www.gov.ie/en/publication/3e711-building-control/>

Building Regulations

<https://www.gov.ie/en/publication/1d2af-building-regulations/>

Technical Guidance Documents

<https://www.gov.ie/en/collection/d9729-technical-guidance-documents>



Regulations change from prescriptive to performance



London 1600's – prescriptive

London 1600's - no thatched roof

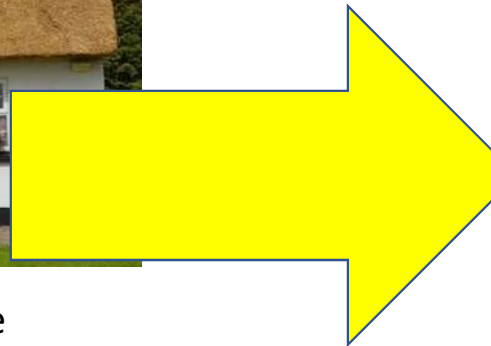


Table 4.3 Limitations on roof coverings* Par. 4.6

Designation of covering of roof, or part of roof		Minimum distance from any point on relevant boundary			
European Class	National Class	Less than 6 m	At least 6 m	At least 12 m	At least 20 m
$B_{ROOF}(t4)$	AA, AB or AC	✓	✓	✓	✓
$C_{ROOF}(t4)$	BA, BB or BC	x	✓	✓	✓
$D_{ROOF}(t4)$	CA, CB or CC	x	✓(1)	✓(2)	✓
$E_{ROOF}(t4)$	AD, BD or CD	x	✓(1)	✓(2)	✓(2)
$F_{ROOF}(t4)$	DA, DB, DC or DD	x	x	x	✓(1)
	thatch or wood shingles (3)	x	✓(1)	✓(2)	✓(2)

Current Irish Regs – performance based



WHY ?



Fire Resistance vs Reaction to fire

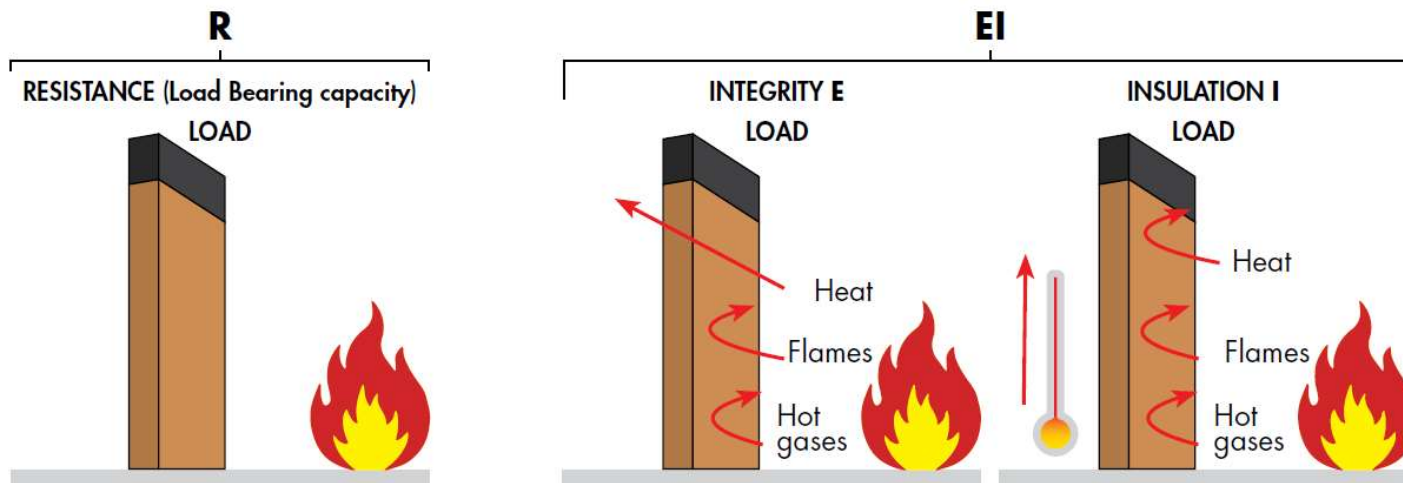
B8 vs B7

- . **Fire resistance** is the measurement of the ability of a material or system to resist, and ideally prevent, the passage of fire from one distinct area to another.
- **Reaction to fire** is the measurement of how a material or system will contribute to the fire development and spread.
- While individual products used in construction e.g. plasterboard, timber, steel, aluminum, etc. will have a “Reaction to Fire” designation based on various tests¹ carried out, **this does not mean that the construction** has a fire resistance.



Fire Resistance vs Reaction to fire B8 vs B7





Fire resistance is the capacity of a construction element (system) to maintain its LOAD-BEARING FUNCTION, INTEGRITY and THERMAL INSULATION properties during a specific period.

