Part D – Material and Workmanship

northern & western
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INSPECTIONS EDUCATION MARKET COMPLIANCE IS-BCMS
TRAINING SURVEILLANCE SUPPORT

An Oifig Náisiúnta um Rialú Foirgníochta
NATIONAL BUILDING CONTROL OFFICE

NBC&MSO CPD Event
24th of June 2024

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- Compliance Support
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- BCMS

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SUSTAINABLE DEVELOPMENT GOALS

(28) NBCO DCC - YouTube

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Building Regulation requirements for works to existing dwellings

NBCO
National Building Control Office

Introduction

When does a Buildings or works to an existing building need to comply with the Building Regulations?

S.I. No. 497/1997 - Building Regulations, 1997

3. (1) Subject to sub-article (2), and article 8, these Regulations apply to works, or a building as regards which a material change of use takes place, where the works commence or the material change of use takes place on or after the date referred to in article 2.

Building Control Act 1990 – 2014

Definitions:

"*building*" includes part of a building and any class or classes of structure which are prescribed by the Minister to be a building for the purposes of this Act;

"*works*" includes any act or operation in connection with the construction, extension, alteration, repair or renewal of a building.

The Building Regulations apply to all buildings or works unless the Building falls under the Exempted Buildings under the Third Schedule of the Building Regulations

Relaxations and dispensations may be applied for in respect of one or more requirements of the Building Regulations and are subject to assessment by the Building Control Authority.

Exemptions from Building Regulations: works in connection with a building referred to in the 3rd schedule to the Building Regulations, provided that after the works are carried out, such building is or continues to be a building referred to in that schedule, or a building referred to in the 3rd schedule to the Building Regulations. See 3rd schedule for detail - abbreviated version in table below.

See Third Schedule to regulation for full description, conditions and limitations of classes	**Class 3:** A single storey extension to an existing dwelling which is ancillary to the dwelling and consists of a conservatory, porch, car port or covered area.	**Class 6:** A building erected in connection with any mine or quarry other than a house or a building used as offices, labs or showrooms.	**Class 9:** Used to be ESB buildings but entire class deleted since Sept 2006 (S.I. No. 115 of 2006)	**Class 12:** A temporary building which is used only in connection, alteration, extension or repair of any work.
Class 1: A single storey building used as a garage (detached, <25m², height <3 or 4m for pitched roof)	**Class 4:** A single storey agricultural glasshouse (not being a building in Class 2)	**Class 7:** A building the construction of which is subject to the Explosives Act 1875.	**Class 10:** A temporary dwelling as in the Local Government (sanitary services) Act, 1948 (No.3 of 1948)	**Class 13:** A building of a temporary nature erected on a site for ≤ 28 consecutive days or 60 days in a 12 month period.
Class 2: A single storey building ancillary to a dwelling (such as a summer house, poultry house, conservatory, shed)	**Class 5:** A single storey building which is used exclusively for storage of materials, accommodation of plant or in connection with livestock.	**Class 8:** A building subject to the National Monuments Acts 1930-1994	**Class 11:** A temporary building used only in connection with the sale or letting of buildings or building plots in course of development.	**Class 14:** A lighthouse or similar structure which is an aid to navigation on water.

Bringing Back Homes FAQs

Introduction

Building Control Act Section 3-DESIGN and CONSTRUCTION of BUILDINGS and WORKS

Building Control Act; Section 3(5)

(5) Subject to subsection (11) and to—

(a) any dispensation or relaxation granted under section 4 or 5, or

(b) any appeal under section 7 which has been allowed,

EVERY BUILDING TO WHICH BUILDING REGULATIONS APPLY shall be designed & constructed in accordance with the provisions of .. regulations.

Alternative Means of Compliance

- **Codes of practice**
- **Standard Recommendations**
- **ACDs etc**
- **Irish Standard (I.S.) or**
- **Irish Agrément Certificate (IAB) or**
- **alternative national technical specification (equivalent level of safety & suitability).**
- **Design etc,**

Building Regulations Article 9 (1) Every **WORKS OR BUILDING** to which these Regulations apply shall be **DESIGNED AND CONSTRUCTED**—

(a) in accordance with the appropriate requirements set out in the Second Schedule,

and

(b) in such a manner as to avoid the breaching of any other requirement of that Schedule.

(2) No works shall be carried out to a building which would **cause a new or greater contravention** in the building of any provision of these Regulations.

Functional requirements state the aim or purpose of the provision, without detailing how it has to be done. The focus is on "ends" allowing the designer to determine best "means".

Building Control Act Section 16.Offences **—Any person who contravenes (by act or omission) any requirement of this Act or of any order, regulation or notice under this Act shall be guilty of an offence.**

Introduction

Building Regulations - Dispensation/Relaxation

Technical Guidance Documents (TGDs)

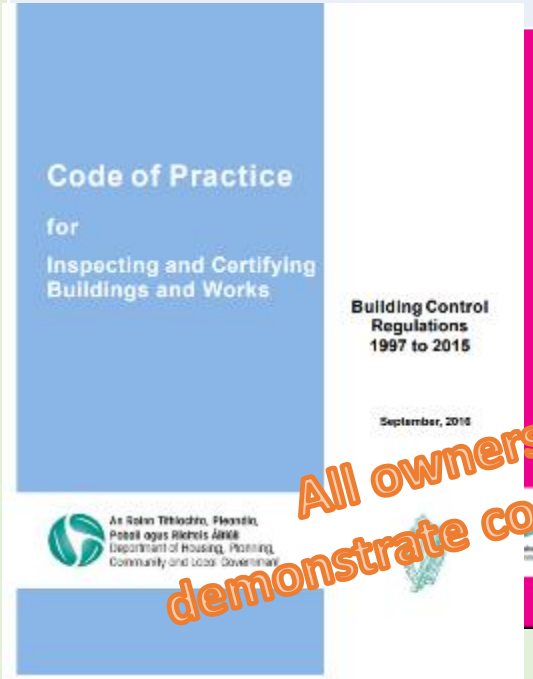
Existing Buildings (works to existing Buildings)
*In the case of **material alterations** or **changes of use** of **existing buildings**, the adoption without modification of the guidance in this document **may not**, in all circumstances, be **appropriate**.*

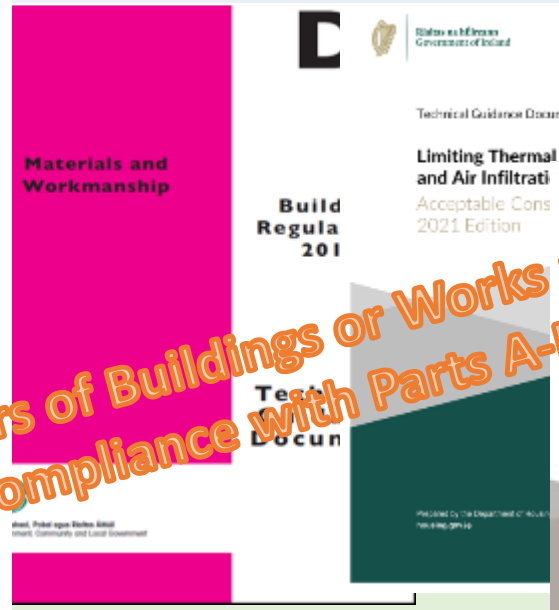
*In particular, the adherence to guidance, including codes, standards or technical specifications, intended for application to new work may be **unduly restrictive or impracticable**. **Protected structures**, **proposed protected structures** and **other buildings of architectural or historical interest** are especially likely to give rise to such circumstances.*

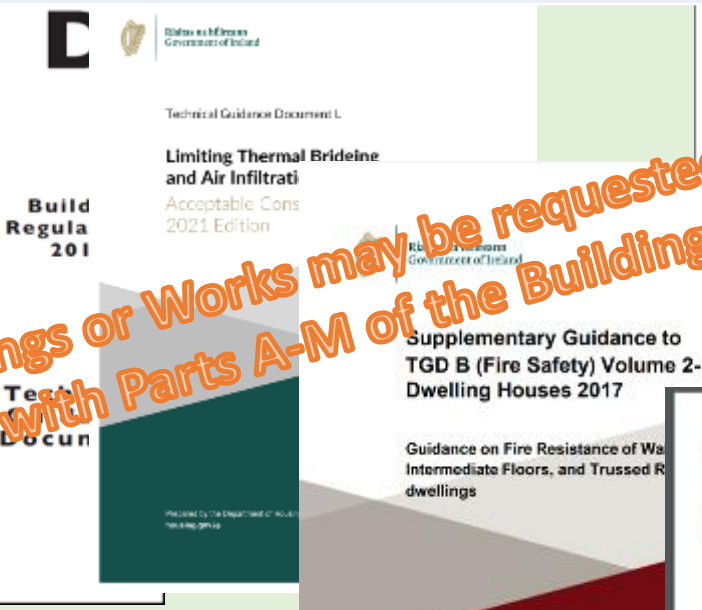
In these situations, alternative approaches based on the principles contained in the document may be more relevant and should be considered.

