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APPROVED DOCUMENT L 2021 GUIDE

(ENGLAND) - FOR DRITHERM® CAVITY SLAB

February 2024

Total assurance from your partner in low-carbon home insulation

Thermal | Fire Safety | Acoustic | Sustainability | Real Performance

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HOUSEBUILDING IS CHANGING

Right now, developers face unprecedented demand for quality homes, built to precise standards, against an increasingly challenging backdrop of compliance, cost pressures and rising customer expectations.

And the updates to Part L of the Building Regulations are just the tip of the iceberg. These higher standards and greater scrutiny are indicative of a broader shift in our industry; in the last year alone we've seen a similar tightening of Part B (Fire safety) and Part V (Ventilation), along with the introduction of Part O (Overheating).

Insulation will play a crucial role in navigating this increasingly complex regulatory landscape, both today and in the long-term. But for products like insulation to be truly effective we must focus on closing the gap between the designed performance of buildings, and how they perform in the real world. At the moment that gap is significant, and it threatens to undermine our efforts towards safer, more comfortable, truly energy efficient homes.

It is essential that the industry pulls together to meet this challenge. Manufacturers, specifiers, installers and developers must operate collaboratively and with complete transparency, to ensure every part of the housebuilding process takes us closer to our shared goals.

We've developed this new edition of our guide to help those within the housebuilding industry find their optimal route to Part L compliance. The following pages review the headline regulation changes and provide technical information and example recipes. But we've also taken a look at the bigger picture, sharing an overview of Part O and changes to Part B, along with insights into upcoming regulations like the Future Homes Standard.

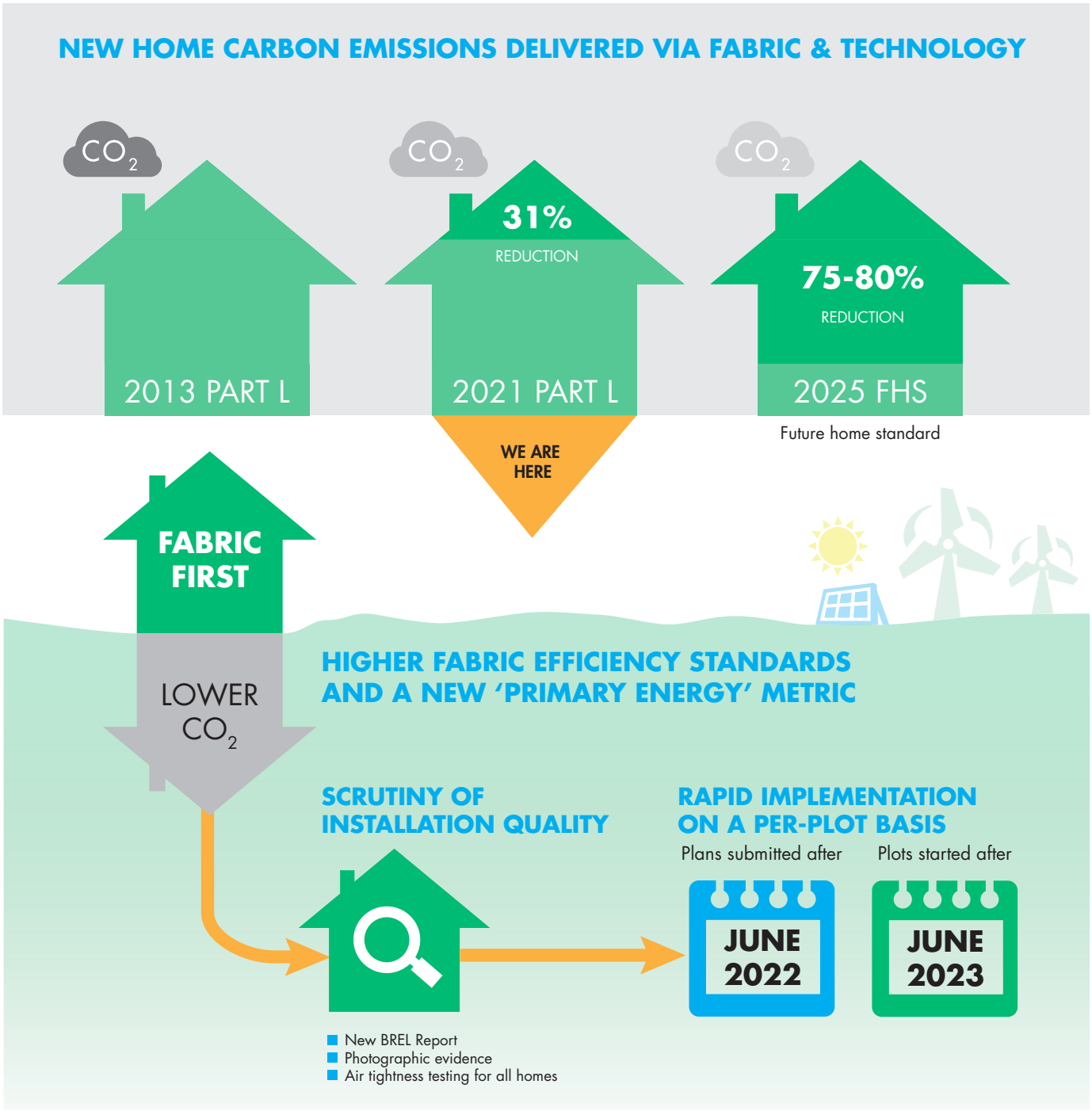
I hope this guide will be a valuable tool, not only for achieving compliance, but in raising the bar for quality and performance across the housebuilding sector.

Neil Hargreaves
Managing Director, Knauf Insulation Northern Europe

APPROVED DOCUMENT L: WHAT'S NEW FOR HOUSEBUILDERS?

The updates to Approved Document L (ADL), or 'Part L', aim to lower the operational carbon emissions of new homes, raise fabric efficiency standards and introduce a new level of quality control.

At a glance



HOUSEBUILDERS HAVE **TWO** ROUTES TO COMPLIANCE USING NON-COMBUSTIBLE INSULATION

ROUTE 1 AN INTERIM DESIGN FOR INTERIM STANDARDS

- Retain existing cavity widths & plot footprints
- Minor upgrades to wall insulation
- Significant upgrades in lofts (more cost-effective)
- Increase use of PV

ROUTE 2 FUTUREPROOFING FUTURE HOMES

- Increase cavity widths in preparation for Future Homes Standard fabric
- Balance wall, roof and floor insulation through various compliance recipes
- Product flexibility to maximise supply chain agility
- Less reliance on high embodied carbon products

WHICHEVER PATH YOU TAKE, **MAKE IT YOURS**

Don't make the mistake of copying the notional dwelling. **The most cost-effective specification will always be a bespoke whole-house recipe based on SAP calculations.**

WE ARE READY TO HELP

As the UK's leading manufacturer of high performance, non-combustible insulation used in new build housing, we can help you achieve cost-effective compliance, without compromising on quality, combustibility, whole-life carbon or your customers' expectations. We offer:

- **Whole-house compliance recipes**
- **Free 3D U-value calculations**
- **Advice on quality assurance**
- **SAP optimisation and modelling**
- **Technical advice and guidance**
- **Psi-value calculations**

INSULATION THAT GIVES REAL PERFORMANCE

31% Reduction in operational CO_2

The updates require all new homes to produce 31% less operational carbon emissions, compared with Part L 2013. Housebuilders must also ensure that new homes meet targets for:

Target	Influenced by Fabric	Influenced by Fuel
Primary Energy	✓	✓
Emissions	✓	✓
Fabric energy efficiency	✓	

The primary energy rate is a new addition to ADL and the limiting U-values for fabric energy efficiency have also been tightened in this revision of the regulations.

To allow for design flexibility, housebuilders can meet the primary energy and emission target rates through any combination of fabric and fuel. However, **the target fabric energy efficiency rate can only be met by using insulation.**

As-built scrutiny

The new regulations introduce a shift in focus, towards measuring a home based on its as-built performance, rather than its notional design. All dwellings built to ADL 2021 must be assessed using the latest version of the government's Standard Assessment Procedure (SAP), through the latest SAP software.

ADL calls for housebuilders to demonstrate continuity of insulation, using the new Buildings Regulations England Part L (BREL) report. Two BREL reports must be submitted for a new build:

- Design stage BREL report – showing that the house specification will meet its target rates
- As-built BREL – showing that the target rates have been met.

The as-built BREL report will also require housebuilders to supply a photographic record of key stages during construction, as evidence of thermal continuity and quality of insulation.

Photographic evidence

The as-built BREL report will require housebuilders to supply a photographic record of typical details. New photographs should be taken for each individual property.

Typical details to be photographed include:

- Foundations/ substructure
- External walls
- Roofing
- Openings
- Airtightness details
- Services such as pipework and ductwork

In some instances, close-ups may be required to show smaller details.

Anyone can take the photographs; however, they must be in a digital format and of a high enough resolution to be used for auditing purposes. All images should also be geo-location, date and time stamped.

WHAT ARE THE PART L U-VALUES?

The new ADL contains 'limiting U-values' for insulating fabric elements in new dwellings (excerpt below). These are sometimes mistakenly referred to as 'minimum U-values' however this term is not quite accurate.

Whilst they indicate a minimum thermal performance requirement for each element, they are actually maximum U-values (i.e. heat transfer through the element should not exceed this value).

Limiting U-values for new fabric elements in new dwellings

Element type	Maximum U-value W/(M²K)
All roof types	0.16
Wall	0.26
Floor	0.18
Party wall	0.20

Source: Approved Document L

Note:
Remember that Part L compliance is achieved for the full build, not individual elements, so matching the limiting U-values throughout a build or copying those in ADL's 'notional dwelling' will not necessarily result in compliance overall.

Considering cavity widths

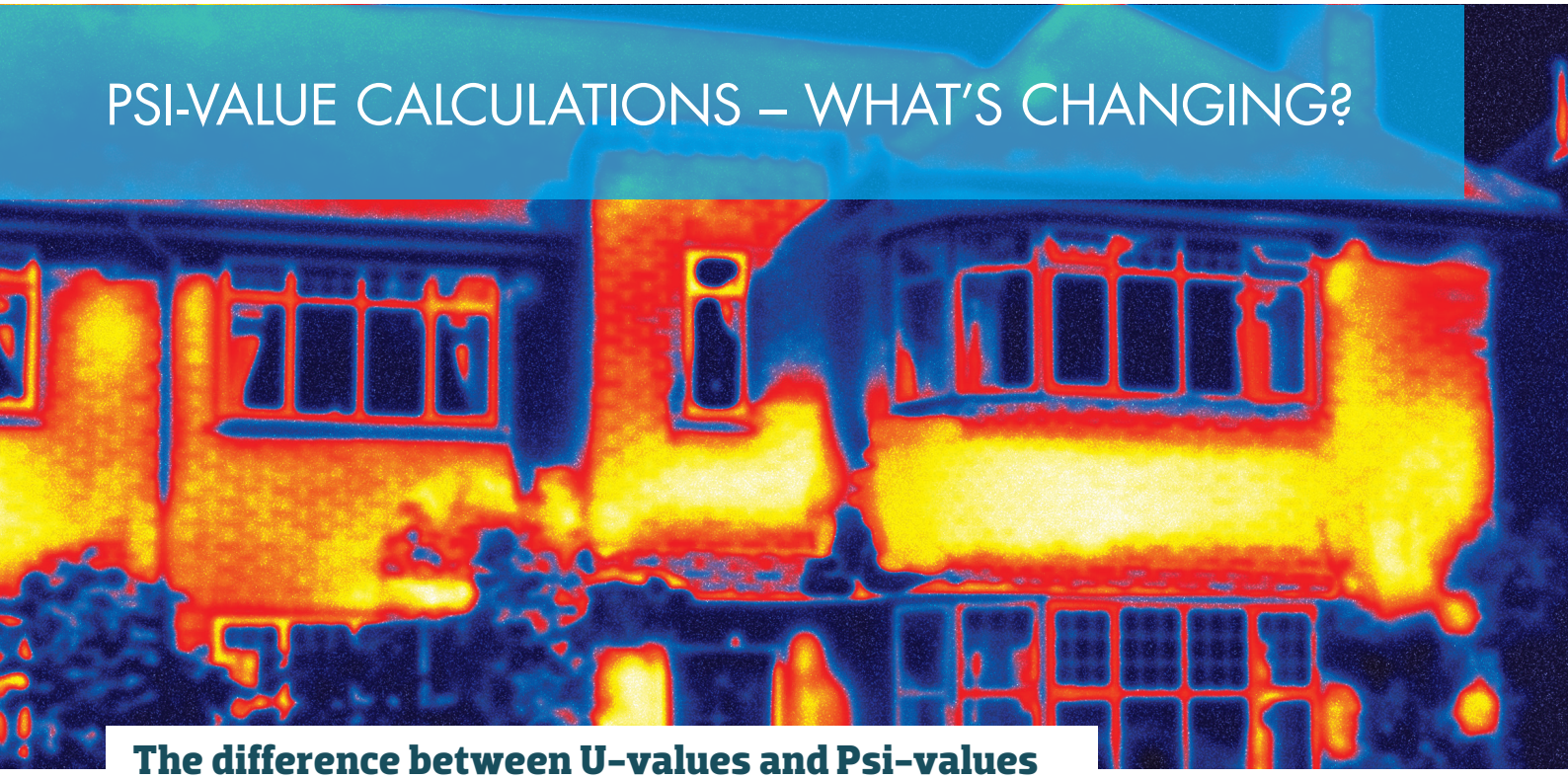
As regulations tighten it's worth considering building with wider cavities.

150mm provides optimal fabric performance in low-rise homes and gives you more flexibility to choose the best insulation for the job.

When the Future Homes Standard arrives, most homes will likely be built with a wider cavity, so it's worth adding the extra 50mm now to avoid having to retrofit later. Especially as a 150mm cavity also gives you more room to manoeuvre in times of supply chain disruption, because you have more insulation options to achieve compliance than with a narrower cavity.