R – Load bearing capacity

The capacity to maintain load-bearing without the loss of structural strength

E – Integrity

The capacity to withstand fire exposure, generally from below to above, without fire passing through to the other side in the form of flames

I – Insulation

The capacity to withstand fire exposure, on one side only, without the transmission of fire in the form of significant heat transfer.



TYPICAL INSULATION PRODUCT EUROCLASS REACTION TO FIRE CLASSIFICATIONS

- Unfaced Glass Mineral Wool
- Unfaced Rock Mineral Wool

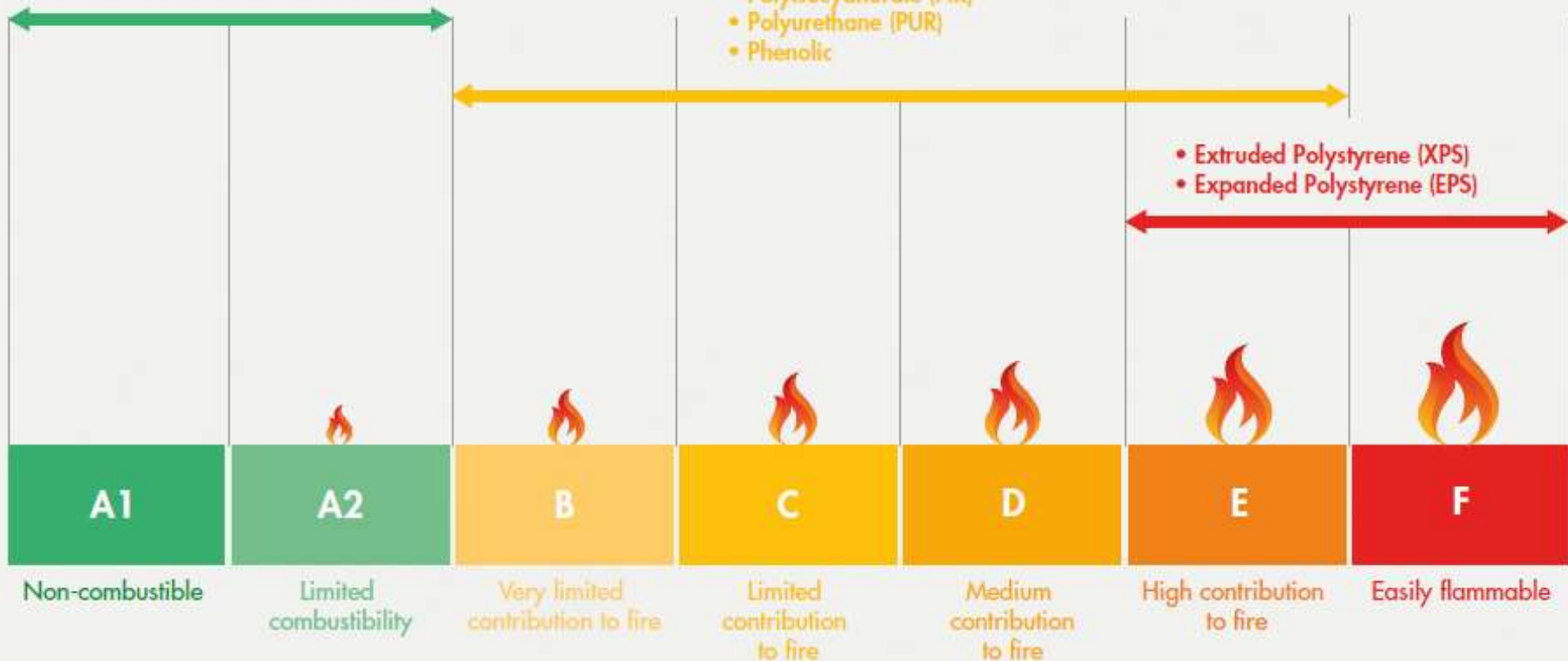
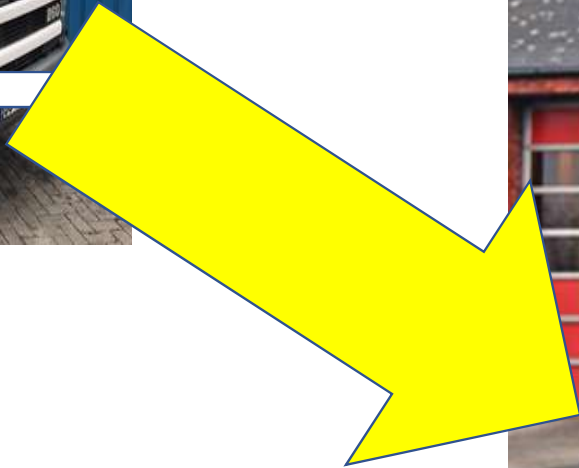


Illustration for guidance only. It is crucial to check the actual Euroclass Reaction to Fire Classification of a product before use.