Introduction
Recommended Guidance for Compliance

"Competent Person": a person is deemed to be a competent person where, having regard to the task he or she is required to perform and taking account of the size and/or complexity of the building or works, the person possesses sufficient training, experience and knowledge appropriate to the nature of the work to be undertaken;







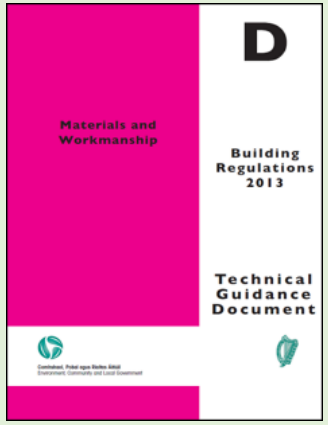
All owners of Buildings or Works may be requested to demonstrate compliance with Parts A-M of the Building Regulations

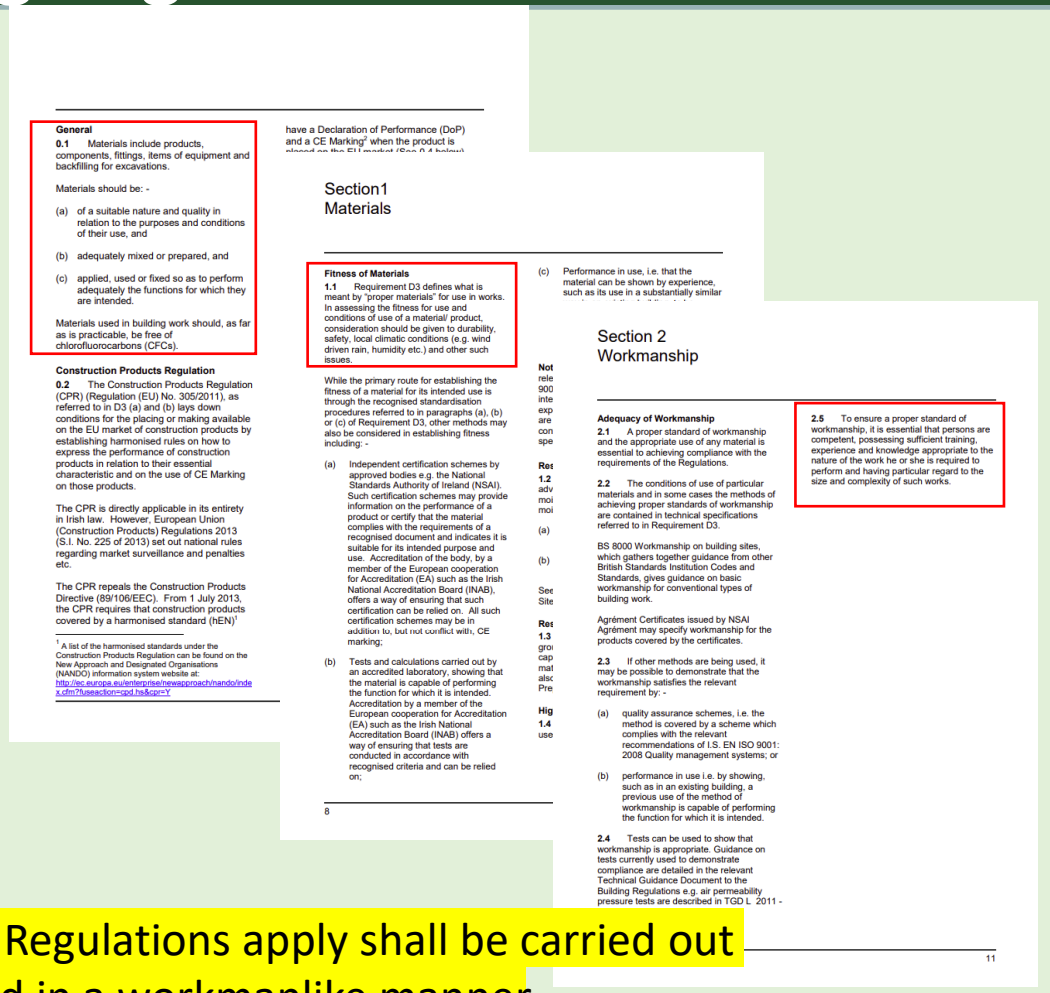
Introduction
The requirements of Part D of the Building Regulations

PART D

MATERIALS AND WORKMANSHIP

Materials and workmanship	D1	All works to which these Regulations apply shall be carried out with proper materials and in a workmanlike manner.
Letterplates	D2	A letter plate aperture shall be so positioned at a reasonable height above ground level so as not to endanger the health and safety of persons using such apertures.
Definitions for this Part	D3	In this Part: "proper materials" means materials which are fit for the use for which they are intended and for the conditions in which they are to be used, and includes materials which: (*a*) bear a CE Marking in accordance with the provisions of the Construction Products Regulation; (*b*) comply with an appropriate harmonised standard or European Technical Assessment in accordance with the provisions of the Construction Products Regulation; or (*c*) comply with an appropriate Irish Standard or Irish Agrément Certificate or with an alternative national technical specification of any State which is a contracting party to the Agreement on the European Economic Area, which provides in use an equivalent level of safety and suitability; "Agreement on the European Economic Area" means the Agreement on the European Economic Area between the European Union, its Member States and the Republic of Iceland, the Principality of Liechtenstein and the Kingdom of Norway as published in the Official Journal of the European Communities (O.J. No. L1, 03.01.1994, page 3); "Construction Products Regulation" means Regulation (EU) No. 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC."




General

0.1 Materials include products, components, fittings, items of equipment and backfilling for excavations.

Materials should be: -

(a) of a suitable nature and quality in relation to the purposes and conditions of their use, and

(b) adequately mixed or prepared, and

(c) applied, used or fixed so as to perform adequately the functions for which they are intended.

Materials used in building work should, as far as is practicable, be free of chlorofluorocarbons (CFCs).

Construction Products Regulation

0.2 The Construction Products Regulation (CPR) (Regulation (EU) No. 305/2011), as referred to in D3 (a) and (b) lays down conditions for the placing or making available on the EU market of construction products by establishing harmonised rules on how to express the performance of construction products in relation to their essential characteristic and on the use of CE Marking on those products.

The CPR is directly applicable in its entirety in Irish law. However, European Union (Construction Products) Regulations 2013 (S.I. No. 225 of 2013) set out national rules regarding market surveillance and penalties etc.

The CPR repeals the Construction Products Directive (89/106/EEC). From 1 July 2013, the CPR requires that construction products covered by a harmonised standard (hEN)[1]

[1] A list of the harmonised standards under the Construction Products Regulation can be found on the New Approach and Designated Organisations (NANDO) information system website at: http://ec.europa.eu/enterprise/newapproach/nando/index.cfm?fuseaction=cpd.hs&cpr=Y

have a Declaration of Performance (DoP) and a CE Marking[2] when the product is

Section1
Materials

Fitness of Materials

1.1 Requirement D3 defines what is meant by "proper materials" for use in works. In assessing the fitness for use and conditions of use of a material/ product, consideration should be given to durability, safety, local climatic conditions (e.g. wind driven rain, humidity etc.) and other such issues.

While the primary route for establishing the fitness of a material for its intended use is through the recognised standardisation procedures referred to in paragraphs (a), (b) or (c) of Requirement D3, other methods may also be considered in establishing fitness including: -

(a) Independent certification schemes by approved bodies e.g. the National Standards Authority of Ireland (NSAI). Such certification schemes may provide information on the performance of a product or certify that the material complies with the requirements of a recognised document and indicates it is suitable for its intended purpose and use. Accreditation of the body, by a member of the European cooperation for Accreditation (EA) such as the Irish National Accreditation Board (INAB), offers a way of ensuring that such certification can be relied on. All such certification schemes may be in addition to, but not conflict with, CE marking;

(b) Tests and calculations carried out by an accredited laboratory, showing that the material is capable of performing the function for which it is intended. Accreditation by a member of the European cooperation for Accreditation (EA) such as the Irish National Accreditation Board (INAB) offers a way of ensuring that tests are conducted in accordance with recognised criteria and can be relied on;

(c) Performance in use, i.e. that the material can be shown by experience, such as its use in a substantially similar

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Section 2
Workmanship

Adequacy of Workmanship

2.1 A proper standard of workmanship and the appropriate use of any material is essential to achieving compliance with the requirements of the Regulations.

2.2 The conditions of use of particular materials and in some cases the methods of achieving proper standards of workmanship are contained in technical specifications referred to in Requirement D3.

BS 8000 Workmanship on building sites, which gathers together guidance from other British Standards Institution Codes and Standards, gives guidance on basic workmanship for conventional types of building work.

Agrément Certificates issued by NSAI Agrément may specify workmanship for the products covered by the certificates.

2.3 If other methods are being used, it may be possible to demonstrate that the workmanship satisfies the relevant requirement by: -

(a) quality assurance schemes, i.e. the method is covered by a scheme which complies with the relevant recommendations of I.S. EN ISO 9001: 2008 Quality management systems; or

(b) performance in use i.e. by showing, such as in an existing building, a previous use of the method of workmanship is capable of performing the function for which it is intended.

2.4 Tests can be used to show that workmanship is appropriate. Guidance on tests currently used to demonstrate compliance are detailed in the relevant Technical Guidance Document to the Building Regulations e.g. air permeability pressure tests are described in TGD L 2011 -

2.5 To ensure a proper standard of workmanship, it is essential that persons are competent, possessing sufficient training, experience and knowledge appropriate to the nature of the work he or she is required to perform and having particular regard to the size and complexity of such works.