As always, it's about finding the best solution for each specific project.

PSI-VALUE CALCULATIONS – WHAT'S CHANGING?



The difference between U-values and Psi-values

U-values measure the rate of heat lost through thermal elements of a building, such as a wall, roof or floor. These are measured in watts per square metre Kelvin (W/m^2K).

Psi-values measure the rate of heat lost through junctions where two elements meet, for example where a floor meets an external wall, or a window interrupts a wall. Psi-values are measured in watts per metre Kelvin (W/mK).

Both U-values and Psi-values must be taken into account, when assessing the energy efficiency of a building. The lower the U-values and Psi-values of a build, the better the building will retain heat.

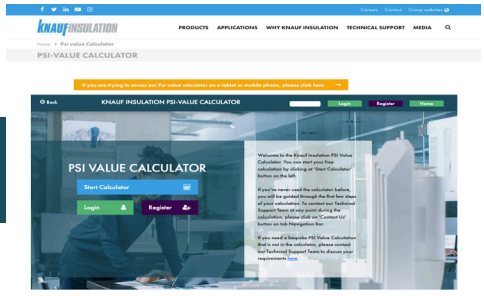
How do the ADL updates affect calculations?

To quantify the heat loss through junctions in a building's design, Psi-values must be inputted into Standard Assessment Procedure (SAP) software. In the past, SAP assessors have had the option to produce these Psi-value calculations using the Government's 'approved' Accredited Construction Details (ACDs) – a pre-set list of standardised details, based on different types of thermal element and junction. However, these became outdated and have been removed from the latest version of the SAP method. Assessors can still use non-government ACDs, as well as SAP's default values, but the latter have been adjusted to be less favourable.

The revisions encourage more accuracy, with less reliance on assumptions and default information. This can be best achieved by working with suppliers who provide Psi-value calculations based on up-to-date, technical information, specific to the products being specified.

Help is at hand

We're actively working on tools to help housebuilders and SAP assessors calculate their Psi-values more accurately. In the meantime our free Psi-value calculator is available online and our Technical Team is on-hand to provide help and advice. You can contact the team on 01744 766 666 or alternatively by email technical.uk@knaufinsulation.com.



ONLINE PSI-VALUE CALCULATOR NOW LIVE
https://www.knaufinsulation.co.uk/psi-value-calculator

HOW KNAUF INSULATION CAN HELP

Housebuilders of every size work with us to create warm, safe and sustainable homes.

As the only UK manufacturer of both glass and rock mineral wool, we are uniquely placed to provide the right insulation solutions for both new build and refurbishment projects. Our products are made in the UK and available nationwide, so wherever our customers are based, we can help them achieve cost-effective compliance, without compromising on quality, performance, fire safety, whole-life carbon or homebuyer expectations.

High-performance products to rely on

Real world performance

With increased scrutiny of 'as-built' fabric efficiency, housebuilders need products they can rely on to deliver real world performance. Our mineral wool insulation has a flexible structure, which adapts to minor imperfections of the substrate, maintaining close contact and preserving performance.

What sets our products apart is their unique combination of thermal, fire safety, acoustic and sustainability benefits, so whatever the requirements, housebuilders know they're getting the performance they've paid for.

- The right solution for any application
- Readily adapts to site conditions
- Extensive industry certifications

Naturally non-combustible

With the current fire safety of buildings rightly in focus, housebuilders need straight-forward solutions that reduce risk and reassure homebuyers.

All our glass mineral wool, wood wool boards and rock mineral wool slabs are non-combustible, minimising risk and preserving peace of mind.

- Euroclass A1 and A2-s1, d0 reaction to fire classifications

Please see page 36 for information on the recent Part B (Fire safety) updates.

Low-embodied carbon & low-VOC

Homebuyers have always asked how sustainable homes are to run. Now, they're asking how sustainably they were built. Our glass mineral wool products are made in the UK, from up to 80% recycled content, minimising the use of virgin raw materials and the energy used in their manufacture. They are also made using ECOSE® Technology, our unique bio-based binder that contains no added formaldehyde or phenol. ECOSE® Technology is made from natural raw materials that are rapidly renewable, and is 70% less energy-intensive to manufacture than traditional binders, so it is more environmentally friendly.

Products made with ECOSE® Technology are soft to touch and easy to handle. They generate low levels of dust and VOCs (volatile organic compounds), increasing the comfort for both installers and homeowners.

- Glass mineral wool has the lowest embodied carbon of any mainstream insulation material
- Products are supported by third-party green certifications and labels

with ECOSE® TECHNOLOGY

INDOOR AIR COMFORT eurofins GOLD CERTIFIED PRODUCT

Declare. Red List Free

MADE IN BRITAIN®

Comprehensive services for complete confidence

We understand that when it comes to a quality installation, product is only half the equation. Housebuilders need total assurance from the design stage, right through to verification, of a job well done. That's why we ensure our customers get so much more than just the products we manufacture.

Technical support and expert advice

Compliance? Carbon? Cost? Whatever the need, we'll find the right specification for the job. Our comprehensive tools and training provide all the support housebuilders need to achieve compliance, using high-performance products, and without compromising on their existing priorities.

- Whole-house compliance recipes
- SAP optimisation and modelling
- U-value and Psi-value calculations

Innovation and foresight

From new regulations to alternative technologies and zero-carbon homes, the pace of change in construction is accelerating. As a market leader, it's our responsibility to contribute to policy development initiatives, and predict the roadmap of upcoming changes for our customers.

At the same time, we are equally committed to innovation; developing new products and services to help housebuilders navigate those changes with ease.

- An active industry voice
- Supporting with upcoming changes
- Cutting-edge technology & innovation

"With Knauf Insulation we have a single point of contact. That means site managers can speak to someone with the right level of competence and knowledge of legislation, who will provide the answer they need, in writing. There's no guesswork. We effectively have the type of relationship you expect from a small, local company but with a national, market leading supplier."

Stewart Hill, Taylor Wimpey North Thames

To view our case studies, visit:
knaufinsulation.co.uk/case-studies

See page 22 for example ADL compliance recipes.

Visit our Housebuilders Hub for downloadable SAP recipes: knaufinsulation.co.uk/housebuilding

MASONRY CAVITY INSULATION SUBSTITUTION CHART

By using DriTherm® Cavity Slab 32 in a full-fill masonry cavity, you get the following benefits:

- Non-combustible A1 Euroclass reaction to fire classification
- ECOSE® Technology, our unique bio-based binder
- Moisture resistant for use in all exposure zones
- Faster, easier and more cost effective to install correctly than rigid foam boards
- No requirement for retaining discs
- Offers thermal and acoustic performance to suit construction requirements
- Low embodied carbon glass mineral wool

Block type	Insulation	U-value required (W/m²K)									
		0.25		0.24		0.23		0.22		0.21	
		Product thickness (mm)	Cavity thickness (mm)	Product thickness (mm)	Cavity thickness (mm)	Product thickness (mm)	Cavity thickness (mm)	Product thickness (mm)	Cavity thickness (mm)	Product thickness (mm)	Cavity thickness (mm)
Lightweight Aircrete	PIR 0.021λ*	65	75	65	75	65	75	65	75	65	75
	PIR 0.022λ**	50	100	50	100	60	110	60	110	75	125
	DriTherm® Cavity Slab 32	**100**		**100**		**100**		**125**		**125**	
Standard Aircrete	PIR 0.021λ*	65	75	65	75	65	75	65	75	90	100
	PIR 0.022λ**	50	100	60	110	60	110	60	110	75	125
	DriTherm® Cavity Slab 32	**100**		**100**		**125**		**125**		**125**	
High Strength Aggregate	PIR 0.021λ*	65	75	65	75	65	75	90	100	90	100
	PIR 0.022λ**	60	110	60	110	60	110	75	125	75	125
	DriTherm® Cavity Slab 32	**100**		**125**		**125**		**125**		**125**	
Lightweight Aggregate	PIR 0.021λ*	65	75	65	75	65	75	90	100	90	100
	PIR 0.022λ**	60	110	60	110	75	125	75	125	75	125
	DriTherm® Cavity Slab 32	**100**		**125**		**125**		**125**		**125**	
Medium Dense	PIR 0.021λ*	65	75	65	75	90	100	90	100	90	100
	PIR 0.022λ**	60	110	60	110	75	125	75	125	75	125
	DriTherm® Cavity Slab 32	**125**		**125**		**125**		**125**		**150**	

* Full-fill PIR Solution ** Partial-fill PIR Solution.
If building with PIR, remember to include cavity barriers around all windows and doors.

with ECOSE® TECHNOLOGY

Block type	Insulation	U-value required (W/m²K)									
		0.20		0.19		0.18		0.17		0.16	
		Product thickness (mm)	Cavity thickness (mm)	Product thickness (mm)	Cavity thickness (mm)	Product thickness (mm)	Cavity thickness (mm)	Product thickness (mm)	Cavity thickness (mm)	Product thickness (mm)	Cavity thickness (mm)
Lightweight Aircrete	PIR 0.021λ*	90	100	90	100	90	100	90	100	115	125
	PIR 0.022λ**	75	125	75	125	85	135	85	135	100	150
	DriTherm® Cavity Slab 32	**125**		**150**		**150**		**150**		**175 (100+75)**	
Standard Aircrete	PIR 0.021λ*	90	100	90	100	90	100	115	125	115	125
	PIR 0.022λ**	75	125	75	125	85	135	100	150	100	150
	DriTherm® Cavity Slab 32	**125**		**150**		**150**		**150**		**175 (100+75)**	
High Strength Aggregate	PIR 0.021λ*	90	100	90	100	90	100	115	125	115	125
	PIR 0.022λ**	75	125	85	135	85	135	100	150	100	150
	DriTherm® Cavity Slab 32	**150**		**150**		**150**		**175 (100+75)**		**175 (100+75)**	
Lightweight Aggregate	PIR 0.021λ*	90	100	90	100	90	100	115	125	115	125
	PIR 0.022λ**	75	125	85	135	100	150	100	150	115 (65 + 50)	165
	DriTherm® Cavity Slab 32	**150**		**150**		**150**		**175 (100+75)**		**200 (2x100)**	
Medium Dense	PIR 0.021λ*	90	100	90	100	115	125	115	125	115	125
	PIR 0.022λ**	85	135	85	135	100	150	100	150	115 (65 + 50)	165
	DriTherm® Cavity Slab 32	**150**		**150**		**175 (100+75)**		**175 (100+75)**		**200 (2x100)**	

* Full-fill PIR Solution ** Partial-fill PIR Solution.
If building with PIR, remember to include cavity barriers around all windows and doors.

Extensions in England

Calculation method: The U-values have been calculated assuming that all walls are lined with 12.50mm standard plasterboard on dabs on standard blocks with 10mm mortar joints. Wall ties assumed to be stainless steel at 2.5 per m² with a cross-sectional area of no more than 12.5mm² for structural cavities up to 100mm wide and no more than 24mm² for cavities over 100mm wide. Emissivity of foil facing for partial fill solutions assumed to be 0.05 and airspace resistance calculated accordingly.

See overleaf for block types and PIR brands

BLOCK TYPES AND PIR PRODUCTS

LIGHTWEIGHT AIRCRETE — ≤0.11 W/mK

Manufacturer	Block	Compressive Strength (N/mm²)
Forterra	Thermalite Turbo	2.9
H+H (Celcon)	Solar Grade	2.9
Tarmac	Toplite GTI 2.9	2.9
Tarmac	Durox Supabloc	3.6
Thomas Armstrong	Airtec XL	2.9
Thomas Armstrong	Airtec Standard	3.6
Tarmac	Toplite Standard	3.6

If your block type varies please contact our Technical Services Team

STANDARD AIRCRETE — ≤0.15 W/mK

Manufacturer	Block	Compressive Strength (N/mm²)
Forterra	Thermalite Shield	3.6
H+H (Celcon)	Standard Grade	3.6
Mannok	Super Blocks	2.9

If your block type varies please contact our Technical Services Team

HIGH STRENGTH AIRCRETE — ≤0.19 W/mK

Manufacturer	Block	Compressive Strength (N/mm²)
Forterra	Thermalite Hi Strength	7.3
H+H (Celcon)	High Strength	7.3
H+H (Celcon)	Super Strength	8.7
Mannok	Standard Blocks	5.2
Mannok	Seven Blocks	7.5
Tarmac	Toplite 7	7.3
Tarmac	Durox Supabloc 4	4.2
Tarmac	Durox Supabloc 7	7.3
Tarmac	Durox Supabloc 8	8.7

If your block type varies please contact our Technical Services Team

LIGHTWEIGHT AGGREGATE — ≤0.28 W/mK

Manufacturer	Block	Compressive Strength (N/mm²)
Interfuse	Interlyte Ultra	7.3
Lignacite	Fibo 850	3.6
Masterblock	Masterlite Ultra	3.6
Mona Precast	Fibotherm	3.6
Plasmor	Fibolite	7.3
Tarmac	Hemelite Ultralite	3.6
Cemex	1400 Readyblock	7.3
Cemex	1100 Readyblock	3.6
Plasmor	Stranlite	7.3
Plasmor	Stranlite	10.4

If your block type varies please contact our Technical Services Team

MEDIUM DENSE — ≤0.45 W/mK

Manufacturer	Block	Compressive Strength (N/mm²)
Besblock	Insulite	7
Broome Bros	Donlite 3.6	3.6
Broome Bros	Donlite 7.3	7.3
Forterra	Fenlite	10.4
Thomas Armstrong	Insulite	7.3
Stowell	Stowlite	7.3

If your block type varies please contact our Technical Services Team

DENSE — ≤1.13 W/mK

Manufacturer	Block	Compressive Strength (N/mm²)
CCP	Consolite	7.3
Hillhouse Quarry group	Carrickcrete 7.3	7.3
Hillhouse Quarry group	Carrickcrete 10.4	7.3
Laird Bros	Lunacrete	7.3
Masterblock	Masterdenz	7.3
Newlay	Newcon	7.3
Quarries Ltd	Standard Dense 7.3	7.3
Quarries Ltd	Lightweight	7.3
S Morris	Dense Solid	7.3
S Morris	Med Dense Solid	7.3
Sellite	Standard Concrete	7.3
Thomas Armstrong	Solid Dense	7.3
WD Lewis	Dense Aggregate	7.3

If your block type varies please contact our Technical Services Team

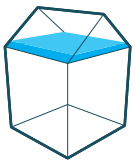
PIR Thermal Conductivity	PIR Products				
0.022 W/mK	Celotex CW4000	Kingspan TW50	Xtratherm XT CW	Ecotherm Eco Cavity	Mannock QW-Cavity Wall
0.021 W/mK	Xtratherm XT CWP				

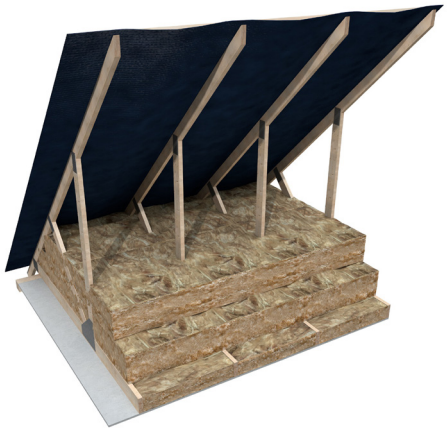
PRODUCT INFORMATION

Page Number

PITCHED ROOF

COLD ROOF





RECOMMENDED PRODUCTS

- Loft Roll 40
- Loft Roll 44

BENEFITS

- Available in combi-cut, ready cut and uncut formats giving a wide range of choice to suit specific install requirements.
- Manufactured in two different options; long lengths to allow quick and simple installation maximising efficiency, and shorter lengths for ease of handling on-site.
- Compression packed and lightweight for easy handling and moving around a site.