NSAI
Approved Vehicle Body Builder Scheme
(AVBB)
For
National Vehicle Approvals (NSSTA and
IVA)
For
Complete/Completed Vehicles

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https://www.nsai.ie/images/uploads/certification-automotive/Approved_Vehicle_Body_Builder_Scheme_02.07.2019_Rev_5_DOP-69-01_.pdf

Note purchasing , drawings, control plan



Technical Guidance Documents

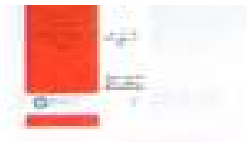
<https://www.gov.ie/en/collection/d9729-technical-guidance-documents/>



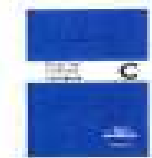
Technical Guidance Document A - Roadwork (all editions and related publications)



Technical Guidance Document B - Fire Safety (all editions and related publications)



Technical Guidance Document B - Fire Safety: Volume 2 Building/Process (all editions)



Technical Guidance Document C - Site Preparation and Excavation in Moisture (all editions and related publications)



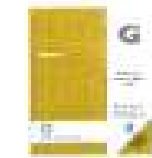
Technical Guidance Document D - Materials and Microclimate in IAQ (all editions and related publications)



Technical Guidance Document E - Acoustic (all editions and related publications)



Technical Guidance Document F - Ventilation (all editions and related publications)



Technical Guidance Document G - Hygiene (all editions and related publications)

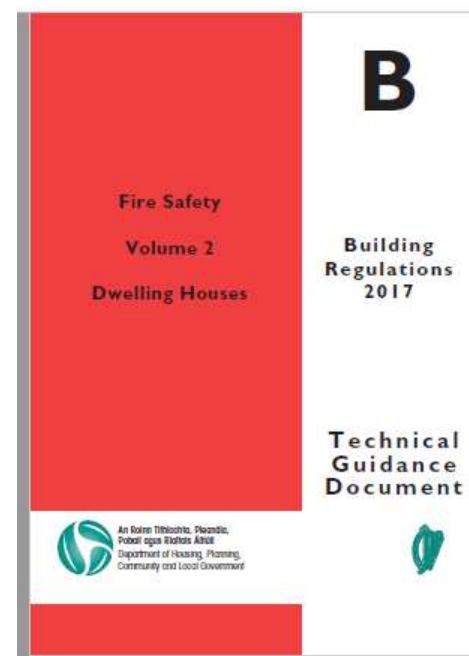


Technical Guidance Document H - Disturbance and Work Hours Guidelines (all editions and related publications)



TGD B Vol. 2 2017 - Dwellings

- Where works are carried out in accordance with the guidance in this document, this will, prima facie, indicate compliance with Part B of the Second Schedule of the Building Regulations
- Remember – Technical Guidance Document B Volume 2 Dwellings 2017 – minimum standard to achieve Regulations



Part B – The Requirement

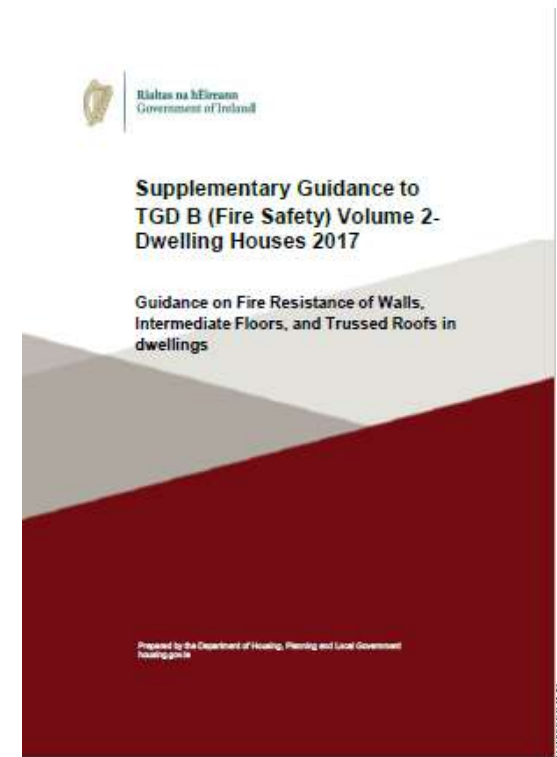
Part B6-B11 of the Second Schedule to the Building Regulations, 2017 provides for Dwelling Houses as follows

- **B6** Means of warning and escape in case of fire.
- **B7** Internal fire spread (linings).
- **B8** Internal fire spread (structure).
- **B9** External fire spread.
- **B10** Access and facilities for the fire service.