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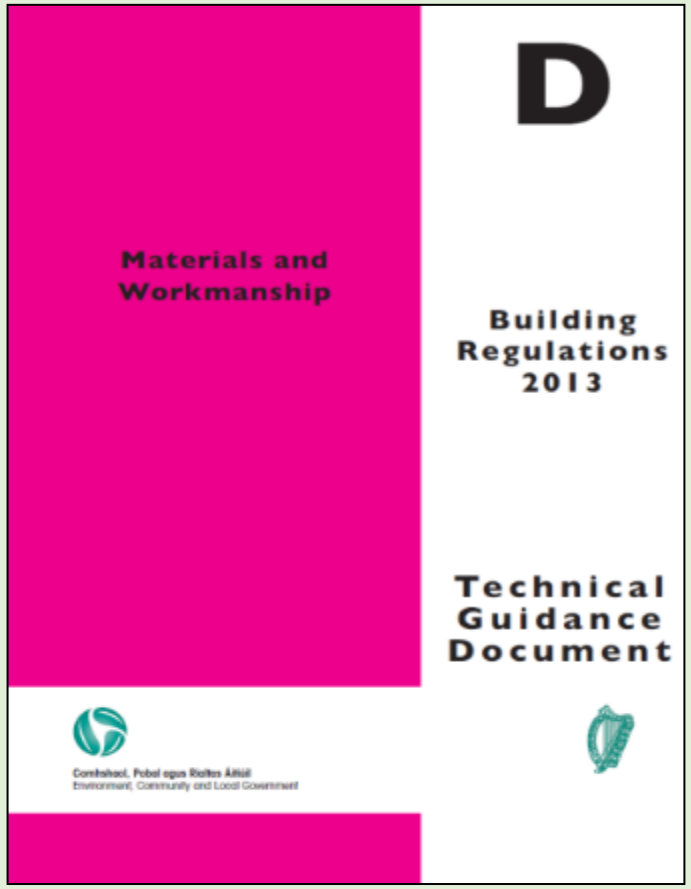
All works to which these Regulations apply shall be carried out with proper materials and in a workmanlike manner.

Requirements Part D
Prima Facie Compliance in TGD D: General

"0.1 Materials include products, components, fittings, items of equipment and backfilling for excavations.
Materials should be: -

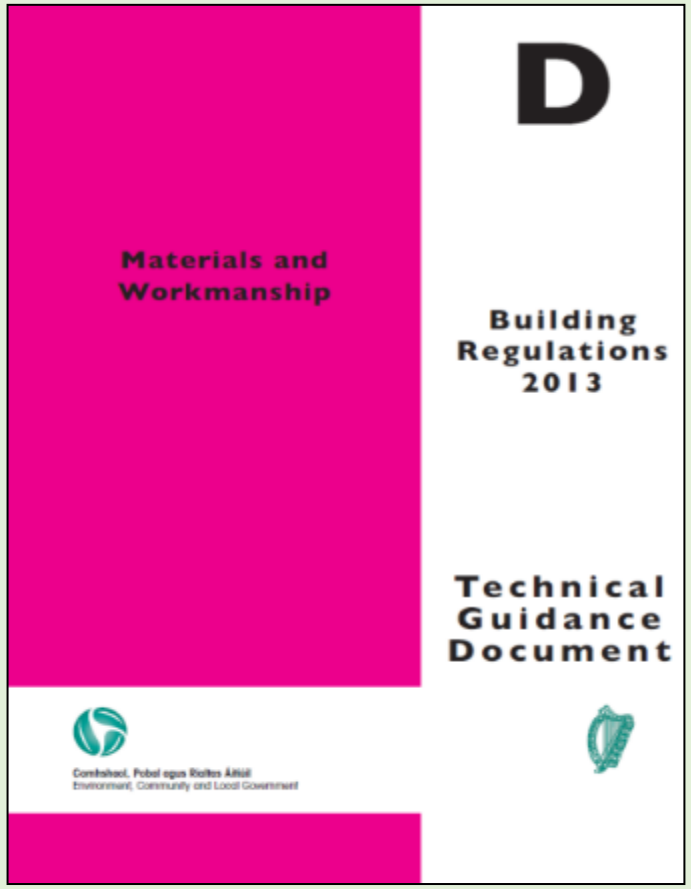
*(a) of **a suitable nature and quality in relation to the purposes and conditions of their use**, and*
(b) adequately mixed or prepared, and
*(c) **applied, used or fixed** so as to perform adequately the functions for which they are intended.*

Materials used in building work should, as far as is practicable, be free of chlorofluorocarbons (CFCs)."



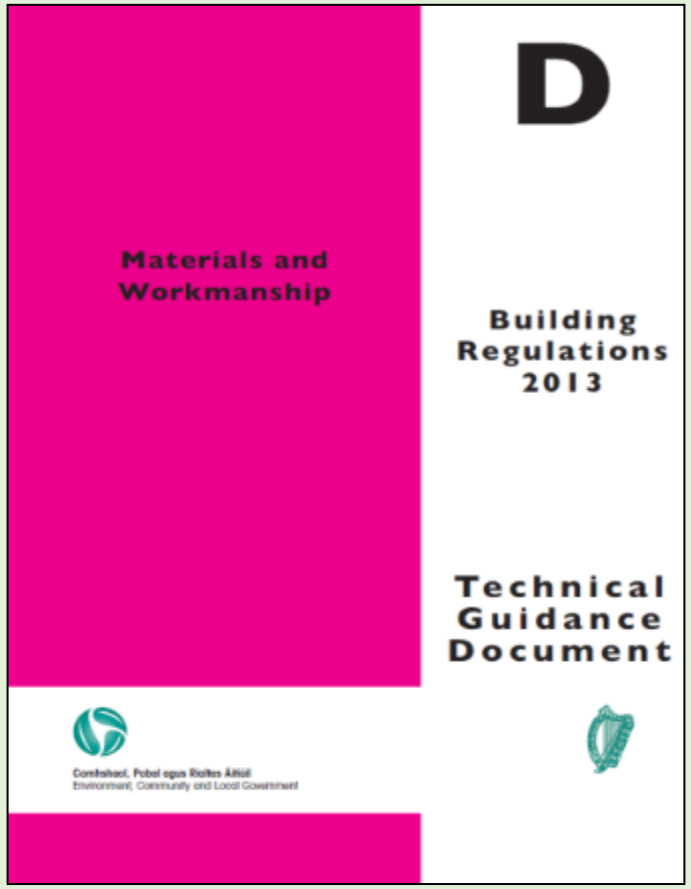
Requirements Part D
Prima Facie Compliance in TGD D: Fitness of Materials

"1.1 Requirement D3 defines what is meant by "proper materials" for use in works. In assessing the ***fitness for use*** *and conditions of use of a material/ product,* ***consideration should be given to durability, safety, local climatic conditions (e.g. wind driven rain, humidity etc.)*** *and* ***other such issues..."***



Requirements Part D
Prima Facie Compliance in TGD D: Workmanship

"To ensure a proper standard of ***workmanship****, it is essential that persons are* ***competent****, possessing sufficient* ***training, experience and knowledge*** *appropriate to the nature of the work he or she is required to perform and having particular regard to the* ***size and complexity of such works****."*



Requirements Part D
Part D3 (a)

a)bear a CE Marking in accordance with the provisions of the EU Construction Products Regulation; ***(EU) No. 305/2011***

- Construction Products Regulation (CPR) requires harmonised products to have a Declaration of Performance (DoP). The Declaration of Performance provides information on the performance of a product in accordance with the EN Harmonised Standard

- By drawing up a DoP, the manufacturer assumes **responsibility for the conformity of the construction product with the declared performance in the DoP.**

- Each construction product covered by a European harmonised standard or for which a European Technical Assessment (ETA) has been issued needs a DoP and must be CE marked.

- The CE marking indicates that a construction product is in conformity with its declared performance and that it has been assessed according to a harmonised European standard or a European Technical Assessment has been issued for it.