Our recommended U-value with Approved Document L 2021 | **Less than or equal to 0.09 U-value (W/m²K)**

TYPICAL U-VALUES

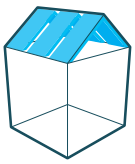
Product	Thickness (mm)			U-value (W/m²K)
	Between joists	Over joists	Total thickness	
Loft Roll 44	100	400 (2 x 200)	500	0.09
	100	350 (150 + 200)	450	0.10
	100	300 (2 x 150)	400	0.11
Loft Roll 40	100	400 (2 x 200)	500	0.08
	100	350 (150 + 200)	450	0.09
	100	300 (2 x 150)	400	0.10

Note: Joist sizes assumed to be 100 x 38mm at 600mm centres, default bridge fraction, 12.8% as per BR443. Assumed 12.5 mm standard plasterboard and cold ventilated roof with felt or sarking boards. All dimensions are nominal.

Minimum backstop U-value with Approved Document L 2021 - 0.16 U-value (W/m²K)

PITCHED ROOF

WARM ROOF



RECOMMENDED PRODUCTS

- Rafter Roll 32

BENEFITS

- Rolls are provided uncut in a width of 1200mm. They are manufactured to allow cutting at varying centre dimensions, for installation, providing maximum flexibility and on-site efficiency.
- High levels of sound absorption and reduction characteristics reduce unwanted external noise such as traffic or drumming from rainfall on the roof.

TYPICAL U-VALUES

USING BATTEN AND COUNTER BATTEN WITH RAFTER ROLL 32 (BETWEEN RAFTERS) AND KNAUF PIR LAMINATE* INTERNALLY – with LR underlay pulled taught and insulation to full depth of rafters

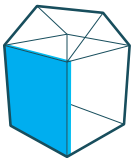
Product	Thickness (mm)	U-value (W/m²K) with Knauf PIR Laminate* (mm)				
		None	35	50	65	75
Rafter Roll 32	250 (100 + 2 x 75)	0.16	0.12	0.12	0.11	0.11
	225 (3 x 75)	0.17	0.13	0.13	0.12	0.11
	200 (2 x 100)	–	0.15	0.14	0.13	0.12
	175 (100 + 75)	–	0.17	0.16	0.14	0.14
	150 (2 x 75)	–	–	0.17	0.16	0.15

*Note: Rafter sizes assumed to be 38mm wide at 600mm centres (6.3% bridging and the same depth as the insulation). 12.5mm Plasterboard internal finish (λ0.190) where no laminate board exists. Where Knauf PIR Laminate is used this consists of PIR of λ0.023 Lambda where the remainder of the thickness is 9.5mm plasterboard at 0.190 W/mK *Available from Knauf UK .*

Minimum backstop U-value with Approved Document L 2021 - 0.16 U-value (W/m²K)

MASONRY CAVITY WALLS

FULL-FILL WITH BUILT-IN GLASS MINERAL WOOL



RECOMMENDED PRODUCTS

- DriTherm® Cavity Slab 32
- DriTherm® Cavity Slab 34

BENEFITS

- Cavity barriers are not required with non-combustible full-fill insulation, minimising the risk of fire spreading through a cavity.
- Water repellent and BBA certified for use in all exposure zones, including those in very severe areas.
- Slabs are sized to fit between wall ties without the need for retaining discs.

Our recommended U-value with Approved Document L 2021 | **Less than or equal to 0.24 U-value (W/m²K)**

TYPICAL U-VALUES

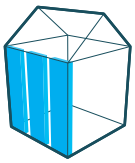
Product	Insulation thickness (mm)	U-value (W/m²K) Medium block (0.45 W/mK)	High strength aircrete (0.28 W/mK)	High strength aircrete (0.19 W/mK)	Standard aircrete (0.15 W/mK)	Lightweight aircrete (0.11 W/mK)
DriTherm® Cavity Slab 32	150	0.19	0.18	0.18	0.17	0.17
	125	0.22	0.21	0.21	0.20	0.20
	100	0.26	0.25	0.25	0.24	0.23

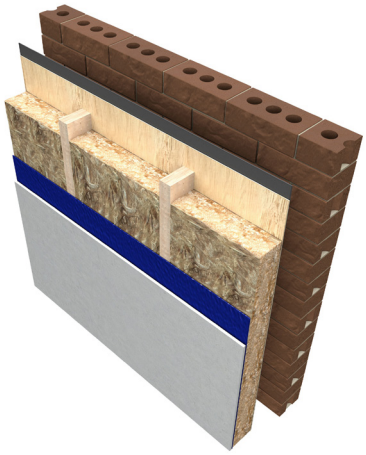
Note: The U-values have been calculated assuming that all walls are lined with 12.5mm standard plasterboard on dabs on standard blocks with 10mm mortar joints. Wall ties assumed to be stainless steel at 2.5 per m² with a cross-sectional area of no more than 12.5mm² for structural cavities up to 100mm wide. For cavities greater than 100mm up to 150mm, the cross sectional area of wall ties is assumed to be 24mm². For cavities above 150mm, the cross sectional area of wall ties is assumed to be 60mm². Air gap correction level is zero. Multiple layers are required for several of the solutions detailed above.

Minimum backstop U-value with Approved Document L 2021 - 0.26 U-value (W/m²K)

TIMBER FRAMED WALLS

INSULATION BETWEEN STUDS WITH A SERVICE VOID





RECOMMENDED PRODUCTS

- FrameTherm® Roll 32
- FrameTherm® Roll 35
- FrameTherm® Roll 40

BENEFITS

- Designed to friction fit between timber studs, which prevents air movement and infiltration through or around the insulation, minimising heat loss.
- Ready-cut to allow quick and simple installation, maximising on-site efficiency when compared with alternative insulants.
- Rolls are fully cut into 2x570mm and 3x380mm to suit commonly used timber stud spacing.

Our recommended required U-value with Approved Document L 2021 | **Less than or equal to 0.24 U-value (W/m²K)**

TYPICAL U-VALUES

		U-value (W/m²K)	
Product	**Stud thickness (mm)**	Masonry outer leaf (Cavity Unventilated)	Tile / timber clad outer leaf (Cavity Ventilated)
FrameTherm® Roll 32	140	0.19	0.22
FrameTherm® Roll 35	140	0.20	0.23
FrameTherm® Roll 40	140	0.21	0.25

Note: Default timber fraction BR443:2019. Timber studs full-filled with FrameTherm® Rolls. Thermal conductivity of timber studs is 0.12 W/mK, Ventilated low emissivity airspace assumed to increase the R-value of the cavity to 0.29m²K/W for tile/ timber clad and 50mm unventilated low emissivity airspace assumed to increase R-value of cavity to 0.77m²K/W for masonry outer leaf. Low emissivity airspace assumed to increase R-value of service void to 0.78m²K/W. 9mm sheathing and 12.5mm Standard wallboard internal finish.

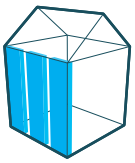
The above values are for guidance only, please contasct our Technical Services Team direct for specific values.

Minimum backstop U-value with Approved Document L 2021 - 0.26 U-value (W/m²K)

challenge. create. care.

TIMBER FRAMED WALLS

INSULATION BETWEEN STUDS WITH A LOW EMISSIVITY SERVICE VOID



RECOMMENDED PRODUCTS

- FrameTherm® Roll 32
- FrameTherm® Roll 35
- FrameTherm® Roll 40

BENEFITS

- Designed to friction fit between timber studs, which prevents air movement and infiltration through or around the insulation, minimising heat loss.
- Ready-cut to allow quick and simple installation, maximising on-site efficiency when compared with alternative insulants.
- Rolls are fully cut into 2x570mm and 3x380mm to suit commonly used timber stud spacing.

Our recommended U-value with Approved Document L 2021 | **Less than or equal to 0.24 U-value (W/m²K)**

TYPICAL U-VALUES

		U-value (W/m²K)
Product	**Stud thickness (mm)**	Masonry outer leaf (Cavity Unventilated)
FrameTherm® Roll 32	140	0.22
FrameTherm® Roll 35	140	0.23
FrameTherm® Roll 40	140	0.25

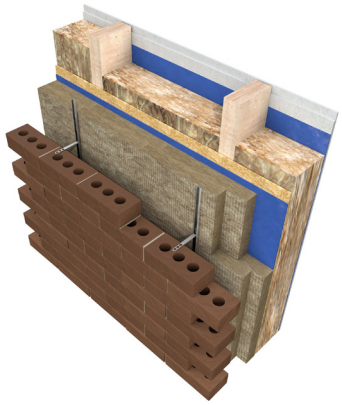
Note: Default timber fraction BR443:2019. Timber studs fully filled with FrameTherm® Rolls. Thermal conductivity of timber studs is 0.12 W/mK, Ventilated low emissivity airspace assumed to increase the R-value of the cavity to 0.29m²K/W for tile/ timber clad and 50mm unventilated low emissivity airspace assumed to increase R-value of cavity to 0.77m²K/W for masonry outer leaf. 9mm sheathing and 12.5mm Standard wallboard (0.19 w/mK) internal finish.

The above values are for guidance only, please contasct our Technical Services Team direct for specific values.

Minimum backstop U-value with Approved Document L 2021 - 0.26 U-value (W/m²K)

TIMBER FRAMED WALLS

PARTIAL-FILL MASONRY OUTER LEAF



RECOMMENDED PRODUCTS

- FrameTherm® Roll 32
- Rocksilk® RainScreen Slab

BENEFITS

- Rocksilk RainScreen® Slab is BBA Certified (certificate 19/5609) for use in multiple build-ups so it can be specified with confidence.
- Rocksilk RainScreen® Slab is made with a water-repellent additive so slabs will maintain their integrity while exposed on site.

Our recommended U-value with Approved Document L 2021 | **Less than or equal to 0.24 U-value (W/m²K)**

TYPICAL U-VALUES	U-value (W/m²K)	
Outer Leaf	102.5mm Brick outer leaf or 100mm Dense block and render	
Timber stud *	90mm	140mm
Rocksilk® RainScreen Slab		
100	0.17	0.14
75	0.20	0.16
50	0.23	0.18

Note: *Default timber fraction BR443:2019. *Timber studs full-filled with FrameTherm® Roll or Slab 32 (0.032W/mK). 9mm sheathing and 2x15mm Standard wallboard internal finish. Rocksilk® RainScreen Slab (0.034W/mK) installed with 50mm residual cavity using ACS 25/15 Framefix restraint system secured with stainless steel fixings.*

The above values are for guidance only, please contasct our Technical Services Team direct for specific values.