Supplementary Guidance to TGD B (Fire Safety) Volume 2- Dwelling Houses 2017

Where buildings are designed in accordance with the Eurocodes and are required by Part B of the Building Regulations to have a fire performance then this fire performance, specified under TGD B, 2017 must be demonstrated in accordance with the European test methods



Fire Resistance Dwelling Houses TGD B2017

 REI 60
(60 minutes fire resistance load bearing capacity, and integrity and insulation)

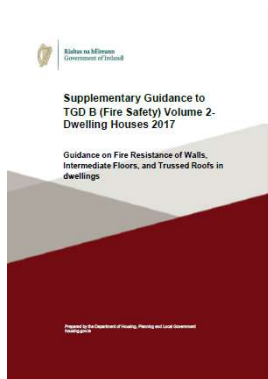
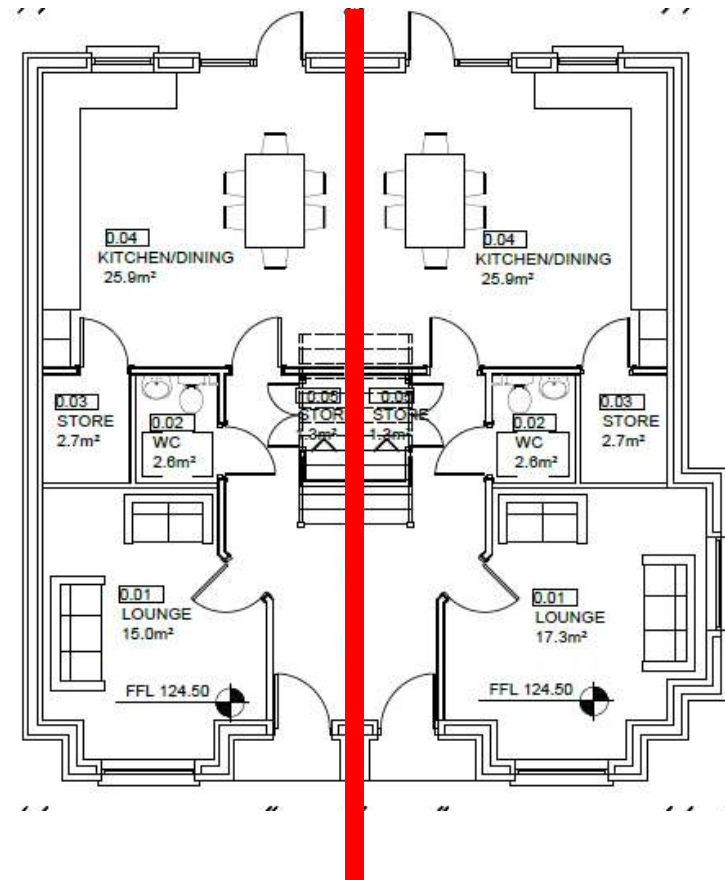
 RE30 REI 15
(30 minutes fire resistance load bearing capacity and integrity, 15 minutes insulation)

 REI 30
(30 minutes fire resistance load bearing capacity, integrity and insulation)