    - **CE marking for construction products 'step-by-step' guide now available in all EU languages**

Requirements Part D
Part D3 (b)

(b) comply with an appropriate harmonised standard or European Technical Assessment in accordance with the provisions of the Construction Products Regulation;

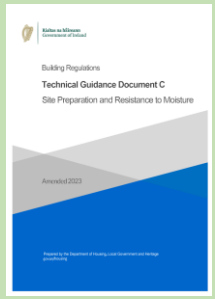
Example:

I.S. EN 13242:2002+A1:2007 – Aggregates for Unbound and Hydraulically Bound Materials for use in civil engineering work and road construction

+Comply with National Provisions

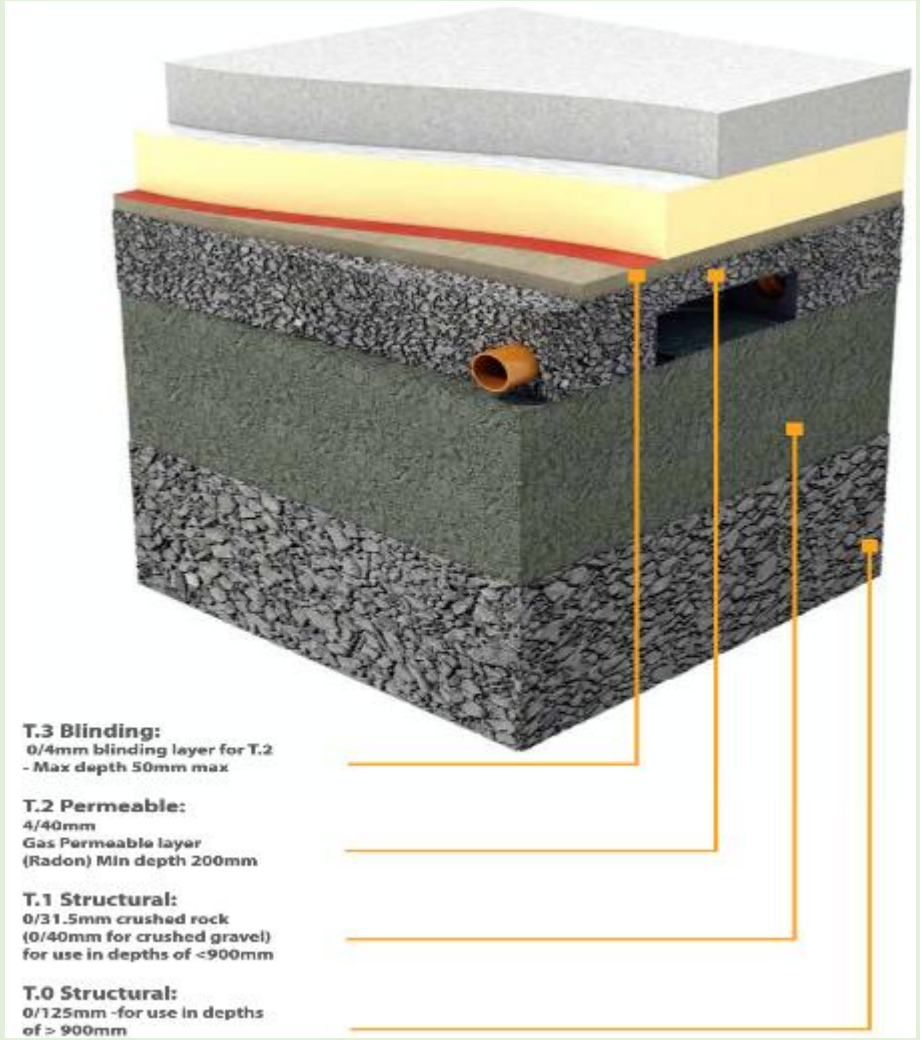
S.R. 21:2014+A1:2016 – Guidance on the use of I.S. EN 13242

Annex E – T0, T1, T2, T3 – incorporate within buildings



TGD C - 3.1.4 (b)

(b) The hardcore bed should be at least 200 mm thick and be gas permeable (*T2 Perm* as defined in par. 3.1.4(d)). Hardcore should conform with I.S. EN 13242:2002 + A1:2007 and meet the specification as outlined in Annex E of the accompanying guidance document to this standard, S.R. 21:2014+A1:2016. The layer of hardcore should be well compacted, clean and free from matter liable to cause damage to the concrete. Specific guidance is given in section 3.3 and Annex E of S.R. 21:2014+A1:2016 on limiting the presence of a reactive form of pyrite which may give rise to swelling or sulfate attack on concrete.



Requirements Part D

European Technical Assessment (ETA) and European Assessment Document (EAD)

The **European Technical Assessment (ETA)** provides an independent Europe-wide procedure for assessing the essential performance characteristics of non-standard construction products.
The ETA offers manufacturers a **voluntary route to CE marking**, when the product is not or not fully covered by a harmonised standard (hEN) under the Construction Products Regulation (EU) No. 305/2011.

A European Assessment Document, or EAD for short, is a harmonised technical specification developed by the European Organisation for Technical Assessment (EOTA) as the basis for European Technical Assessments (ETAs).

In combination with the ETA, the EAD provides manufacturers with a way to CE marking for construction products that are not or not fully covered by a harmonised European standard (hEN) under the Construction Products Regulation (EU) 305/2011. The CE marking allows the manufacturer to freely market his product in the entire European Economic Area as well as in Switzerland and Turkey.

Building Regulation requirements for works to existing dwellings

NBCO
National Building Control Office

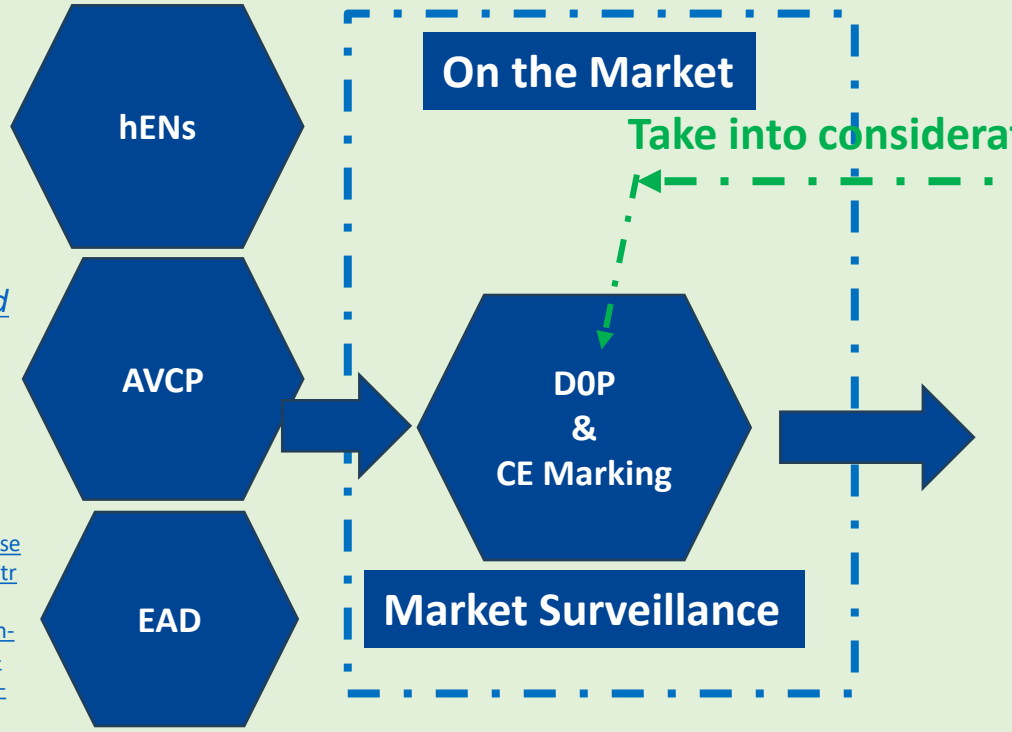
Market Surveillance

Placing a Construction Product on the Market
Declaration of Performance

https://single-market-economy.ec.europa.eu/single-market/european-standards/harmonised-standards_en

Assessment and Verification of Constancy of Performance (AVCP)

https://single-market-economy.ec.europa.eu/sectors/construction/construction-products-regulation-cpr/european-assessment-documents-and-european-technical-assessments_en

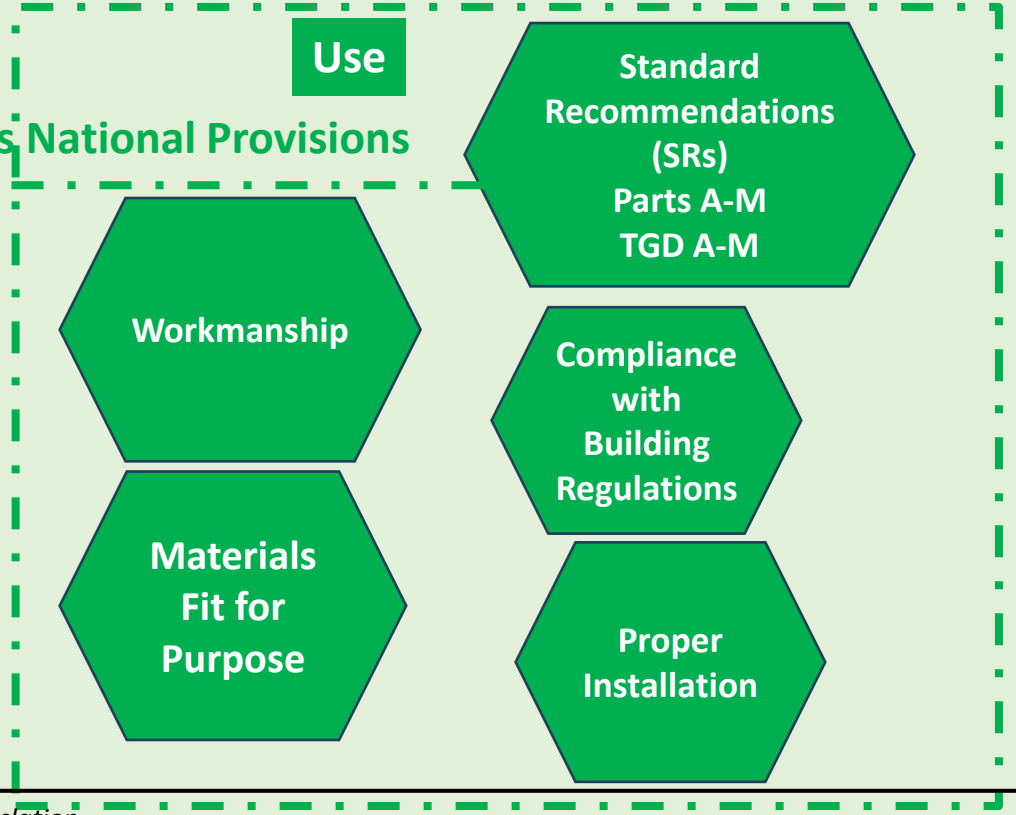


Legislation

- *Construction Products Regulation (EU) 305/2011 & Regulation (EU) 2010/1020*
- *European Union (Construction Products) Regulations 2013 (S.I. No. 225 of 2013)* & SI. 217 of 2023
- *S1. No. 682 of 2020" & Regulation 23 of 2023*
- **Responsibility for compliance**
  - "Economic Operators"
- **Enforcement**
  - **NBCMSO & 31 Building Control/Market Surveillance Authorities**