Minimum backstop U-value with Approved Document L 2021 - 0.26 U-value (W/m²K)

with ECOSE® TECHNOLOGY · INDOOR AIR COMFORT eurofins GOLD CERTIFIED PRODUCT · Declare. · Red List Free · EUROCLASS A1 FIRE CLASSIFICATION · MADE IN BRITAIN · BBA APPROVAL INSPECTION TESTING CERTIFICATION

** Declare 'Red List Free' only relevant to FrameTherm Roll® 32*

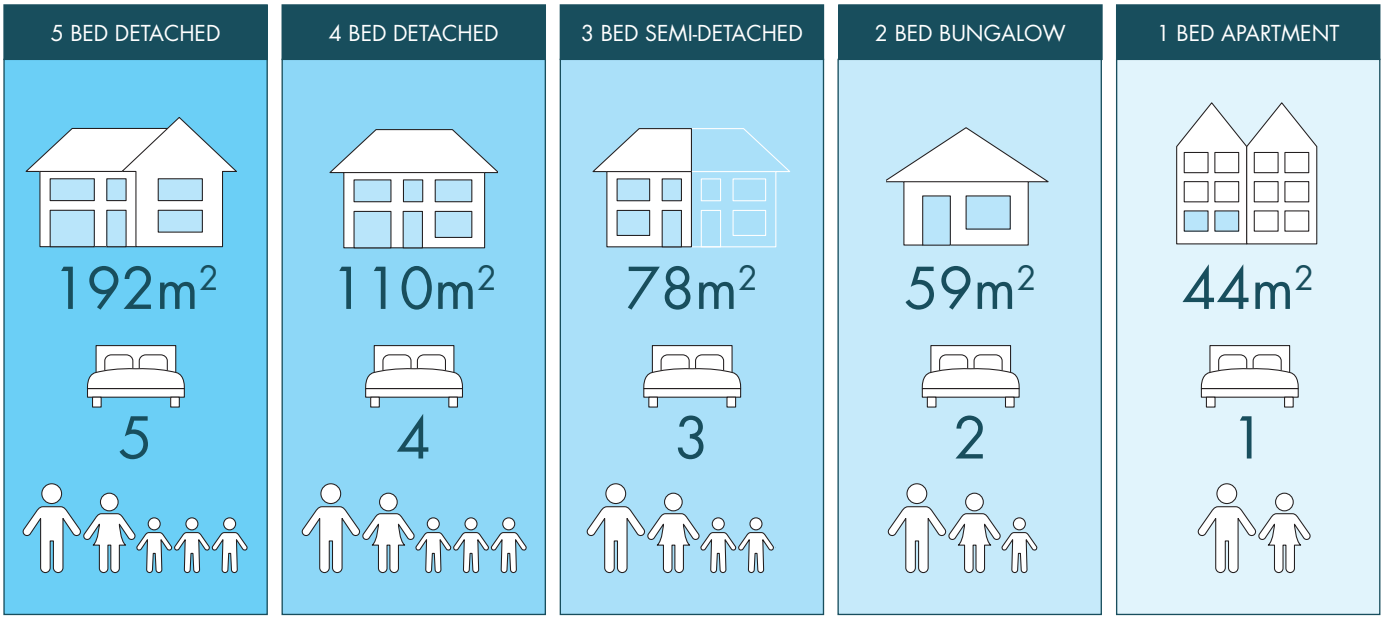
WHOLE HOUSE RECIPES

DRITHERM® SLAB RECIPES

COMPLIANCE RECIPES FOR APPROVED DOCUMENT L: 2021

There are a number of ways to achieve compliance to the updated Approved Document L.

Every project is unique, so we have some tailor-made recipes which help you choose from an extensive array of options, for a variety of property types.



Achieving compliance is possible through making changes to your building fabric, openings, heating, ventilation, or renewables. Our solutions have made it easy to find a recipe that works for you.

Fabric

ROOF INSULATION
500mm Loft Roll 44
EXTERNAL WALLS
100mm DriTherm® 32
125mm DriTherm® 32
150mm DriTherm® 32
GARAGE SOFFIT
200mm OmniFit® Roll 34
PARTY WALL INSULATION
None
100mm Party Wall Slab
Supafil® Party Wall
FLOOR INSULATION
0.11W/m²K
LINTELS
Thermally broken

Openings

WINDOWS
Double Glazed U=1.3 g=0.47
Triple Glazed U=0.98 g=0.39
DOORS
1.09W/m²K
1.00W/m²K

Heating

HEATING TYPE
Gas + Cylinder Ideal System Boiler
Gas Combi Ideal ESP1 38 Combi
Air Source Heat Pump
HEATING CONTROLS
Time & Temperature Zone Control
Weather Compensator
Delayed Start Thermostat

Ventilation

AIR PERMEABILITY			
1.00	2.25	2.5	4.00
VENTILATION SYSTEM			
System 1 Intermittent extract fans & background vents			
System 3 Mechnical extract Ventilation (MEV)			
System 4 Mechnical Ventilation with Heat Recovery (MVHR)			

Renewables

PHOTOVOLTAIC PANELS
None
2 (0.54 kWp)
3 (0.81 kWp)
4 (1.08 kWp)
5 (1.35 kWp)
7 (1.89 kWp)
10 (2.70 kWp)
15 (4.05 kWp)
20 (5.50 kWp)
WASTE WATER HEAT RECOVERY
None
1 system (2 showers)

5 BED DETACHED
3 WET ROOMS

 192m²  5 

RECIPE 1

Fabric

ROOF INSULATION
500mm Loft Roll 44
EXTERNAL WALLS
100mm DriTherm® 32
125mm DriTherm® 32
150mm DriTherm® 32
PARTY WALL INSULATION
None
100mm Masonry Party Wall Slab
FLOOR INSULATION
0.11W/m²K
LINTELS
Thermally broken

Openings

WINDOWS
Double Glazed U=1.3 g=0.47
Triple Glazed U=0.98 g=0.39
DOORS
1.09W/m²K
1.00W/m²K

Heating

HEATING TYPE
Gas + Cylinder Ideal System Boiler
Gas Combi Ideal ESP1 38 Combi
Air Source Heat Pump
HEATING CONTROLS
Time & Temperature Zone Control
Weather Compensator
Delayed Start Thermostat

Ventilation

AIR PERMEABILITY
1.00 | 2.25 | 2.5 | **4.00**
VENTILATION SYSTEM
System 1 Intermittent extract fans & background vents
System 3 Mechnical extract Ventilation (MEV)
System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS
None
2 (0.54 kWp)
3 (0.81 kWp)
4 (1.08 kWp)
5 (1.35 kWp)
7 (1.89 kWp)
10 (2.70 kWp)
15 (4.05 kWp)
20 (5.50 kWp)
WASTE WATER HEAT RECOVERY
None
1 system (2 showers)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 2

Fabric

ROOF INSULATION
500mm Loft Roll 44
EXTERNAL WALLS
100mm DriTherm® 32
125mm DriTherm® 32
150mm DriTherm® 32
PARTY WALL INSULATION
None
100mm Masonry Party Wall Slab
FLOOR INSULATION
0.11W/m²K
LINTELS
Thermally broken

Openings

WINDOWS
Double Glazed U=1.3 g=0.47
Triple Glazed U=0.98 g=0.39
DOORS
1.09W/m²K
1.00W/m²K

Heating

HEATING TYPE
Gas + Cylinder Ideal System Boiler
Gas Combi Ideal ESP1 38 Combi
Air Source Heat Pump
HEATING CONTROLS
Time & Temperature Zone Control
Weather Compensator
Delayed Start Thermostat

Ventilation

AIR PERMEABILITY
1.00 | 2.25 | 2.5 | **4.00**
VENTILATION SYSTEM
System 1 Intermittent extract fans & background vents
System 3 Mechnical extract Ventilation (MEV)
System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS
None
2 (0.54 kWp)
3 (0.81 kWp)
4 (1.08 kWp)
5 (1.35 kWp)
7 (1.89 kWp)
10 (2.70 kWp)
15 (4.05 kWp)
20 (5.50 kWp)
WASTE WATER HEAT RECOVERY
None
1 system (2 showers)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 3

Fabric	Openings	Heating	Ventilation	Renewables
ROOF INSULATION	WINDOWS	HEATING TYPE	AIR PERMEABILITY	PHOTOVOLTAIC PANELS
500mm Loft Roll 44	Double Glazed U=1.3 g=0.47	**Gas + Cylinder Ideal System Boiler**	**1.00** 2.25 2.5 4.00	**None**
EXTERNAL WALLS	**Triple Glazed U=0.98 g=0.39**	Gas Combi Ideal ESP1 38 Combi	VENTILATION SYSTEM	2 (0.54 kWp)
100mm DriTherm® 32	DOORS	Air Source Heat Pump	System 1 Intermittent extract fans & background vents	3 (0.81 kWp)
125mm DriTherm® 32	1.09W/m²K	HEATING CONTROLS	System 3 Mechnical extract Ventilation (MEV)	4 (1.08 kWp)
150mm DriTherm® 32	**1.00W/m²K**	**Time & Temperature Zone Control**	**System 4 Mechnical Ventilation with Heat Recovery (MVHR)**	5 (1.35 kWp)
PARTY WALL INSULATION		**Weather Compensator**		7 (1.89 kWp)
None		Delayed Start Thermostat		10 (2.70 kWp)
100mm Masonry Party Wall Slab				15 (4.05 kWp)
FLOOR INSULATION				20 (5.50 kWp)
0.11W/m²K				WASTE WATER HEAT RECOVERY
LINTELS				None
Thermally broken				**1 system (2 showers)**

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 4

Fabric	Openings	Heating	Ventilation	Renewables
ROOF INSULATION	WINDOWS	HEATING TYPE	AIR PERMEABILITY	PHOTOVOLTAIC PANELS
500mm Loft Roll 44	**Double Glazed U=1.3 g=0.47**	Gas + Cylinder Ideal System Boiler	1.00 2.25 2.5 **4.00**	**None**
EXTERNAL WALLS	Triple Glazed U=0.98 g=0.39	Gas Combi Ideal ESP1 38 Combi	VENTILATION SYSTEM	2 (0.54 kWp)
100mm DriTherm® 32	DOORS	**Air Source Heat Pump**	**System 1 Intermittent extract fans & background vents**	3 (0.81 kWp)
125mm DriTherm® 32	1.09W/m²K	HEATING CONTROLS	System 3 Mechnical extract Ventilation (MEV)	4 (1.08 kWp)
150mm DriTherm® 32	**1.00W/m²K**	**Time & Temperature Zone Control**	System 4 Mechnical Ventilation with Heat Recovery (MVHR)	5 (1.35 kWp)
PARTY WALL INSULATION		**Weather Compensator**		7 (1.89 kWp)
None		Delayed Start Thermostat		10 (2.70 kWp)
100mm Masonry Party Wall Slab				15 (4.05 kWp)
FLOOR INSULATION				20 (5.50 kWp)
0.11W/m²K				WASTE WATER HEAT RECOVERY
LINTELS				**None**
Thermally broken				1 system (2 showers)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

4 BED DETACHED
2 WET ROOMS + INTEGRAL GARAGE


110m²

4


RECIPE 1

Fabric	Openings	Heating	Ventilation	Renewables
ROOF INSULATION	WINDOWS	HEATING TYPE	AIR PERMEABILITY	PHOTOVOLTAIC PANELS
500mm Loft Roll 44	**Double Glazed U=1.3 g=0.47**	Gas + Cylinder Ideal System Boiler	1.00 / 2.25 / 2.5 / **4.00**	None
EXTERNAL WALLS	Triple Glazed U=0.98 g=0.39	**Gas Combi Ideal ESP1 38 Combi**	VENTILATION SYSTEM	2 (0.54 kWp)
100mm DriTherm® 32	DOORS	Air Source Heat Pump	**System 1 Intermittent extract fans & background vents**	3 (0.81 kWp)
125mm DriTherm® 32	1.09W/m²K	HEATING CONTROLS	System 3 Mechnical extract Ventilation (MEV)	4 (1.08 kWp)
150mm DriTherm® 32	**1.00W/m²K**	**Time & Temperature Zone Control**	System 4 Mechnical Ventilation with Heat Recovery (MVHR)	5 (1.35 kWp)
GARAGE SOFFIT		Weather Compensator		**7 (1.89 kWp)**
200mm OmniFit® Roll 34		**Delayed Start Thermostat**		10 (2.70 kWp)
PARTY WALL INSULATION				15 (4.05 kWp)
None				20 (5.50 kWp)
100mm Masonry Party Wall Slab				WASTE WATER HEAT RECOVERY
FLOOR INSULATION				None
0.11W/m²K				**1 system (2 showers)**
LINTELS				
Thermally broken				

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 2

Fabric	Openings	Heating	Ventilation	Renewables
ROOF INSULATION	WINDOWS	HEATING TYPE	AIR PERMEABILITY	PHOTOVOLTAIC PANELS
500mm Loft Roll 44	**Double Glazed U=1.3 g=0.47**	Gas + Cylinder Ideal System Boiler	1.00 / 2.25 / 2.5 / **4.00**	None
EXTERNAL WALLS	Triple Glazed U=0.98 g=0.39	**Gas Combi Ideal ESP1 38 Combi**	VENTILATION SYSTEM	2 (0.54 kWp)
100mm DriTherm® 32	DOORS	Air Source Heat Pump	System 1 Intermittent extract fans & background vents	3 (0.81 kWp)
125mm DriTherm® 32	1.09W/m²K	HEATING CONTROLS	**System 3 Mechnical extract Ventilation (MEV)**	4 (1.08 kWp)
150mm DriTherm® 32	**1.00W/m²K**	**Time & Temperature Zone Control**	System 4 Mechnical Ventilation with Heat Recovery (MVHR)	**5 (1.35 kWp)**
GARAGE SOFFIT		Weather Compensator		7 (1.89 kWp)
200mm OmniFit® Roll 34		**Delayed Start Thermostat**		10 (2.70 kWp)
PARTY WALL INSULATION				15 (4.05 kWp)
None				20 (5.50 kWp)
100mm Masonry Party Wall Slab				WASTE WATER HEAT RECOVERY
FLOOR INSULATION				None
0.11W/m²K				**1 system (2 showers)**
LINTELS				
Thermally broken				

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 3

Fabric

ROOF INSULATION

500mm Loft Roll 44

EXTERNAL WALLS

100mm DriTherm® 32

125mm DriTherm® 32

150mm DriTherm® 32

GARAGE SOFFIT

200mm OmniFit® Roll 34

PARTY WALL INSULATION

None

100mm Masonry Party Wall Slab

FLOOR INSULATION

0.11W/m²K

LINTELS

Thermally broken

Openings

WINDOWS

Double Glazed U=1.3 g=0.47

Triple Glazed U=0.98 g=0.39

DOORS

1.09W/m²K

1.00W/m²K

Heating

HEATING TYPE

Gas + Cylinder Ideal System Boiler

Gas Combi Ideal ESP1 38 Combi

Air Source Heat Pump

HEATING CONTROLS

Time & Temperature Zone Control

Weather Compensator

Delayed Start Thermostat

Ventilation

AIR PERMEABILITY

1.00 | **2.25** | 2.5 | 4.00

VENTILATION SYSTEM

System 1 Intermittent extract fans & background vents

System 3 Mechnical extract Ventilation (MEV)