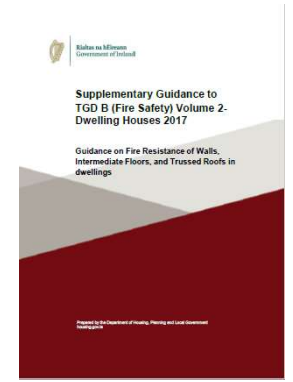
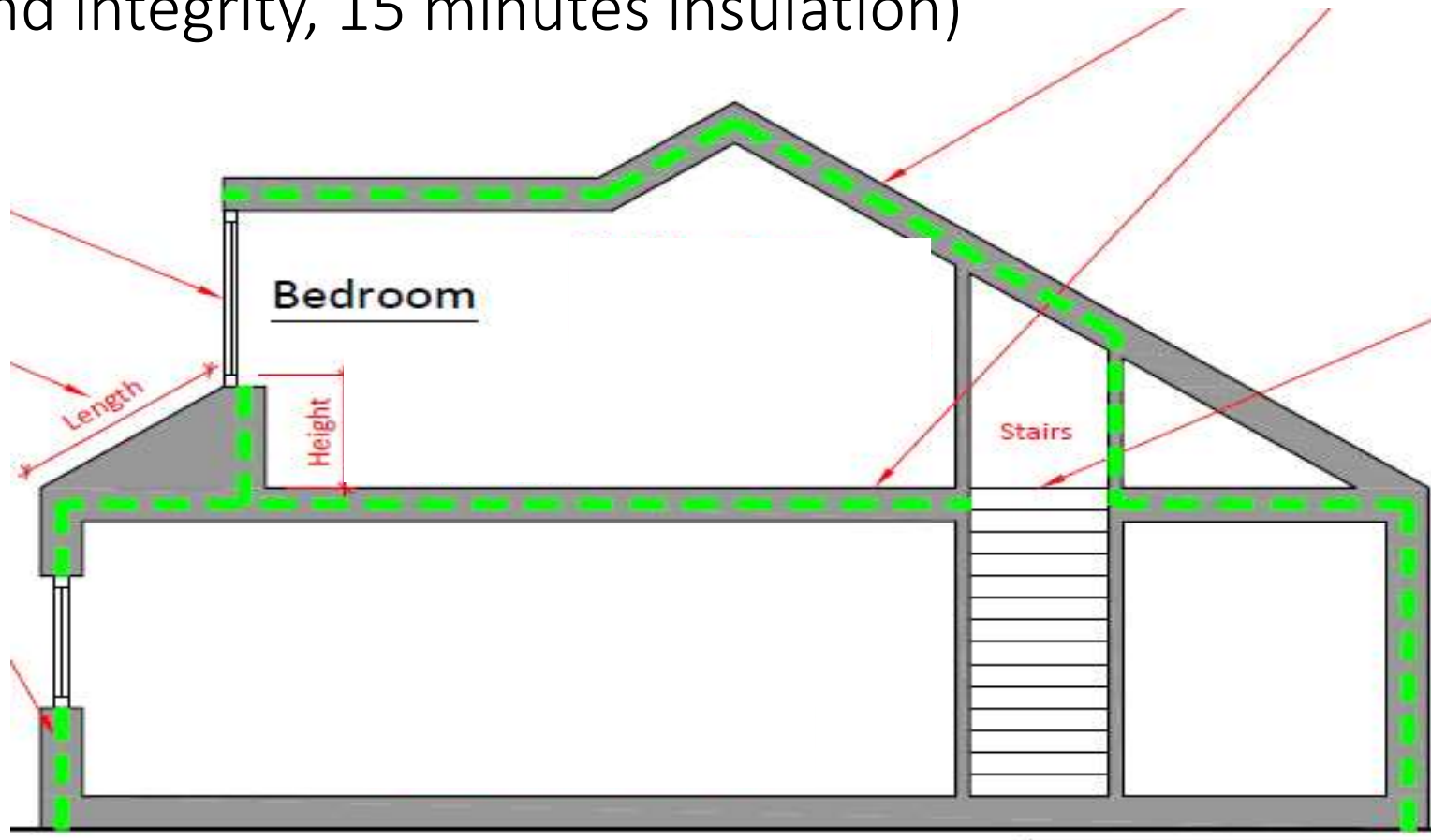


REI 60 (60 minutes fire resistance load bearing capacity, and integrity and insulation)

REI 60
(60 minutes fire resistance load bearing capacity, and integrity and insulation)



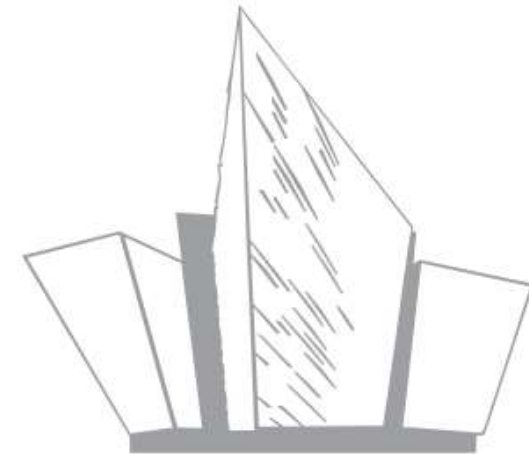
RE30 REI 15 (30 minutes fire resistance load bearing capacity and integrity, 15 minutes insulation)



RE30 REI 15
(30 minutes fire resistance load bearing capacity and integrity, 15 minutes insulation)



Substantiation

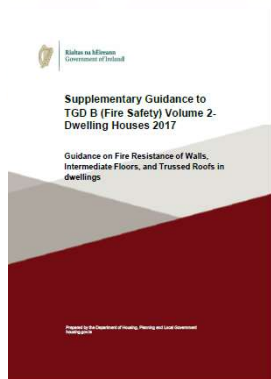


The White Book

Block mm	Loadbearing Wall		Non-loadbearing Wall		Cavity Wall	
	No Finish	VG Plaster	No Finish	VG Plaster	No Finish	VG Plaster
90	1 hour	2 hours	3 hours	3 hours	1 hour	1.5 hours
100	2 hours	4 hours	4 hours	4 hours	2 hours	4 hours
140	3 hours	4 hours	4 hours	4 hours	3 hours	4 hours



Plasterboard to EN 520 Gypsum plasterboards



Detail	Partition thickness mm	Inner board type mm	Outer board type mm	Max. partition height ¹ mm	Sound insulation R _w dB	Duty rating	Approx. weight kg/m ²	System reference
30 minutes fire resistance (EN)								
①	97	Rigidur 12.5	-	3800	44	Severe ²	30	X606009
②	97	Rigidur 12.5	-	3800	47	Severe ²	30	X606010
③	97	Rigidur 12.5	-	3800	49	Severe ²	30	X606011
①	102	Rigidur 15	-	4000	45	Severe ²	36	X606001



Remember not all tests are equal!