Building Control

Using/Placing a construction product in Works or a Building
Declaration of Performance –suitable for end use



Legislation

- *Building Control Act 1990-2014*
- *Building Regulations 1997-2024*
- **Responsibility for compliance**
  - "Owner", "Builder", "Specifier", "Designer", "Certifier"
- **Enforcement**
  - **31 Building Control Authorities within their Administrative Areas**

Requirements Part D
Part D3 (c)

c) comply with an appropriate Irish Standard (EN) or Irish Agrément Certificate or with an alternative national technical specification of any State which is a contracting party to the Agreement on the European Economic Area, which provides in use an equivalent level of safety and suitability.

- Irish Standard is an I.S. e.g., I.S. 440 Timber Frame Standard
- Irish Agrément Certificate are issued by NSAI e.g., External Wall Insulation
  - NSAI Agrément Certification – Information & Guidelines
- For further information regarding NSAI Agrément Certification, refer to the following link: https://www.nsai.ie/certification/agrement-certification/
- **Search for an Agréments Certificate**
- Alternative Standards which provides in use an equivalent level of safety and suitability.

Part D provides routes to compliance for alternative methods as an ETA, IAB or an alternative national technical specification which provides in use an equivalent level of safety and suitability

TAB BRE Global Assurance (Ireland) Ltd. Ireland
TAB FM Approvals Europe Limited Ireland
TAB National Standards Authority of Ireland Ireland

- Technical Assessment Bodies (TABs) are members of the European Organisation for Technical Assessment (EOTA)
- **Nando (New Approach Notified and Designated Organisations) Information System** https://ec.europa.eu/growth/tools-databases/nando/index.cfm
- Irish Agrément Board (IAB), a division of the National Standards Authority of Ireland, certifies construction products without a long history of use in Ireland, and for which there is no national standard.

Materials & Workmanship

Materials and workmanship

D1 All works to which these Regulations apply shall be carried out with proper materials and in a workmanlike manner.

D3 In this Part, "proper materials" means materials which are fit for the use for which they are intended and for the conditions in which they are to be used, and includes materials which:

(a) bear a CE Marking in accordance with the provisions of the Construction Products Regulation;

(b) comply with an appropriate harmonised standard or European Technical Assessment in accordance with the provisions of the Construction Products Regulation; or

(c) comply with an appropriate Irish Standard or Irish Agrément Certificate or with an alternative national technical specification of any State which is a contracting party to the Agreement on the European Economic Area, which provides in use an equivalent level of safety and suitability

Technical Guidance Document D
Resistance to Moisture

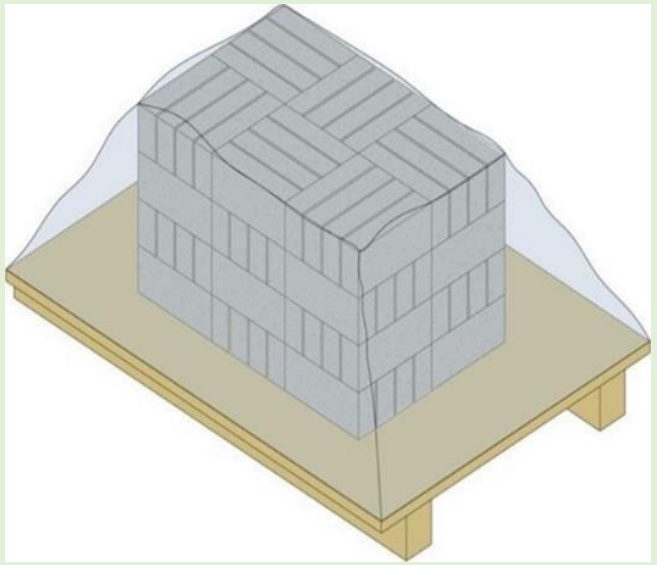
1.2 Where any material is likely to be adversely affected by condensation, by moisture from the ground or by airborne moisture such as rain or snow: - (a) the construction should prevent the passage of moisture to the material, or (b) the material should be treated or otherwise protected from moisture.

Materials & Workmanship

Storage, protection and installation of material on site – Concrete Blocks

When working in cold weather, it's important to follow cold weather masonry procedures to protect your product. This includes things like providing covers to protect your materials from frost, snow and ice.

This is particularly true of bricks, blocks, sand and cement. Frozen materials should never be used when laying brick or in any circumstances. Always wait for temperatures to rise before laying bricks in cold weather. Cold weather can stop the bond between the mortar and brick setting correctly. This usually occurs at temperatures below 3°C.



6 Blockwork Durability

6.1 If Blocks are stored externally (either in the manufacturing facility or on site before use), are used in rising work below ground level with or without high water table, or if external renders do not offer adequate weather protection, the blocks may become saturated. In these cases the resistance to freeze / thaw action is reduced, possibly significantly. There is no current approved testing method for freeze / thaw action in blockwork or a limit on the coefficient of water absorption within current Irish or European standards.

6.2 Recent research and testing of blockwork samples taken in-situ in Irish exposed conditions has demonstrated high moisture content levels in rising blockwork and the blockwork outer leaf constructed under normal conditions freeze / thaw action can damage masonry depending upon the blockwork's susceptibility to such damage on freezing in a wet or saturated condition. Where low strength blocks have been used, results of freeze / thaw testing demonstrates that significant deterioration of concrete blockwork can occur over relatively few freeze / thaw cycles.

ACEI Advice Note to Structural Engineers: Blockwork

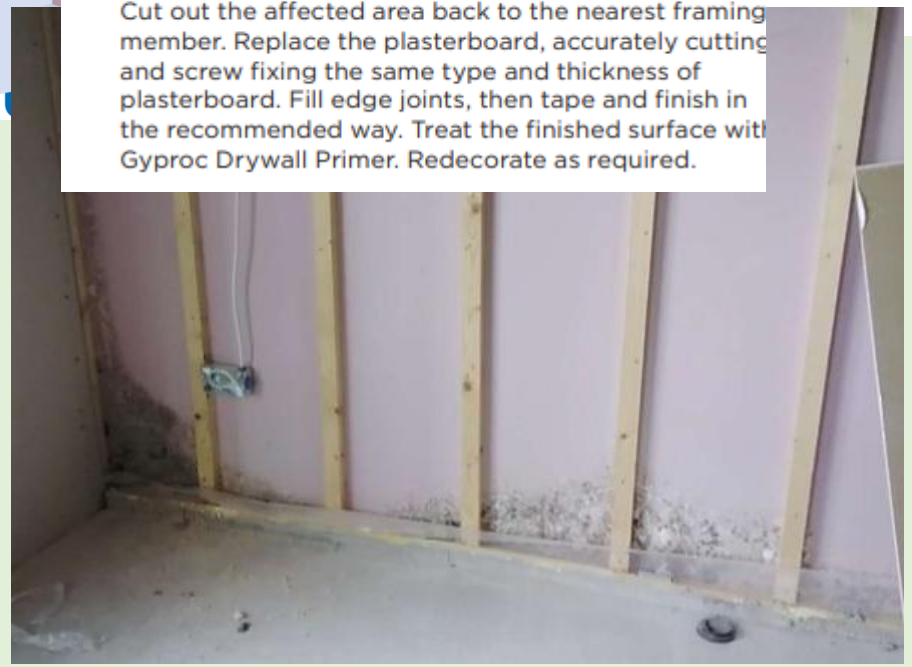
Materials & Workmanship
Storage, protection and installation of materials on site

Resistance to weather and ground moisture
C4 The floors, walls and roof of a building shall be so designed **and constructed** as to prevent the passage of moisture to the inside of the building or damage to the fabric of the building.

gyproc SAINT-GOBAIN

Moisture
Our products should not be used in continuously damp conditions or in buildings that are not weather tight. However, our Gyproc moisture resistant grade plasterboards and Glasroc F specialist boards are suitable for use in intermittently damp conditions or sheltered external situations in conjunction with an appropriate decorative

Extensive damage – When the damage is more extensive, it may be necessary to replace that area of plasterboard. It is important that the replacement board is of the same type as specified and installed. Cut out the affected area back to the nearest framing member. Replace the plasterboard, accurately cutting and screw fixing the same type and thickness of plasterboard. Fill edge joints, then tape and finish in the recommended way. Treat the finished surface with Gyproc Drywall Primer. Redecorate as required.