System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS

None

2 (0.54 kWp)

3 (0.81 kWp)

4 (1.08 kWp)

5 (1.35 kWp)

7 (1.89 kWp)

10 (2.70 kWp)

15 (4.05 kWp)

20 (5.50 kWp)

WASTE WATER HEAT RECOVERY

None

1 system (2 showers)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 4

Fabric

ROOF INSULATION

500mm Loft Roll 44

EXTERNAL WALLS

100mm DriTherm® 32

125mm DriTherm® 32

150mm DriTherm® 32

GARAGE SOFFIT

200mm OmniFit® Roll 34

PARTY WALL INSULATION

None

100mm Masonry Party Wall Slab

FLOOR INSULATION

0.11W/m²K

LINTELS

Thermally broken

Openings

WINDOWS

Double Glazed U=1.3 g=0.47

Triple Glazed U=0.98 g=0.39

DOORS

1.09W/m²K

1.00W/m²K

Heating

HEATING TYPE

Gas + Cylinder Ideal System Boiler

Gas Combi Ideal ESP1 38 Combi

Air Source Heat Pump

HEATING CONTROLS

Time & Temperature Zone Control

Weather Compensator

Delayed Start Thermostat

Ventilation

AIR PERMEABILITY

1.00 | 2.25 | 2.5 | **4.00**

VENTILATION SYSTEM

System 1 Intermittent extract fans & background vents

System 3 Mechnical extract Ventilation (MEV)

System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS

None

2 (0.54 kWp)

3 (0.81 kWp)

4 (1.08 kWp)

5 (1.35 kWp)

7 (1.89 kWp)

10 (2.70 kWp)

15 (4.05 kWp)

20 (5.50 kWp)

WASTE WATER HEAT RECOVERY

None

1 system (2 showers)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

3 BED SEMI-DETACHED
2 WET ROOMS

 78m²  3 

RECIPE 1

Fabric

ROOF INSULATION

500mm Loft Roll 44

EXTERNAL WALLS

100mm DriTherm® 32

125mm DriTherm® 32

150mm DriTherm® 32

PARTY WALL INSULATION

None

100mm Masonry Party Wall Slab

FLOOR INSULATION

0.11W/m²K

LINTELS

Thermally broken

Openings

WINDOWS

Double Glazed U=1.3 g=0.47

Triple Glazed U=0.98 g=0.39

DOORS

1.09W/m²K

1.00W/m²K

Heating

HEATING TYPE

Gas + Cylinder Ideal System Boiler

Gas Combi Ideal ESP1 38 Combi

Air Source Heat Pump

HEATING CONTROLS

Time & Temperature Zone Control

Weather Compensator

Delayed Start Thermostat

Ventilation

AIR PERMEABILITY

1.00 | 2.25 | 2.5 | **4.00**

VENTILATION SYSTEM

System 1 Intermittent extract fans & background vents

System 3 Mechnical extract Ventilation (MEV)

System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS

None

2 (0.54 kWp)

3 (0.81 kWp)

4 (1.08 kWp)

5 (1.35 kWp)

7 (1.89 kWp)

10 (2.70 kWp)

15 (4.05 kWp)

20 (5.50 kWp)

WASTE WATER HEAT RECOVERY

None

1 system (2 showers)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 2

Fabric

ROOF INSULATION

500mm Loft Roll 44

EXTERNAL WALLS

100mm DriTherm® 32

125mm DriTherm® 32

150mm DriTherm® 32

PARTY WALL INSULATION

None

100mm Masonry Party Wall Slab

FLOOR INSULATION

0.11W/m²K

LINTELS

Thermally broken

Openings

WINDOWS

Double Glazed U=1.3 g=0.47

Triple Glazed U=0.98 g=0.39

DOORS

1.09W/m²K

1.00W/m²K

Heating

HEATING TYPE

Gas + Cylinder Ideal System Boiler

Gas Combi Ideal ESP1 38 Combi

Air Source Heat Pump

HEATING CONTROLS

Time & Temperature Zone Control

Weather Compensator

Delayed Start Thermostat

Ventilation

AIR PERMEABILITY

1.00 | 2.25 | 2.5 | **4.00**

VENTILATION SYSTEM

System 1 Intermittent extract fans & background vents

System 3 Mechnical extract Ventilation (MEV)

System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS

None

2 (0.54 kWp)

3 (0.81 kWp)

4 (1.08 kWp)

5 (1.35 kWp)

7 (1.89 kWp)

10 (2.70 kWp)

15 (4.05 kWp)

20 (5.50 kWp)

WASTE WATER HEAT RECOVERY

None

1 system (2 showers)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 3

Fabric

ROOF INSULATION

500mm Loft Roll 44

EXTERNAL WALLS

100mm DriTherm® 32

125mm DriTherm® 32

150mm DriTherm® 32

PARTY WALL INSULATION

None

100mm Masonry Party Wall Slab

FLOOR INSULATION

0.11W/m²K

LINTELS

Thermally broken

Openings

WINDOWS

Double Glazed U=1.3 g=0.47

Triple Glazed U=0.98 g=0.39

DOORS

1.09W/m²K

1.00W/m²K

Heating

HEATING TYPE

Gas + Cylinder Ideal System Boiler

Gas Combi Ideal ESP1 38 Combi

Air Source Heat Pump

HEATING CONTROLS

Time & Temperature Zone Control

Weather Compensator

Delayed Start Thermostat

Ventilation

AIR PERMEABILITY

1.00 | 2.25 | 2.5 | **4.00**

VENTILATION SYSTEM

System 1 Intermittent extract fans & background vents

System 3 Mechnical extract Ventilation (MEV)

System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS

None

2 (0.54 kWp)

3 (0.81 kWp)

4 (1.08 kWp)

5 (1.35 kWp)

7 (1.89 kWp)

10 (2.70 kWp)

15 (4.05 kWp)

20 (5.50 kWp)

WASTE WATER HEAT RECOVERY

None

1 system (2 showers)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 4

Fabric

ROOF INSULATION

500mm Loft Roll 44

EXTERNAL WALLS

100mm DriTherm® 32

125mm DriTherm® 32

150mm DriTherm® 32

PARTY WALL INSULATION

None

100mm Masonry Party Wall Slab

FLOOR INSULATION

0.11W/m²K

LINTELS

Thermally broken

Openings

WINDOWS

Double Glazed U=1.3 g=0.47

Triple Glazed U=0.98 g=0.39

DOORS

1.09W/m²K

1.00W/m²K

Heating

HEATING TYPE

Gas + Cylinder Ideal System Boiler

Gas Combi Ideal ESP1 38 Combi

Air Source Heat Pump

HEATING CONTROLS

Time & Temperature Zone Control

Weather Compensator

Delayed Start Thermostat

Ventilation

AIR PERMEABILITY

1.00 | 2.25 | 2.5 | **4.00**

VENTILATION SYSTEM

System 1 Intermittent extract fans & background vents

System 3 Mechnical extract Ventilation (MEV)

System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS

None

2 (0.54 kWp)

3 (0.81 kWp)

4 (1.08 kWp)

5 (1.35 kWp)

7 (1.89 kWp)

10 (2.70 kWp)

15 (4.05 kWp)

20 (5.50 kWp)

WASTE WATER HEAT RECOVERY

None

1 system (2 showers)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

3 BED SEMI-DETACHED
2 WET ROOMS

 78m²  3 

RECIPE 5

Fabric	Openings	Heating	Ventilation	Renewables
ROOF INSULATION	WINDOWS	HEATING TYPE	AIR PERMEABILITY	PHOTOVOLTAIC PANELS
500mm Loft Roll 44	**Double Glazed U=1.3 g=0.47**	Gas + Cylinder Ideal System Boiler	1.00 / 2.25 / 2.5 / **4.00**	None
EXTERNAL WALLS	Triple Glazed U=0.98 g=0.39	**Gas Combi Ideal ESP1 38 Combi**	VENTILATION SYSTEM	2 (0.54 kWp)
100mm DriTherm® 32	DOORS	Air Source Heat Pump	System 1 Intermittent extract fans & background vents	**3 (0.81 kWp)**
125mm DriTherm® 32	**1.09W/m²K**	HEATING CONTROLS	**System 3 Mechnical extract Ventilation (MEV)**	4 (1.08 kWp)
150mm DriTherm® 32	1.00W/m²K	**Time & Temperature Zone Control**	System 4 Mechnical Ventilation with Heat Recovery (MVHR)	5 (1.35 kWp)
PARTY WALL INSULATION		**Weather Compensator**		7 (1.89 kWp)
None		Delayed Start Thermostat		10 (2.70 kWp)
100mm Masonry Party Wall Slab				15 (4.05 kWp)
FLOOR INSULATION				20 (5.50 kWp)
0.11W/m²K				WASTE WATER HEAT RECOVERY
LINTELS				None
Thermally broken				**1 system (2 showers)**

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 6

Fabric	Openings	Heating	Ventilation	Renewables
ROOF INSULATION	WINDOWS	HEATING TYPE	AIR PERMEABILITY	PHOTOVOLTAIC PANELS
500mm Loft Roll 44	**Double Glazed U=1.3 g=0.47**	Gas + Cylinder Ideal System Boiler	1.00 / **2.25** / 2.5 / 4.00	**None**
EXTERNAL WALLS	Triple Glazed U=0.98 g=0.39	**Gas Combi Ideal ESP1 38 Combi**	VENTILATION SYSTEM	2 (0.54 kWp)
100mm DriTherm® 32	DOORS	Air Source Heat Pump	System 1 Intermittent extract fans & background vents	3 (0.81 kWp)
125mm DriTherm® 32	**1.09W/m²K**	HEATING CONTROLS	System 3 Mechnical extract Ventilation (MEV)	4 (1.08 kWp)
150mm DriTherm® 32	1.00W/m²K	**Time & Temperature Zone Control**	**System 4 Mechnical Ventilation with Heat Recovery (MVHR)**	5 (1.35 kWp)
PARTY WALL INSULATION		**Weather Compensator**		7 (1.89 kWp)
None		Delayed Start Thermostat		10 (2.70 kWp)
100mm Masonry Party Wall Slab				15 (4.05 kWp)
FLOOR INSULATION				20 (5.50 kWp)
0.11W/m²K				WASTE WATER HEAT RECOVERY
LINTELS				None
Thermally broken				**1 system (2 showers)**

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 7

Fabric

ROOF INSULATION

500mm Loft Roll 44

EXTERNAL WALLS

100mm DriTherm® 32

125mm DriTherm® 32

150mm DriTherm® 32

PARTY WALL INSULATION

None

100mm Masonry Party Wall Slab

FLOOR INSULATION

0.11W/m²K

LINTELS

Thermally broken

Openings

WINDOWS

Double Glazed U=1.3 g=0.47

Triple Glazed U=0.98 g=0.39

DOORS

1.09W/m²K

1.00W/m²K

Heating

HEATING TYPE

Gas + Cylinder Ideal System Boiler

Gas Combi Ideal ESP1 38 Combi

Air Source Heat Pump

HEATING CONTROLS

Time & Temperature Zone Control

Weather Compensator

Delayed Start Thermostat

Ventilation

AIR PERMEABILITY

1.00	2.25	2.5	**4.00**

VENTILATION SYSTEM

System 1 Intermittent extract fans & background vents

System 3 Mechnical extract Ventilation (MEV)

System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS

None

2 (0.54 kWp)

3 (0.81 kWp)

4 (1.08 kWp)

5 (1.35 kWp)

7 (1.89 kWp)

10 (2.70 kWp)

15 (4.05 kWp)

20 (5.50 kWp)

WASTE WATER HEAT RECOVERY

None

1 system (2 showers)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

2 BED BUNGALOW
1 WET ROOM

 59m²  2 

RECIPE 1

Fabric

ROOF INSULATION

500mm Loft Roll 44

EXTERNAL WALLS

100mm DriTherm® 32

125mm DriTherm® 32

150mm DriTherm® 32

PARTY WALL INSULATION

None

100mm Masonry Party Wall Slab

FLOOR INSULATION

0.11W/m²K

LINTELS

Thermally broken

Openings

WINDOWS

Double Glazed U=1.3 g=0.47

Triple Glazed U=0.98 g=0.39

DOORS

1.09W/m²K

1.00W/m²K

Heating

HEATING TYPE

Gas + Cylinder Ideal System Boiler

Gas Combi Ideal ESP1 38 Combi

Air Source Heat Pump

HEATING CONTROLS

Time & Temperature Zone Control

Weather Compensator

Delayed Start Thermostat

Ventilation

AIR PERMEABILITY

1.00 | 2.25 | 2.5 | **4.00**

VENTILATION SYSTEM

System 1 Intermittent extract fans & background vents

System 3 Mechnical extract Ventilation (MEV)

System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS

None

2 (0.54 kWp)

3 (0.81 kWp)

4 (1.08 kWp)

5 (1.35 kWp)

7 (1.89 kWp)

10 (2.70 kWp)

15 (4.05 kWp)

20 (5.50 kWp)

WASTE WATER HEAT RECOVERY

None

1 system (1 shower)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 2

Fabric

ROOF INSULATION

500mm Loft Roll 44

EXTERNAL WALLS

100mm DriTherm® 32

125mm DriTherm® 32

150mm DriTherm® 32

PARTY WALL INSULATION

None

100mm Masonry Party Wall Slab

FLOOR INSULATION

0.11W/m²K

LINTELS

Thermally broken

Openings

WINDOWS

Double Glazed U=1.3 g=0.47

Triple Glazed U=0.98 g=0.39

DOORS

1.09W/m²K

1.00W/m²K

Heating

HEATING TYPE

Gas + Cylinder Ideal System Boiler

Gas Combi Ideal ESP1 38 Combi

Air Source Heat Pump

HEATING CONTROLS

Time & Temperature Zone Control

Weather Compensator

Delayed Start Thermostat

Ventilation

AIR PERMEABILITY

1.00 | 2.25 | 2.5 | **4.00**

VENTILATION SYSTEM

System 1 Intermittent extract fans & background vents

System 3 Mechnical extract Ventilation (MEV)