BS 476 versus EN 1365

Summary of Fire Resistance Tests on Posi-Joist Floors

Target Fire Resistance	Details of Fire Test			Construction of Test Floor				Other Relevant Factors	Results of Fire Test		
	Test standard	Test Date	Test Lab.	Joist Centres	Joist Depth	Deck	Ceiling Makeup		Asses. Standard	Report No.	Fire resistance Achieved
REI30	BS476-21	16/11/16	Exova Warrington	400	225	18 OSB	12.5 Type A + 5mm Skim (Screws at 150)	No Strongback Strong pass enabled IFC assessment to EN1363-1	BS476-21	376186	55 minutes Test stopped without failure
REI30	EN1365-2	08/08/17	Cerib, France	600	253	18 Ply	15 Type F (screws at 230)		EN1363-1	009195	36 minutes
REI30	EN1365-2	06/09/17	Exova Warrington	400	225	18 OSB	15 Type A (screws at 150/230)		EN1363-1	384902	42 minutes



Extract from Appendix A – TGD B Vol. 2 2017

For buildings designed in accordance with the Eurocodes, the performance specified must be achieved when tested in accordance with the European test methods .

For existing buildings the performance may be achieved by reference to the test methods set out in BS 476.



Title:

**Fire Resistance Test
In Accordance With
BS EN 1365-2: 2014,
On A Loadbearing
Timber Floor
Construction Protected
By A Plasterboard
Ceiling and
Incorporating Seven
Down Lighters.**

Date of Test:

28th January 2021

Issue 1:

15th June 2021

WF Report No.

436930/R



Test Assembly

**Summary of
Tested Assembly**

The timber floor had overall nominal dimensions of 4494 mm long by 2960 mm wide by 262 deep. The floor comprised 225 mm high by 4400 mm long 'Truss Form Ltd' joists at 600 mm centres. The unexposed face of the floor comprised nominally 22 mm thick tongue and groove chipboard referenced 'FSC E1 P5'. The floor assembly was protected on its underside by a single layer of 15 mm thick 'Gyproc Wallboard', through fixed to the joists with screws.

The ceiling incorporated seven downlighter light fittings. The lights are referenced as follows:

Test Ref.	Model Ref.	Cut Out Diameter.
1	V50 JC1001 WH/CH/BN	70 mm
2	JC010010 WH/CH/BN	72 mm
3	JC010016 WH/CH/BN	72 mm
4	V50 Tilt JC1002 WH/CH/BN	85 mm
5	V50 Tilt JC1002 WH/CH/BN	85 mm
6	V50 JC1001 WH/CH/BN	70 mm
7	JC010023 WH/CH/BN	84 mm

The floor supported a uniformly distributed load of 1.37 kN/m². This load was provided by the test sponsor as to represent the expected working load for the floor construction in practice.

Detailed drawings of the test specimen(s) and a comprehensive description of the test construction based on a detailed survey of the specimen(s) and information supplied by the sponsor of the test are included in the Test Specimen and Schedule of Components sections of this report.