NSAI Agrément

IRISH AGRÉMENT BOARD
CERTIFICATE NO. 02/0093
SMARTPLY EUROPE DAC
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Waterford X91 PX75
Tel: +353 (0) 51 851233
Fax: +353 (0) 51 851130
Web site: www.mdfosb.com
Email: info@mdfosb.com

SMARTPLY OSB (Oriented Strand Bo

2.4.1.7 SMARTPLY OSB Board is suitable for temporary exposure to the elements during installation; however, such exposure must be for the shortest possible period. Where longer exposure is expected SMARTPLY SURE STEP can be used for improved weather performance and low slip risk in wet conditions. Where possible therefore, flooring should not be laid until the dwelling is glazed and substantially watertight. If wetted, the boards must be allowed to dry out thoroughly before applying any floor coverings or

Materials & Workmanship
Storage, protection and installation of materials on site

S.R. 325:2013+ A2:2018

5.6.1.3 Masonry construction

The durability of masonry depends primarily upon the characteristics of the masonry units and the mortar, particularly as regards resistance to frost and to chemical attack. The following factors affect the susceptibility of the masonry to damage;

a) exposure to the weather or to other sources of water (see 5.6.1.4),

b) exposure to aggressive conditions from all sources including the ground (see 5.6.1.5 and 5.6.2),

c) the adequacy of methods taken to prevent the masonry from becoming saturated both in terms of design (see 5.6.3) and workmanship.

6.2.2 Masonry units

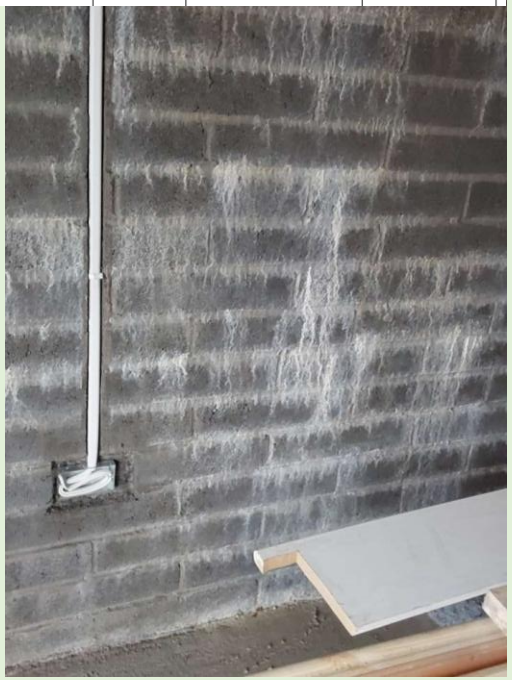
Masonry units should be unloaded on to a dry and reasonably level area or scaffold. It is important that they should be carefully stacked to avoid damage or deterioration and to ensure stability, and should be protected from rain and snow.

For concrete and calcium silicate masonry units, it is desirable that provision is made for the free circulation of air within the stack so that masonry units may dry out before being built into the work.

Particular care should be taken with facing units. Masonry units should not be stacked directly on sulphate bearing ground, clinker or ashes because of the danger of chemical contamination through rising moisture, nor should masonry units be stacked on newly cast slabs until the slabs have attained sufficient strength.

Table F.2 — ⟨AC1⟩ Severe exposure: recommended rendering specifications ⟨AC1⟩

Background	First undercoat (see 6.18.4)		Second undercoat[a] (see 6.18.4)		Final coat (see 6.18.5 and Note 2)	
	/Designation (see Table F.1)	Thickness (mm)	/Designation (see Table F.1)	Thickness (mm)	Type	Mix proportions by volume[b] or designation (see Table F.1)
Strong to Moderate	II	8 to 12	II	6 to 10	Roughcast	1 : ½ : 3 : 1½
					Buttercoat for drydash Tyrolean	II



Materials & Workmanship
Storage, protection and installation of materials on site

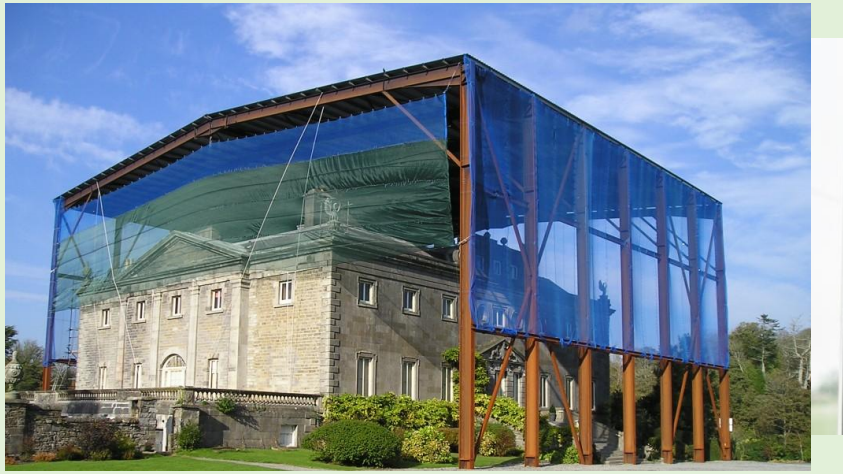
Moisture management strategy

Process guidance for structural timber buildings
Version 1.0 - July 2022

STRUCTURAL TIMBER ASSOCIATION
Building offsite solutions in timber

Key causes of excessive moisture

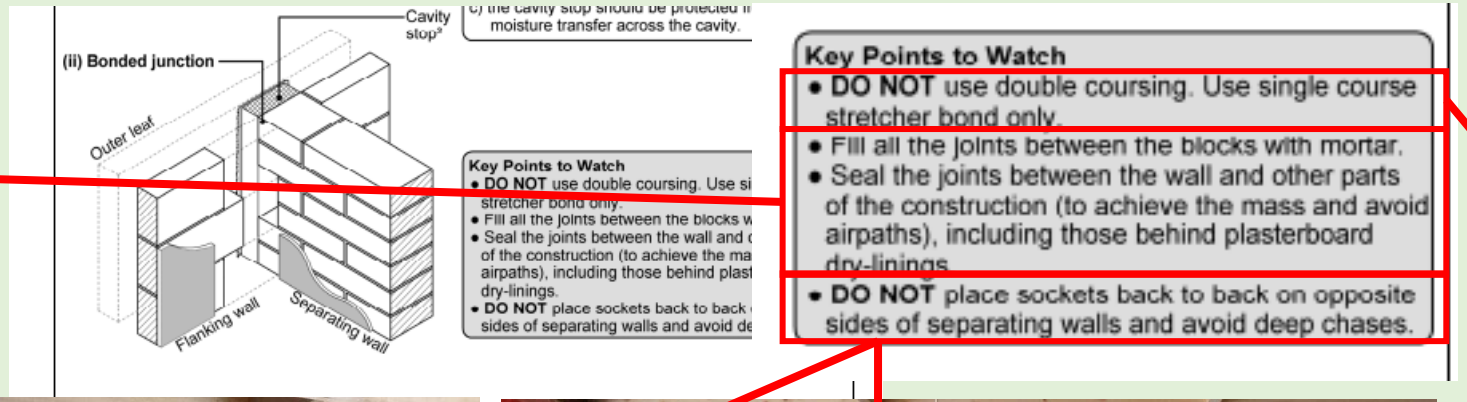
PERIOD	CAUSE OF EXCESSIVE MOISTURE	RISK MITIGATION
FROM FABRICATION TO DELIVERY	Inadequate protection from heavy rainfall/snow during pre-delivery storage and transport Trapped rainwater following heavy rain or snow into closed panels from pre-delivery storage	Allowance for ventilation and drying period during the storage and build process Checks on products at delivery
DURING CONSTRUCTION	Inadequate protection during site storage Heavy rainfall or snow during the build process leaving pre-assembled elements to absorb moisture continuously over days without drying out periods Materials left in standing water Trapped moisture in products that are encased before drying	Allowance for ventilation and drying period during the build process Checks on products before encapsulation, particularly closed panel elements Pre-insulated panels protected during the build process Vulnerable assemblies with weather protection temporary works Design allowing structural elements to breath and dry out Quality control checks on as built



During the build

RULES	TO THINK
1. Prevention against consistent wetting is better than a cure 2. Remedial works undertaken before closing in defects 3. Inform the design team where timbers have become wetted from standing water 4. Consider the weathertightness process as a critical path, where not possible consider temporary weather cover 5. Have a sign off process that checks the moisture content is within acceptable limits and that the enclosure of all structural timber elements does not occur before this check has been undertaken	Is there standing water on timber products? Are there processes that create pockets with timber and water? Do the design details address how water is managed? Are services built to be durable and accessible?

Materials & Workmanship
Workmanship and requirements Part E



Application of Part G, H & J
When does Parts G, H & J apply?

These Regulations apply:

- New Build
- Material alteration and extensions
- Material change of use.

SI 497: 1997 also states in article 12,

- **Subject to articles 3 and 8, these Regulations apply to all works in connection with the provision (by way of new work or by way of replacement) in relation to a building of services, fittings and equipment in respect of which Parts G, H or J of the Second Schedule impose a requirement.**

Parts G- Hygiene, H- Drainage and Wastewater and J -Heat Producing appliances apply.