System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS

None

2 (0.54 kWp)

3 (0.81 kWp)

4 (1.08 kWp)

5 (1.35 kWp)

7 (1.89 kWp)

10 (2.70 kWp)

15 (4.05 kWp)

20 (5.50 kWp)

WASTE WATER HEAT RECOVERY

None

1 system (1 shower)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

1 BED APARTMENT
1 WET ROOM (GROUND FLOOR)

 44m²  1 

RECIPE 1

Fabric

ROOF INSULATION

500mm Loft Roll 44

EXTERNAL WALLS

100mm DriTherm® 32

125mm DriTherm® 32

150mm DriTherm® 32

CORRIDOR WALLS

None

0.20 W/m²K

FLOOR INSULATION

0.11W/m²K

LINTELS

Thermally broken

Openings

WINDOWS

Double Glazed U=1.3 g=0.47

Triple Glazed U=0.98 g=0.39

DOORS

1.09W/m²K

1.00W/m²K

Heating

HEATING TYPE

Gas + Cylinder Ideal System Boiler

Gas Combi Ideal ESP1 38 Combi

Air Source Heat Pump

HEATING CONTROLS

Time & Temperature Zone Control

Weather Compensator

Delayed Start Thermostat

Ventilation

AIR PERMEABILITY

1.00 | 2.25 | 2.5 | **4.00**

VENTILATION SYSTEM

System 1 Intermittent extract fans & background vents

System 3 Mechnical extract Ventilation (MEV)

System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS

None

2 (0.54 kWp)

3 (0.81 kWp)

4 (1.08 kWp)

5 (1.35 kWp)

7 (1.89 kWp)

10 (2.70 kWp)

15 (4.05 kWp)

20 (5.50 kWp)

WASTE WATER HEAT RECOVERY

None

1 system (1 shower)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 2

Fabric

ROOF INSULATION

500mm Loft Roll 44

EXTERNAL WALLS

100mm DriTherm® 32

125mm DriTherm® 32

150mm DriTherm® 32

CORRIDOR WALLS

None

0.20 W/m²K

FLOOR INSULATION

0.11W/m²K

LINTELS

Thermally broken

Openings

WINDOWS

Double Glazed U=1.3 g=0.47

Triple Glazed U=0.98 g=0.39

DOORS

1.09W/m²K

1.00W/m²K

Heating

HEATING TYPE

Gas + Cylinder Ideal System Boiler

Gas Combi Ideal ESP1 38 Combi

Air Source Heat Pump

HEATING CONTROLS

Time & Temperature Zone Control

Weather Compensator

Delayed Start Thermostat

Ventilation

AIR PERMEABILITY

1.00 | 2.25 | 2.5 | **4.00**

VENTILATION SYSTEM

System 1 Intermittent extract fans & background vents

System 3 Mechnical extract Ventilation (MEV)

System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS

None

2 (0.54 kWp)

3 (0.81 kWp)

4 (1.08 kWp)

5 (1.35 kWp)

7 (1.89 kWp)

10 (2.70 kWp)

15 (4.05 kWp)

20 (5.50 kWp)

WASTE WATER HEAT RECOVERY

None

1 system (1 shower)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

1 BED APARTMENT
1 WET ROOM (MIDDLE FLOOR)

 44m²  1 

RECIPE 1

Fabric

ROOF INSULATION
500mm Loft Roll 44
EXTERNAL WALLS
100mm DriTherm® 32
125mm DriTherm® 32
150mm DriTherm® 32
CORRIDOR WALLS
None
0.20 W/m²K
FLOOR INSULATION
0.11W/m²K
LINTELS
Thermally broken

Openings

WINDOWS
Double Glazed U=1.3 g=0.47
Triple Glazed U=0.98 g=0.39
DOORS
1.09W/m²K
1.00W/m²K

Heating

HEATING TYPE
Gas + Cylinder Ideal System Boiler
Gas Combi Ideal ESP1 38 Combi
Air Source Heat Pump
HEATING CONTROLS
Time & Temperature Zone Control
Weather Compensator
Delayed Start Thermostat

Ventilation

AIR PERMEABILITY
1.00 | 2.25 | 2.5 | **4.00**
VENTILATION SYSTEM
System 1 Intermittent extract fans & background vents
System 3 Mechnical extract Ventilation (MEV)
System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS
None
2 (0.54 kWp)
3 (0.81 kWp)
4 (1.08 kWp)
5 (1.35 kWp)
7 (1.89 kWp)
10 (2.70 kWp)
15 (4.05 kWp)
20 (5.50 kWp)
WASTE WATER HEAT RECOVERY
None
1 system (1 shower)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 2

Fabric

ROOF INSULATION
500mm Loft Roll 44
EXTERNAL WALLS
100mm DriTherm® 32
125mm DriTherm® 32
150mm DriTherm® 32
CORRIDOR WALLS
None
0.20 W/m²K
FLOOR INSULATION
0.11W/m²K
LINTELS
Thermally broken

Openings

WINDOWS
Double Glazed U=1.3 g=0.47
Triple Glazed U=0.98 g=0.39
DOORS
1.09W/m²K
1.00W/m²K

Heating

HEATING TYPE
Gas + Cylinder Ideal System Boiler
Gas Combi Ideal ESP1 38 Combi
Air Source Heat Pump
HEATING CONTROLS
Time & Temperature Zone Control
Weather Compensator
Delayed Start Thermostat

Ventilation

AIR PERMEABILITY
1.00 | 2.25 | 2.5 | **4.00**
VENTILATION SYSTEM
System 1 Intermittent extract fans & background vents
System 3 Mechnical extract Ventilation (MEV)
System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables

PHOTOVOLTAIC PANELS
None
2 (0.54 kWp)
3 (0.81 kWp)
4 (1.08 kWp)
5 (1.35 kWp)
7 (1.89 kWp)
10 (2.70 kWp)
15 (4.05 kWp)
20 (5.50 kWp)
WASTE WATER HEAT RECOVERY
None
1 system (1 shower)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

1 BED APARTMENT
1 WET ROOM (TOP FLOOR)

 44m²  1 

RECIPE 1

Fabric
ROOF INSULATION
500mm Loft Roll 44
EXTERNAL WALLS
100mm DriTherm® 32
125mm DriTherm® 32
150mm DriTherm® 32
CORRIDOR WALLS
None
0.20 W/m²K
FLOOR INSULATION
0.11W/m²K
LINTELS
Thermally broken

Openings
WINDOWS
Double Glazed U=1.3 g=0.47
Triple Glazed U=0.98 g=0.39
DOORS
1.09W/m²K
1.00W/m²K

Heating
HEATING TYPE
Gas + Cylinder Ideal System Boiler
Gas Combi Ideal ESP1 38 Combi
Air Source Heat Pump
HEATING CONTROLS
Time & Temperature Zone Control
Weather Compensator
Delayed Start Thermostat

Ventilation
AIR PERMEABILITY
1.00 | 2.25 | 2.5 | **4.00**
VENTILATION SYSTEM
System 1 Intermittent extract fans & background vents
System 3 Mechnical extract Ventilation (MEV)
System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables
PHOTOVOLTAIC PANELS
None
2 (0.54 kWp)
3 (0.81 kWp)
4 (1.08 kWp)
5 (1.35 kWp)
7 (1.89 kWp)
10 (2.70 kWp)
15 (4.05 kWp)
20 (5.50 kWp)
WASTE WATER HEAT RECOVERY
None
1 system (1 shower)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

RECIPE 2

Fabric
ROOF INSULATION
500mm Loft Roll 44
EXTERNAL WALLS
100mm DriTherm® 32
125mm DriTherm® 32
150mm DriTherm® 32
CORRIDOR WALLS
None
0.20 W/m²K
FLOOR INSULATION
0.11W/m²K
LINTELS
Thermally broken

Openings
WINDOWS
Double Glazed U=1.3 g=0.47
Triple Glazed U=0.98 g=0.39
DOORS
1.09W/m²K
1.00W/m²K

Heating
HEATING TYPE
Gas + Cylinder Ideal System Boiler
Gas Combi Ideal ESP1 38 Combi
Air Source Heat Pump
HEATING CONTROLS
Time & Temperature Zone Control
Weather Compensator
Delayed Start Thermostat

Ventilation
AIR PERMEABILITY
1.00 | 2.25 | 2.5 | **4.00**
VENTILATION SYSTEM
System 1 Intermittent extract fans & background vents
System 3 Mechnical extract Ventilation (MEV)
System 4 Mechnical Ventilation with Heat Recovery (MVHR)

Renewables
PHOTOVOLTAIC PANELS
None
2 (0.54 kWp)
3 (0.81 kWp)
4 (1.08 kWp)
5 (1.35 kWp)
7 (1.89 kWp)
10 (2.70 kWp)
15 (4.05 kWp)
20 (5.50 kWp)
WASTE WATER HEAT RECOVERY
None
1 system (1 shower)

Example recipes have been produced using SAP 2012 software and are intended for illustrative purposes only.

PART B AND INSULATION: WHAT'S NEW FOR HOUSEBUILDERS?

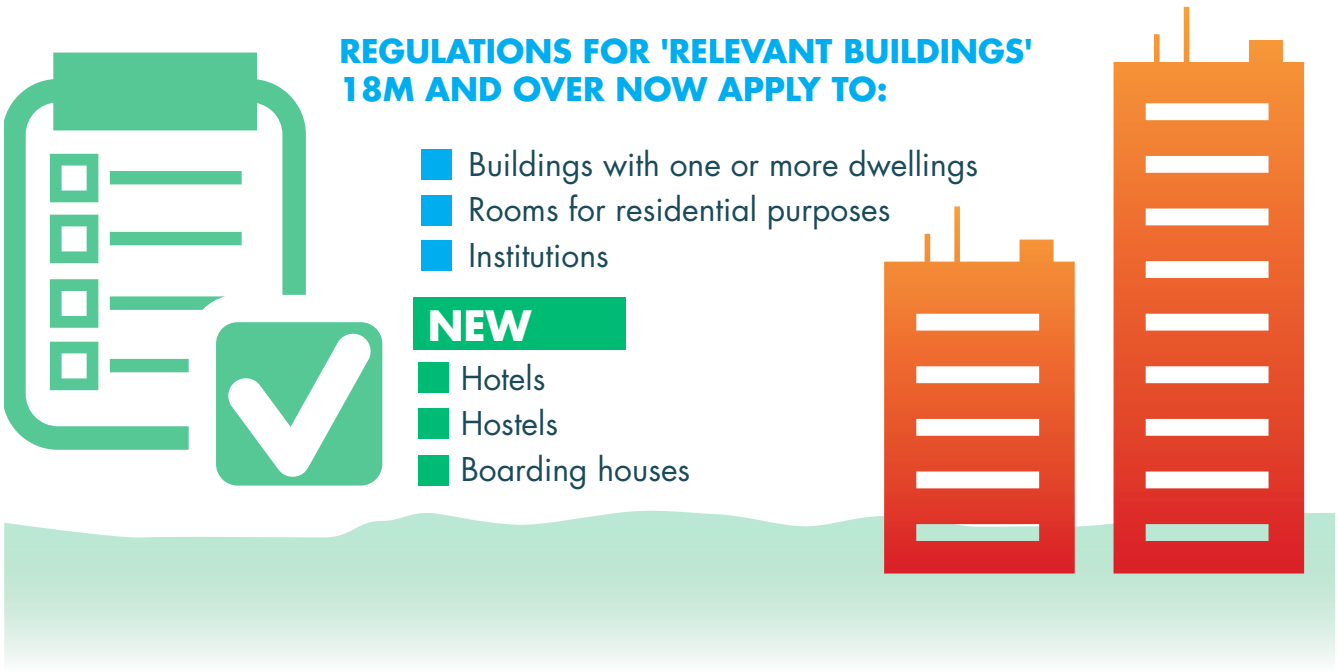
UPDATES TO PART B 'FIRE SAFETY' OF BUILDING REGULATIONS FOR ENGLAND TOOK EFFECT 1st DECEMBER 2022

Previous regulations apply if both:

1. Building notice, initial notice or full plans given to local authority before this date
2. Work has started before or within six months of this date

In all other cases, the updated regulations apply.

For all residential buildings between 11m and 18m, non-combustible materials must now be used in certain external wall system build-ups, such as rainscreen façades and timber frames, unless a full-scale fire test to BS 8414-1 or BS 8414-2 has been conducted.



REGULATIONS FOR 'RELEVANT BUILDINGS' 18M AND OVER NOW APPLY TO:

- Buildings with one or more dwellings
- Rooms for residential purposes
- Institutions

NEW

- Hotels
- Hostels
- Boarding houses

WHEN IT COMES TO SPECIFYING INSULATION, THE SIMPLEST WAY TO REDUCE FIRE RISK IS TO USE NON-COMBUSTIBLE MATERIALS WHATEVER THE HEIGHT OR USE OF THE BUILDING.