Note 15 mm slab, 225 mm joist at 600mm cc and 22mm T&G chipboard





Performance Criteria and Test Results


Loadbearing Capacity	<p>This is the time in completed minutes for which the test specimen continues to maintain its ability to support the test load during the test. Support of the test load is determined by both the amount and the rate of deflection. The limiting deflection and the limiting rate of deflection for the specimen, as specified by the Standard, are calculated as:</p>												
	<table border="1"> <thead> <tr> <th>Criteria</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td><i>L</i>: Clear span - in mm</td> <td>4200</td> </tr> <tr> <td><i>d</i>: Depth of structural section - in mm</td> <td>225</td> </tr> <tr> <td>Limiting deflection ($L^2/400d$) - in mm</td> <td>196.0</td> </tr> <tr> <td>Limiting rate of deflection ($L^2/9000d$) - in mm/min</td> <td>8.7</td> </tr> <tr> <td>Measured deflection 1.5 x ($L^2/400d$) - in mm</td> <td>294.0</td> </tr> </tbody> </table>	Criteria	Value	<i>L</i> : Clear span - in mm	4200	<i>d</i> : Depth of structural section - in mm	225	Limiting deflection ($L^2/400d$) - in mm	196.0	Limiting rate of deflection ($L^2/9000d$) - in mm/min	8.7	Measured deflection 1.5 x ($L^2/400d$) - in mm	294.0
Criteria	Value												
<i>L</i> : Clear span - in mm	4200												
<i>d</i> : Depth of structural section - in mm	225												
Limiting deflection ($L^2/400d$) - in mm	196.0												
Limiting rate of deflection ($L^2/9000d$) - in mm/min	8.7												
Measured deflection 1.5 x ($L^2/400d$) - in mm	294.0												
	<p>Failure to support the load is deemed to have occurred when a 'Measured Deflection' greater than or equal to '1.5 x Limiting Deflection' is observed</p>												
	<p>Or</p>												
	<p>Both the 'Limiting rate of deflection' and 'Limiting deflection' are exceeded.</p>												
	<p>The criterion was satisfied for 31 minutes after which time the test was discontinued.</p>												
Integrity	<p>It is required that the specimen retains its separating function, without:</p> <ul style="list-style-type: none"> ▪ causing ignition of a cotton pad when applied ▪ permitting the penetration of a gap gauge as specified in BS EN 1363-1: 2020 ▪ sustained flaming on the unexposed surface ▪ subsequent failure of loadbearing capacity 												
	<p>These requirements were satisfied for the periods shown below:</p>												
Sustained flaming	31 minutes*												
Gap gauge	31 minutes*												
Cotton pad	31 minutes*												
Insulation	<p>It is required that the mean temperature rise of the unexposed surface shall not be greater than 140°C and that the maximum temperature rise shall not be greater than 180°C. Insulation failure also occurs simultaneously with integrity failure. These requirements were satisfied for the period shown below:</p>												
Specimen	31 minutes No failure*												
	<p>*Test duration. Test was discontinued after a period of 31 minutes.</p>												
Date of Test	28th January 2021												



Signatories


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* For and on behalf of **Warringtonfire**.

Report Issued: 15th June 2021

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 **Stáin na hÉireann**
Government of Ireland

Supplementary Guidance to
TGD B (Fire Safety) Volume 2-
Dwelling Houses 2017

Guidance on Fire Resistance of Walls,
Intermediate Floors, and Trussed Roofs in
dwellings

Prepared by the Department of Housing, Planning and Local Government
November 2016

https://www.jcc.co.uk/en_GB/docs/JCC_FG_Range_Open_Web_Mitek_Joist_FR-436930_June2021.pdf



Fire Resistance EN 1365 (series)
 Ability to withstand or contain a fire and still function:
 1. mechanical resistance i.e. an ability to maintain loadbearing capacity,
 2. integrity i.e. an ability to maintain the integrity of the structure,
 3. insulation i.e. an ability to provide insulation from high temperatures

Reaction to Fire (EN 13501-1)
 Materials classification is a fire:
 All products, excluding fireproofing, are classified as A1, A2, E, C, D, E or F with class A1 being the highest performance and F being the lowest i.e. A1 - it does not fuel the combustion but the fire
 F - does not meet the criteria and products concerned



Consolidated Guidance on Fire Safety Provisions to Dwelling House Types

Incorporating guidance from:
 Technical Guidance Document B (Fire Safety) Volume 2 Dwelling Houses 2017
 and
 Supplementary Guidance to TGD B (Fire Safety) Volume 2 - Dwelling Houses

Notes:
 This diagrammatic guidance document has been prepared together to assist owners, builders and designers with regards to the early provisions in the 3 most common dwelling house types:

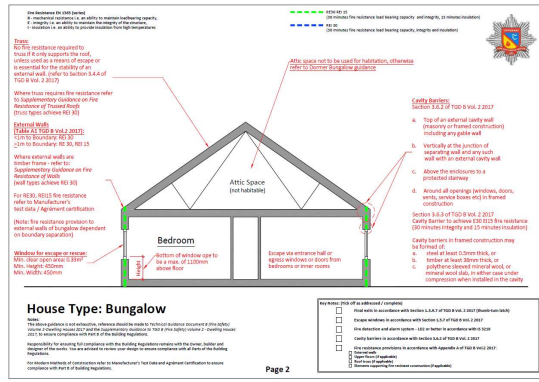
- Bungalow - Page 2
- Dormer Bungalow - Page 3
- Two Storey - Page 4
- Dormer Two Storey - Page 5
- Three Storey - Page 6

The guidance within this document is not exhaustive, reference should be made to Technical Guidance Document B (Fire Safety) Volume 2 - Dwelling Houses 2017 and the Supplementary Guidance to TGD B (Fire Safety) Volume 2 - Dwelling Houses 2017 to ensure full compliance with Part 6 of the Building Regulations.