Compliance of Part G
Part G/TGD G Section 2

- When an existing WC suite, comprising of WC pan and flushing cistern is to be replaced by a suite incorporating a manual flushing device (except a pressure flushing valve), **a dual flush facility as described in paragraph 2.7 should be installed**.
- If the flushing cistern alone is to be changed, without changing the WC pan, the **replacement should be of the same size as the one it replaces**.
- A **single flush cistern should not be replaced with a dual flush cistern**, when the WC pan is remaining.

dual flush

Compliance with Part G
Guidance regarding cold water cistern and pipework

1.6 The cold water storage cistern should have an actual capacity of not less than 212 litres in the case of a dwelling containing up to three bedrooms and an actual capacity of not less than 340 litres in the case of a dwelling containing four or more bedrooms.

1.7 The cistern should be properly covered but not airtight, accessible for cleaning and replacement, and fitted with an overflow pipe so located as to discharge in a manner that will give ready warning of the occurrence of overflow without causing any nuisance or any dampness in the dwelling.

1.9.2 The cold water cistern, when located in the attic, has the top and sides of the cistern insulated. The area underneath the cistern should be left un-insulated and continuity of tank and ceiling insulation should be ensured (see Diagram 3). Where raised tanks are used, to aid head pressure, the ceiling should be insulated as normal and all surfaces of the tank insulated separately. Provision should be made to ensure ventilation of the tank.

Diagram 3 **Insulated pipes and cisterns in roof space**
(Par. 1.9)

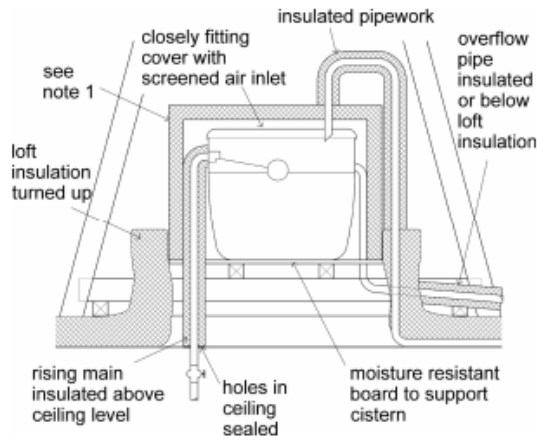


Diagram for clarification only.
Note 1: Insulation U-value to be not less than 0.3 W/m^{2}K as per TGD L Table 1.

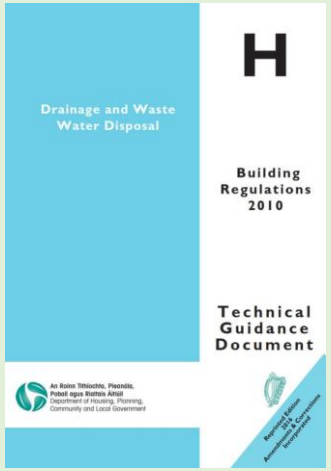
Table 1.

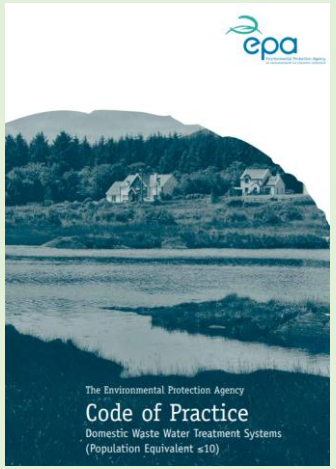
Minimum insulation thickness (mm) to protect against freezing for domestic cold water systems (12 hour period)						
Outside diameter (mm)	**Inside diameter bore (mm)**	**Extreme installation Inside the building but outside the envelope of the insulation**				
		λ = 0.020	**λ = 0.025**	**λ = 0.030**	**λ = 0.035**	**λ = 0.040**
15	**13.6**	**23**	**35**	**53**	**78**	**113**
22	**20.2**	**10**	**14**	**18**	**23**	**28**
28	**26.2**	**7**	**9**	**11**	**13**	**16**
35	**32.6**	**5**	**7**	**8**	**10**	**11**
Initial water temperature: +2^{0}C **Minimum ambient temperature: -6^{0}C** **Permitted ice formation: 50%** **Evaluation period: 12 hours.**						
Note 1 Thicknesses given are calculated specifically against the criteria noted in the table. These thicknesses may not satisfy other design requirements.						
Note 2 Some of the insulation thicknesses given are too large to be applied in practice. The purpose of including very high thicknesses is to demonstrate that the application of a material of the given thermal conductivity (**λ**) is not able to provide the degree of frost protection on the pipe size indicated under the design conditions. Therefore in order to increase the degree of frost protection it is necessary to increase the pipe size, select an insulation with a lower thermal conductivity or use some means of putting heat back into the system.						

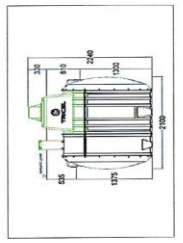
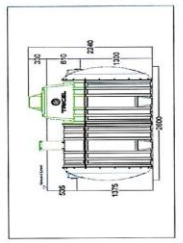
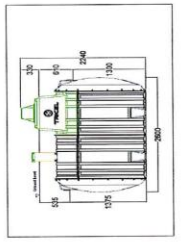
Compliance with Part H
Guidance regarding septic tank

Design population Equivalent (PE)
as per TGD H 2010 (Reprint 2016) and EPA Clarification

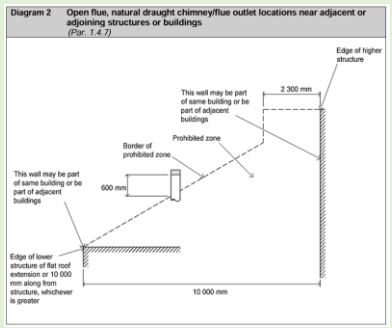
No. of Bedrooms	Design Population Equivalent
Min of 2	4
3	5
4	6
5	7
6	8
7	9
8	10





Population equivalent (PE)	Drawing of model of the range	Watertightness (EN 12566-3 Annex A)	Treatment Efficiency (EN 12566-3 Annex B)	Structural Behaviour (EN 12566-3 Annex C)	Durability
Initial Type Test (ITT) 6		Pass PIA2009-WD-AT0909-1055 PIA2015-WD/NC-1404-1021.01 PIA2015-WD/NC-1406-1031.01	Pass PIA2010-103B18SBe	Pass For wet ground conditions also, 1.25 m installation depth from inlet invert	Pass PIA2015-DH-1504-1023.01
6		Pass PIA2009-WD-AT0909-1055 PIA2015-WD/NC-1404-1021.01 PIA2015-WD/NC-1406-1031.01	Pass Range conformity according to S.R. 66:2015	Pass For wet ground conditions also, 1.25 m installation depth from inlet invert	Pass PIA2015-DH-1504-1023.01
8		Pass PIA2009-WD-AT0909-1055 PIA2015-WD/NC-1404-1021.01 PIA2015-WD/NC-1406-1031.01	Pass Range conformity according to S.R. 66:2015	Pass For wet ground conditions also, 1.25 m installation depth from inlet invert	Pass PIA2015-DH-1504-1023.01

Compliance with Part J
TGD J Guidance on replacement or new flues, chimneys



0.1.1 The aim of Part J of the Second Schedule to the Building Regulations is to allow for the installation of heat producing appliances while giving adequate protection to the occupants from incomplete combustion or products of combustion and limiting the risk of fire to the building or fuel storage.

0.1.2 Part J of the Second Schedule to the Building Regulations 2014 applies to all installations (both by way of new work or replacement) but this Technical Guidance Document (TGD) gives guidance on Heat Producing Appliances having power ratings and fuel storage capacities up to the limits specified in Sections 2, 3 and 4.

0.1.3 Part J of the Second Schedule to the Building Regulations 2014 applies to the storage of fuels for all combustion appliances but Section 5 gives guidance for storage with limited capacity applicable to domestic scenarios.

1.4.8 Repair or reuse of existing flues or chimneys

1.4.8.1 Where it is proposed to bring a flue in an existing chimney back into use or to re-use a flue with a different type or rating of appliance, the flue and chimney should be checked and if necessary altered to ensure that they satisfy the requirements for the proposed use.

1.4.8.2 Defective flues may be relined using materials and components described in Sections 2, 3 or 4 depending on the type of appliance proposed. Chimneys should be swept before relining to remove deposits. A flue may also need to be relined to reduce the flue area to suit the intended appliance as oversize flues can be unsafe.

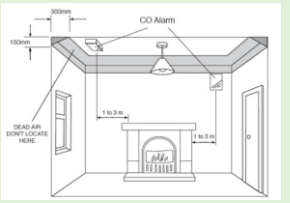
1.5 Warning of the release of carbon monoxide in dwellings

1.5.1 Carbon monoxide: To ensure proper combustion and removal of the products of combustion a heat producing appliance should be correctly installed and regularly serviced. The provision of an alarm in accordance with the guidance below should not be regarded as a substitute for this.

1.5.2 Carbon monoxide alarms: Where a new or replacement open-flued or flueless combustion appliance, not designed solely for cooking purposes, is installed in a dwelling, a carbon monoxide (CO) alarm should be provided:

(a) in the room where the appliance is located, and

(b) either inside each bedroom or, within 5 m (16 ft.) of the bedroom door, measured along the path of the corridor.