Glass mineral wool, wood wool boards and rock mineral wool slabs:

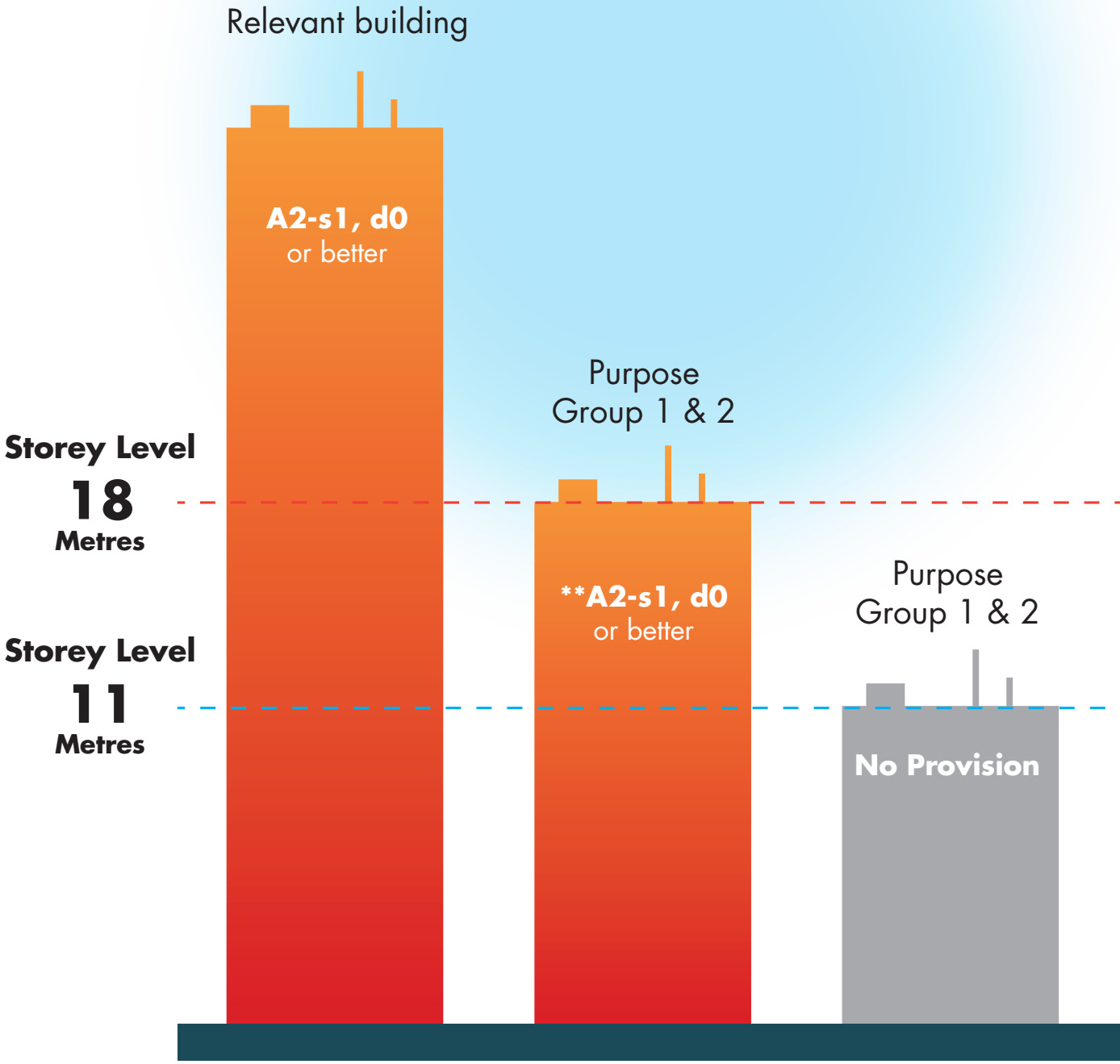
- ✓ Non-combustible
- ✓ Highest Euroclass A1 or A2-s1,d0 reaction to fire classification

See Approved Document B for full regulation updates, including fire detection and alarms, means of escape and solar shading devices:

www.gov.uk/government/publications/fire-safety-approved-document-b

REACTION TO FIRE REGULATORY REQUIREMENTS
INSULATION PERFORMANCE REQUIREMENTS

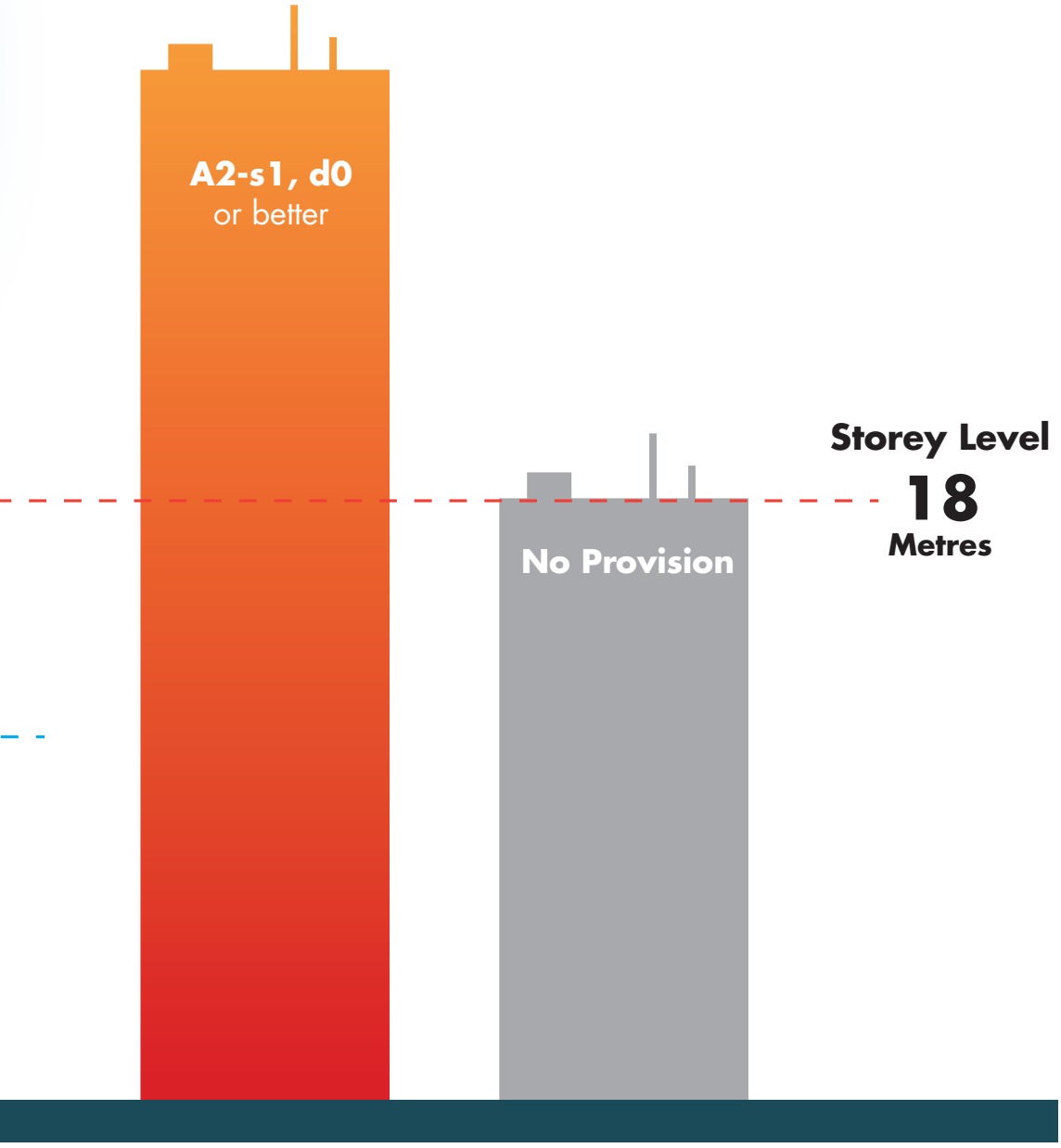
RESIDENTIAL BUILDINGS**



* Required performance for insulation within the construction
** Dwellings (ADB 1), now including any room in a hostel, hotel or boarding house

(ENGLAND & WALES)
(OTHER THAN MASONRY CAVITY WALL)*

ALL OTHER BUILDINGS



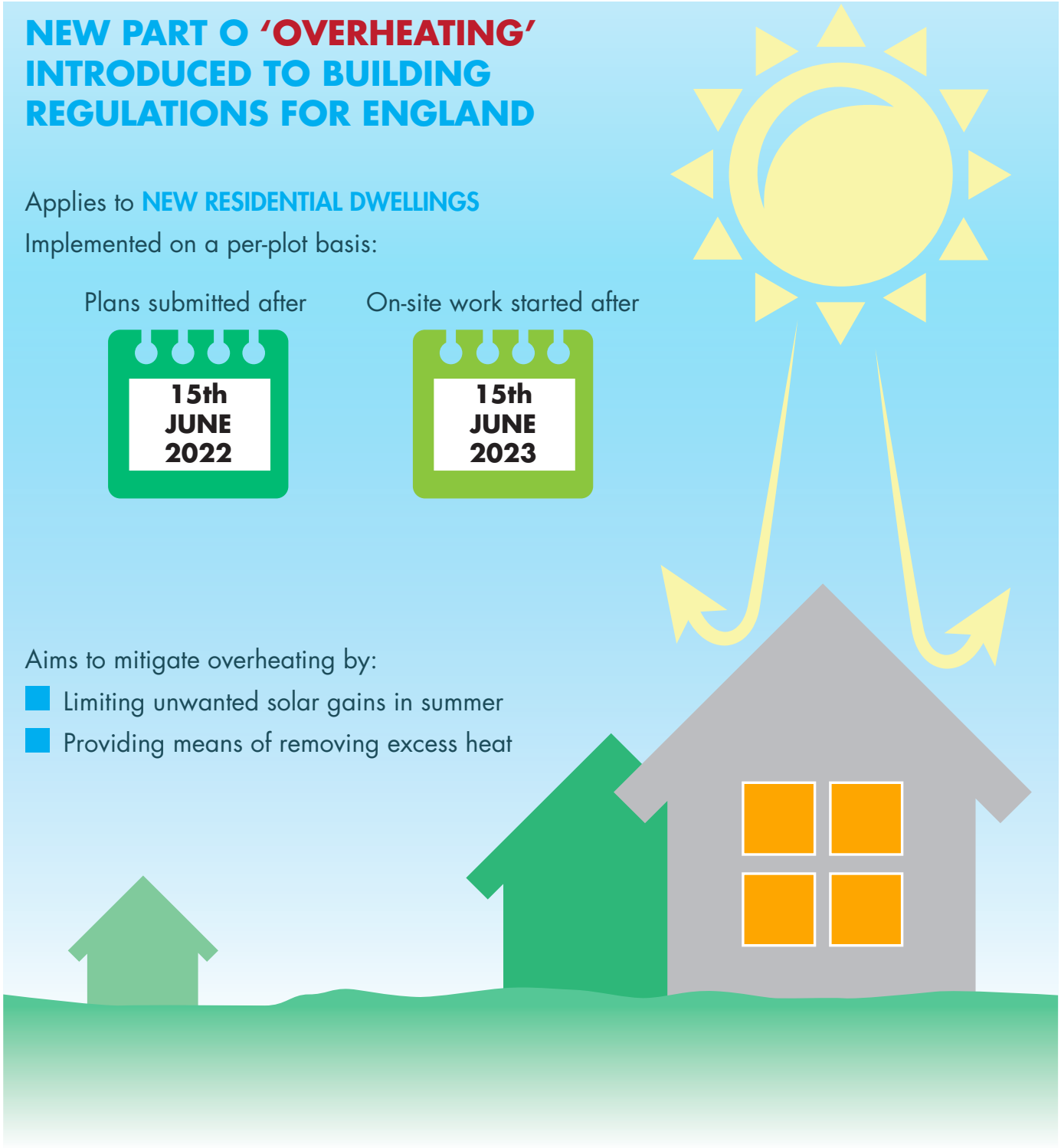
PART O:
WHAT'S NEW FOR HOUSEBUILDERS?

NEW PART O 'OVERHEATING' INTRODUCED TO BUILDING REGULATIONS FOR ENGLAND

Applies to **NEW RESIDENTIAL DWELLINGS**

Implemented on a per-plot basis:

Plans submitted after	On-site work started after
15th JUNE 2022	15th JUNE 2023



Aims to mitigate overheating by:

- Limiting unwanted solar gains in summer
- Providing means of removing excess heat

HOUSEBUILDERS CAN CHOOSE BETWEEN TWO METHODS

ROUTE 1 SIMPLIFIED METHOD

APPROVED DOCUMENT O (ADO) PROVIDES GUIDANCE ON:

- Maximum glazing areas
- Minimum opening areas

GUIDANCE IS DETERMINED BY WHETHER THE BUILDING:

- Is in a 'high' or 'moderate' risk location
- Has cross-ventilation

ROUTE 2 DYNAMIC THERMAL MODELLING METHOD

Building must pass a CIBSE's TM59 assessment, completed by a specialist consultant.

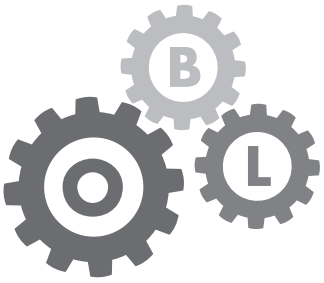
Assessment must incorporate limits set out in ADO for factors like internal temperatures and occupied hours.

NOTE

The simplified method is not suitable for certain types of building, for example those with more than one residential unit, using a communal heating or hot water system with significant horizontal heating or hot water pipework. Due to the requirements of Part Q (Security in dwellings), it is also unsuitable for dwellings with ground floor bedrooms, such as bungalows.

DESIGNS FOR PART O MUST ALSO CONSIDER:

- Noise and pollution
- Security
- Protection from falling
- Protection from entrapment



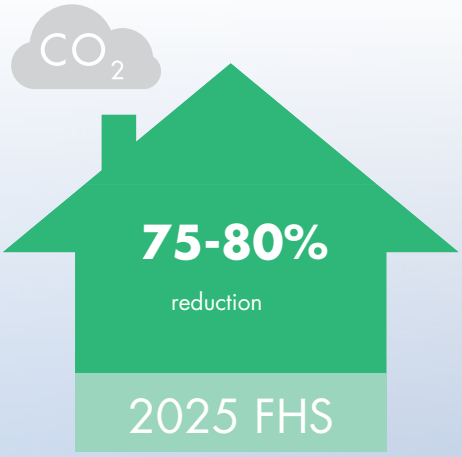
Part O interacts with several other parts of the Building Regulations, for example Part L: Conservation of Fuel and Power. It is advisable to assess Part O before assessing Part L.