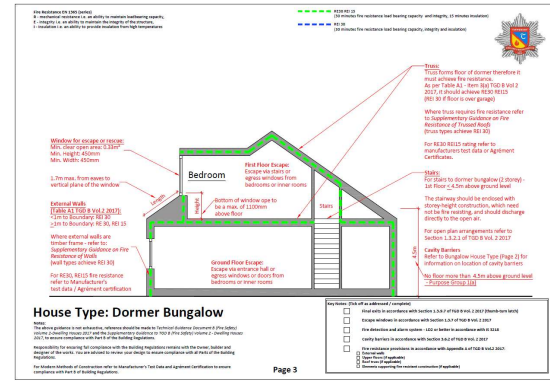
Responsibility for ensuring full compliance with the Building Regulations remains with the Owner, builder and designer of the works. You are advised to review your designs to ensure compliance with Part 6 of the Building Regulations.

For Modern Methods of Construction refer to Manufacturer's Test Data and Approval Certification to ensure compliance with Part 6 of Building Regulations.

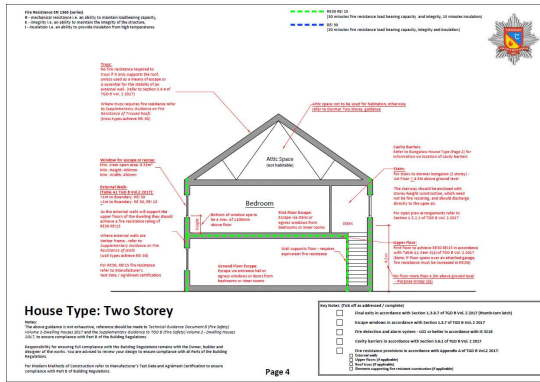
- Common Non-Compliances Found during Building Control Inspections of Dwellings with Regards to Part 6:**
- Installation of smoke alarms on all habitable rooms (TGD B 2017 - Section 3.8.6)
 - Use of optical smoke detectors on ground floor (TGD B 2017 - Section 3.8.6)
 - Correct location of detectors from other features (doors) (TGD B 2017 - Section 3.8.6)
 - Height of escape windows / ventilators (TGD B 2017 - Section 3.7.1)
 - Fire stopping at top of party walls (see page 9 of 10) (TGD B 2017 - Diagram 10)
 - Spacing of screw fixings to plasterboard on framed construction (refer to manufacturer's test data)
 - Fire resistance provisions to upper floors (refer to manufacturer's test data)
 - Fire stopping to openings in floors with open voids (metal web) (refer to manufacturer's test data)
 - Presence of cavity barriers (TGD B 2017 - Section 3.9)
 - Presence of simple battens to roof eaves (jamb battens) (refer to manufacturer's test data)
 - Trimmed of fire doors (hinges, seats, self-closer)
 - Isolation switches for PV arrays (TGD B 2017 - Section 3.4.3.1)
- The above list is not exhaustive, reference should be made to Technical Guidance Document B (Fire Safety) Volume 2 - Dwelling Houses 2017 and the Supplementary Guidance to TGD B (Fire Safety) Volume 2 - Dwelling Houses 2017, to ensure full compliance with Part 6 of the building regulations.



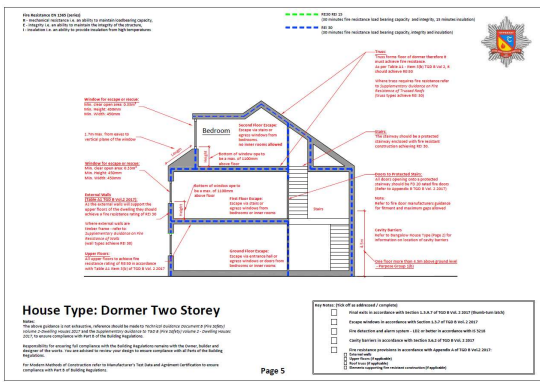
Bungalow



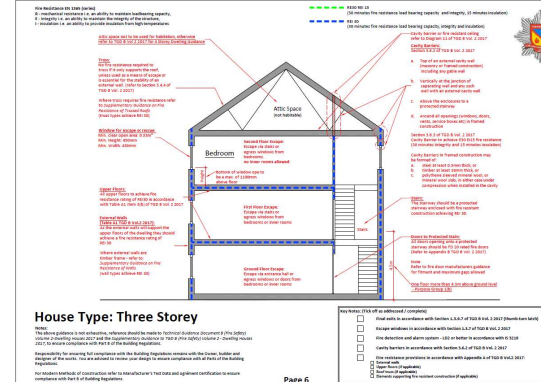
Dormer Bungalow



Two Storey



Dormer Two Storey



Three Storey