Building Regulation requirements for works to existing dwellings

NBCO
National Building Control Office

Compliance with Part J

TGD J Guidance on replacement or new tanks, flues positions and User Information

5.2.5 Secondary containment, e.g. a non-permeable bund or integrally bunded prefabricated tank, should be provided where the tank capacity is in excess of 2,500 litres or where there is a significant risk of water pollution should a spillage occur. A significant risk of water pollution is likely to exist where the storage tank is located:

- within 10 m of inland freshwaters or coastal waters; or
- where spillage could run into an open drain or to a loose fitting manhole cover; or
- within 50 m of sources of potable water, such as wells, bore-holes or springs; or
- where oil spilled from the installation could reach the waters listed above by running across hard ground; or
- where tank vent pipe outlets cannot be seen from the intended filling point.

Table 10: Oil storage tanks (capacity not exceeding 3,500 litres)

Location of tank	Secondary containment	Protection from fire in a building	Protection from fire required in relation to a boundary
Within a building.	Required.	Within a chamber.	Not applicable.
External, above ground.	Required (see note 1 below).	In accordance with sub-section 5.2.6 and Table 11.	In accordance with sub-section 5.2.6 and Table 11.
External, wholly below ground.	Required.	No requirement.	No requirement.

Note:
1. An oil storage tank not exceeding 2,500 litres capacity, which serves a dwelling house, does not generally require a bund. However, where an oil leak would present a significant risk of water pollution, a bund should be provided (see sub-section 5.2.5). An oil storage tank which is not provided with a bund or has an integrated bund should be installed on or above a non-combustible base which extends out at least 300 mm from all sides of the tank.

Table 5: Flue terminal locations (see Diagram 16)

Terminal position All dimensions in mm	REF. Dimension	Room sealed		Open Flues	
		Natural Draught	Fanned Draught	Natural Draught	Fanned Draught
Directly below opening vent, window, air brick, etc.	A*	300	300	N/P	300
Below gutters, soil pipes.	B	300	75	N/P	75
Below eaves.	C	300	200	N/P	200
Below balconies, car port roof.	D	600	200	N/P	75
From a vertical drain/soil pipe.	E	75	75	N/P	300
From an internal/external corner.	F	600	300	N/P	300
Above ground roof or balcony level.	G*	300	300	N/P	300
From a surface or Boundary facing a terminal.	H*	600	600	N/A	600
From a terminal facing a terminal.	I*	600	1,200	N/A	1,200
From an opening in a car port into a dwelling.	J*	1,200	1,200	N/A	1,200
Vertical from a terminal on the same wall.	K*	1,500	1,500	N/A	1,500
Horizontal from a terminal on the same wall.	L*	300	300	N/A	300
From the wall on which the terminal is mounted.	M	N/A	N/A	N/A	50
From a vertical structure on the roof.	N	N/A	N/A	See Diagram 17 (a) & (b)	N/A
Above intersection with the roof.	P	N/A	N/A		N/A
Below horizontal hinged window.	Q*	1,000	3,000 Where the exhaust is directly upwards, Otherwise 1,000	N/P	3000 Where the exhaust is directly upwards, Otherwise 1000
Horizontal from door, window, vent or air brick.	R*	300	300	N/P	300
From an opening of a building directly opposite.	S	600	2,000	N/A	N/A
Terminal running parallel to the boundary.	T	300	300	N/A	N/A
From a gas meter or gas meter cabinet.	U	300	300	N/A	N/A

Note:
1. N/P means "Not Permitted". N/A means "Not Applicable".
2. M relates to fanned draught flue only, terminating below level of roof.
3. The distance marked with a * are minimum safety distances and override any lesser dimensions given by the appliance manufacturer. Other distances not marked with a * are to be applied in the absence of any advice from the appliance manufacturer.

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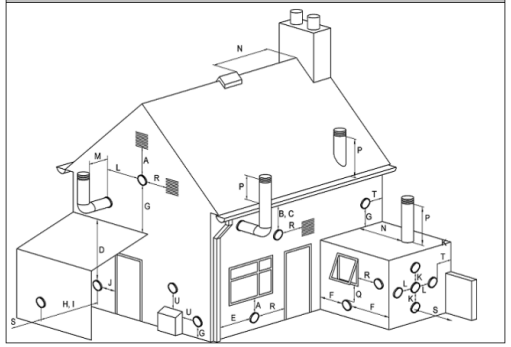
Diagram 16 Location of flue outlets for gas appliances
(Par. 3.6.4)



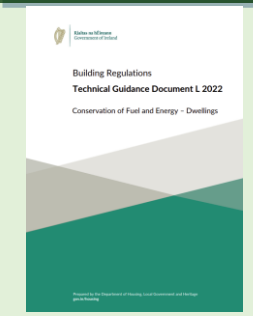
1.9 Commissioning

1.9.1 Heat producing appliances serving the total dwelling should be commissioned and tested at completion so that the systems and their controls are left in the intended working order and can operate effectively and efficiently.

1.10 User information

1.10.1 The owner of the building should be provided with sufficient clear and comprehensive information on any continuing maintenance required to facilitate the effective operation of the heating system or systems in order to protect the health and safety of the building occupants.

Compliance with Part J
L Guidance on boilers



2.2.1 General

Where building services are being provided or extended to meet the requirements of Building Regulations by way of extension, material alteration, material change of use, major renovation or replacement of heat generators to an existing building reasonable provision would be to meet the guidance in this section.

2.2.1.1 Space and water heating systems provided in the context of material alterations to existing dwellings or extensions to existing dwellings should be energy efficient and have efficient heat sources and effective controls including self-regulating devices. Similar considerations apply to space and water heating systems provided in the context of a material change of use of an existing building to use as a dwelling. Specifically, Regulation L2(d) provides that oil or gas fired boilers installed as replacements in existing dwellings should have a minimum seasonal efficiency of 90 %, where practicable.

2.2.1.2 In existing buildings, the installation of self-regulating devices shall be required when heat generators are replaced, where technically and economically feasible.

It is considered technically and economically feasible to install self-regulating devices when:

(a) a heat generator and heating system are being replaced;

(b) a heating system is being replaced;

(c) a heat generator is being replaced as part of a planned upgrade.

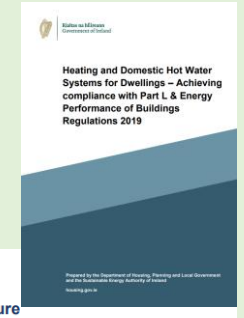
It is not generally considered technically and economically feasible to install self-regulating devices when:

- a heat generator is being replaced in an emergency situation, i.e. the work is unplanned, or
- where it is not possible to install self-regulating devices without carrying out substantial alterations to the systems and/ or to the building.

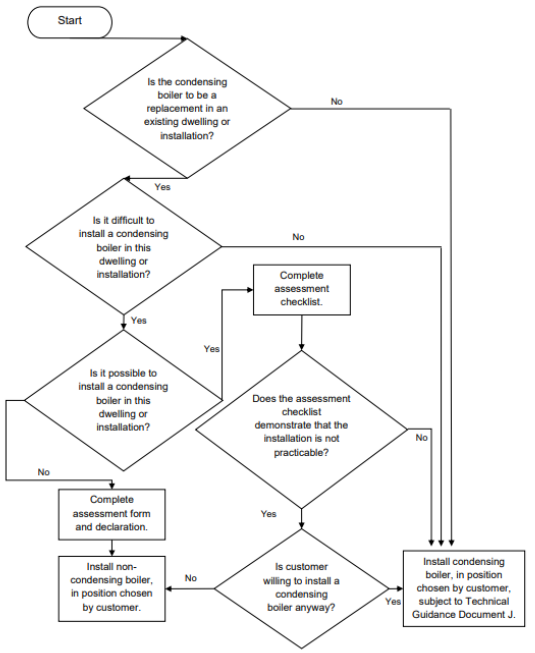
However, in these circumstances the installation of self-regulating devices should be undertaken at the next planned refurbishment/ upgrade to the building.

2.2.2 Heat Generator Efficiency

2.2.2.1 The appliance or appliances provided to service space heating and hot water systems should be as efficient in use as is reasonably practicable. Guidance on appropriate efficiency for various systems and fuels is contained in Heating and Domestic Hot Water Systems for Dwellings – Achieving compliance with Part L and Energy Performance of Buildings Regulations 2019. For fully pumped hot water-based central heating systems utilising oil or gas, the boiler seasonal efficiency should be not less than 90 % as specified in the DEAP manual and the associated Home-heating Appliance Register of Performance (HARP) database maintained by the SEAI (www.seai.ie/harp). Effectively this requires the use of condensing boilers. In a limited number of situations involving replacement of existing boilers, provision of a condensing boiler may not be practicable. Detailed guidance on the assessment of specific situations to identify those where provision of condensing boilers is not practicable is given in Heating and Domestic Hot Water Systems for Dwellings – Achieving compliance with Part L and Energy Performance of Buildings Regulations 2019.



3. Outline of the assessment procedure



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Building Regulation requirements for works to existing dwellings

NBCO
National Building Control Office

northern & western
eastern & midlands
southern region
INSPECTIONS EDUCATION MARKET COMPLIANCE IS-BCMS
TRAINING SURVEILLANCE SUPPORT
An Oifig Náisiúnta um Rialú Foirgníochta
NATIONAL BUILDING CONTROL OFFICE

SUSTAINABLE DEVELOPMENT GOALS

GO RAIBH
MAITH AGAIBH