See ADO for more info:

www.gov.uk/government/publications/overheating-approved-document-o

A LOOK AHEAD

The pace of change within the housebuilding industry is accelerating and with regulations updating across the board, it's worth keeping an eye on what's coming next.



Future Homes Standard

- Due to come into force in 2025
- Updates to Parts L and F of England's Building Regulations
- New homes must produce 75-80% less carbon emissions
- Likely to encourage low carbon heating systems
- Smart meter enabled thermal efficiency ratings data (measuring in-use energy performance of occupied homes) may be introduced within SAP software
- Proposed 'Smart Mandate' requiring minimum levels of smart functionality for an initial group of electric heating appliances
- Many homes likely to be built with wider cavities

Building Safety Act

- Achieved Royal Assent April 2022
- Legislation currently coming into force
- Due to introduce new requirements for construction products to be safe
- Overseen by the National Construction Products Regulator.

Embodied carbon

Embodied carbon[1] is the total greenhouse gas emissions (often simplified to "carbon") generated to produce a built asset. This includes emissions caused by extraction, manufacture/processing, transportation and assembly of every product and element in an asset.

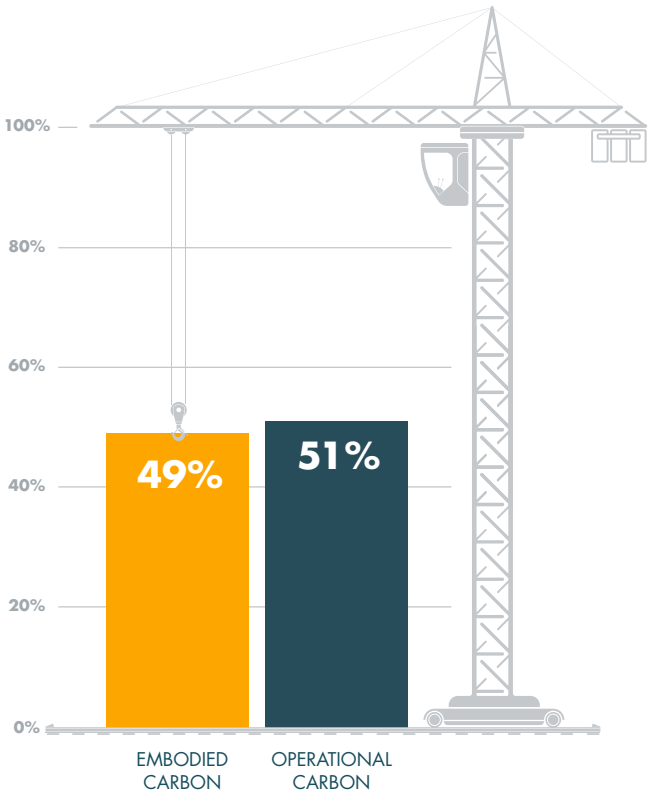
If left unchecked, embodied carbon emissions are projected to make up 49%[2] of all carbon emissions from new construction projects over the next thirty years. Current Building Regulations don't yet address embodied carbon, but that looks set to change…

- RIBA recommends embodied carbon target of 800 $KgCO_2$ e/m^2, 'as a minimum' for new builds in design today
- UK Climate Change Committee called for mandatory disclosure of whole-life carbon in buildings
- Industry proposed 'Part Z' Building Regulations for the regulation of embodied carbon

RIBA

Climate Change Committee

TOTAL CARBON EMISSIONS OF GLOBAL NEW CONSTRUCTION
from 2020-2050 - business as usual projection



The embodied carbon of a given amount of a material can be expressed as its GWP – its Global Warming Potential.
This gives a standardised measure that allows direct comparison between materials, and therefore, informed materials procurement choices.

The GWP, multiplied by the specified amount of that material used in construction, indicates that material's total embodied carbon contribution to a building.

Did you know?
A product's GWP can be found within its Environmental Product Declaration – a document that carbon-conscious manufacturers produce to provide peer-reviewed information on a product's make-up and environmental impact. EPDs for all Knauf Insulation products can be found on our website.

Long-term thinking

To specify strategically, housebuilders should choose products which meet their current needs whilst also setting their builds up for success in the future.

Mineral wool by its nature is non-combustible, easier to install correctly (therefore maximising thermal performance) and can be used in larger and smaller cavities, in buildings of any height. Glass mineral wool also has the lowest embodied carbon of any mainstream insulation material.

Products like mineral wool insulation help homes achieve compliance with Part L 2021 as well as the broader suite of current regulations, and the changes which we expect to see in the coming years.

1 'Embodied Carbon: Developing a client brief' – UK Green Building Council, March 2017
2 UN Environment Global Status Report 2017

ABOUT KNAUF INSULATION

Drawing on 40 years of experience in the industry, we are leading the change in smarter insulation solutions, for a better world.

Our mission is to challenge conventional thinking and create innovative insulation solutions that shape the way we live and build in the future, with care for the people who make them, the people who use them and the world we all depend on.

Knauf Insulation in numbers:

Knauf Insulation

2022 figures

€2.5 bn
turnover

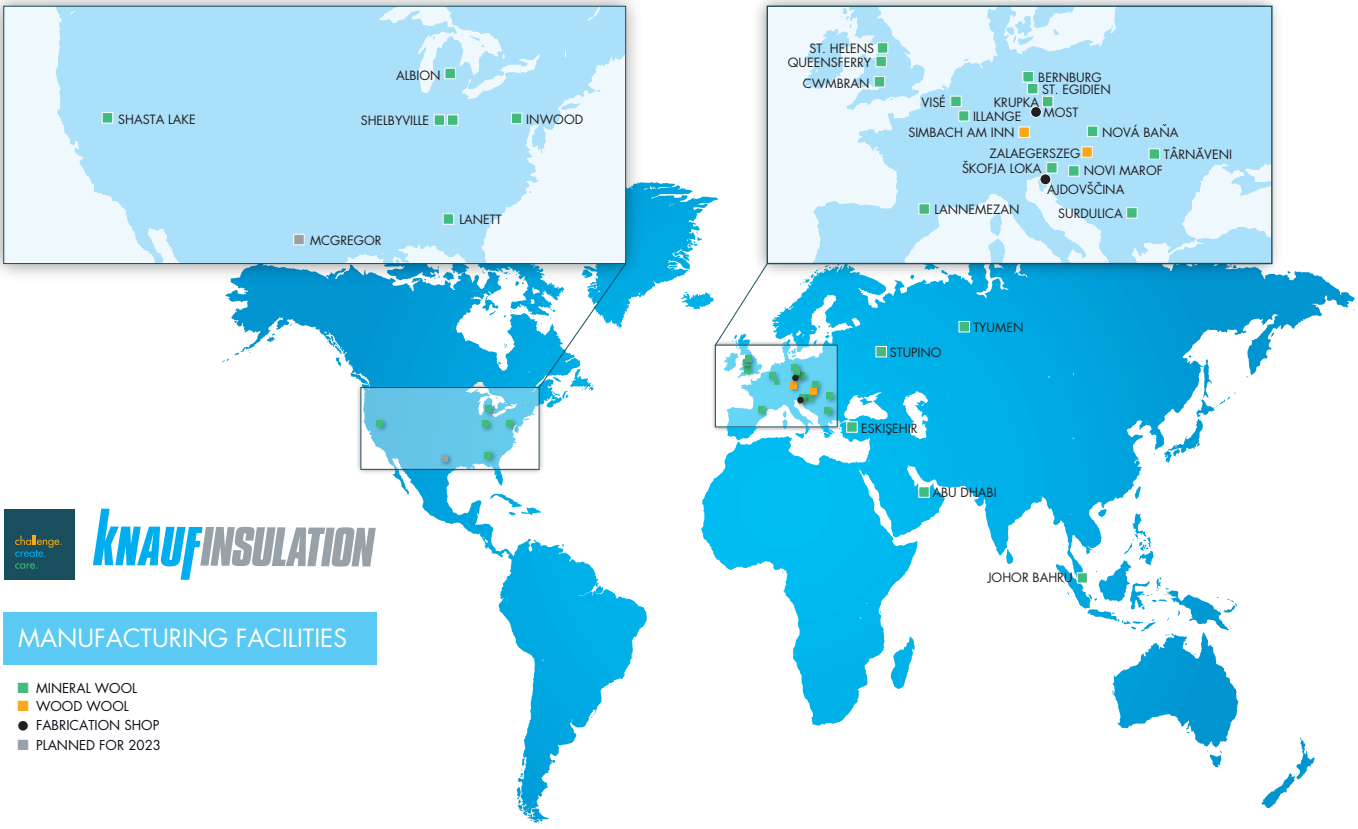
+6000
employees worldwide

28
manufacturing sites

+15
countries

We are part of the Knauf Group, a family-owned, multi-national manufacturer of building materials and construction systems.

To learn more, visit: **knaufinsulation.co.uk**



OUR ACCREDITATIONS

We're proud to have gained a number of accreditations and be able to provide our customers the assurance that our products are manufactured to the highest level of quality, having passed a series of comprehensive and rigorous assessments which ensures they're fit for purpose.

Euroclass reaction to fire classification
All of our glass mineral wool, wood wool boards and rock mineral wool slabs are non-combustible and achieve the best Euroclass A1 or A2-s1,d0 reaction to fire classification.

BBA Certification
The British Board of Agreement offers third party certification for the use of building products and systems in critical applications. We have a number of products certified, and are always seeking to increase our portfolio.

BES 6001
The BES6001 accreditation shows that our products have been made with constituent materials that have been responsibly sourced. Our BES6001 rating level is 'Very Good'.

ISO
All of our manufacturing plants are certified to ISO standards.

BRE Green Guide Rating A+
We have received the BRE Green Guide Rating A+ for the best environmental performance for the majority of our products.

EUCEB
An independent certification authority that guarantees our mineral wool products are made of certified bio-soluble fibres.

Constructzero
Knauf Insulation has been selected as a net zero 'Business Champion' by the Construction Leadership Council and Department for Business, Energy and Industrial Strategy (BEIS) for the CO2nstructZero initiative.

EN 15804
Our product specific Environmental Product Declarations (EPD) are in line with the BRE and European standard EN 15804.

Supply chain sustainability school
We have been awarded Gold status from the Supply Chain Sustainability School.

DECLARE 'Red List' Free
Our entire glass mineral wool range of products has been awarded the DECLARE 'Red List Free' label. 'Red List Free' means that our products contain no harmful chemicals from the 'Red List'. This allows product transparency disclosure that identifies where a product comes from and what it is made of.

CE Marking
All our products are CE marked where required.

Made in Britain
As a member of the Made in Britain organisation, it helps customers identify that our mineral wool products are manufactured in the UK.

Eurofins Indoor Air Comfort Gold Certified
The Eurofins Gold certification for Indoor Air Comfort means our glass and rock mineral wool products are the best-in-class low VOC emissions and are therefore the ideal solution for indoor air quality.

GLOSSARY

ASHP – Air Source Heat Pump
Air source heat pumps (ASHPs) absorb heat from the outside air to heat your home and hot water. They can still extract heat when air temperatures are as low as -15°C. Air source heat pumps need electricity to run, but because they are extracting renewable heat from the environment, the heat output is greater than the electricity input. This makes them an energy efficient method of heating your home.

BREL
Building Regulations England Part L.

Delayed Start Thermostat
The Delayed Start feature delays the start-up of the heating, depending on how warm the room temperature is at the time when the central heating is due to come on. The heating start can be delayed for up to 45 minutes if the room is already relatively warm, when the weather is milder for example.

DER – Dwelling Emission Rates
Estimated CO_2 emissions per m^2 of the floor area.

DFEE – Dwelling Fabric Energy Efficiency
The actual achieved energy demand in Kw hours per m^2 per year (kWh/yr) of a property.

DLUHC
Department for Levelling Up, Housing and Communities.

FGHR – Flue Gas Heat Recovery
This is a device that sits neatly between boiler and flue. It collects any remaining heat in the flue gas which would normally go through the flue, into the atmosphere and be wasted.

Future Homes Standard
The Future Homes Standard is a set of standards that will complement the Building Regulations to ensure new homes built from 2025 will produce 75-80% less carbon emissions than homes delivered under current regulations.

G value (glazing)
The g value of the glass simply tells us how well the glass transmits heat from the sun. It is expressed either as a percentage, or simple decimal. A g value of 1.0 (100%) would tell us that all solar heat could enter the building (so without any glass), and of 0 (0%) would be for an opaque material.

GSHP – Ground Source Heat Pump
Heat from the ground is absorbed at low temperatures into a fluid inside a loop of pipe (a ground loop) buried underground. The fluid then passes through a compressor that raises it to a higher temperature, which can then heat water for the heating and hot water circuits of the house.
The cooled ground-loop fluid passes back into the ground where it absorbs further energy from the ground in a continuous process as long as heating is required.

Heating Zones
A zoned heating and cooling system breaks your home into different areas or "zones", each controlled separately by a thermostat. Zoning your home allows for several benefits including elimination of hot and cold spots and individual control of different rooms' temperatures.

Part L/ADL
This approved document sets the standards for the energy performance of both new and existing buildings. Part L of the Building Regulations is split into four documents, each of which covers the conservation of fuel and power for different building types (new build or existing).

PV – Photovoltaic panels
Solar panels – conversion of light into electricity.

TER – Target Emission Rate
The target CO_2 emission rate sets a minimum allowable standard for the energy performance of a building and is defined by the annual CO_2 emissions of a notional building of same type, size and shape to the proposed building.

TFEE – Target Fabric Energy Efficiency
The target energy demand of a property measured in kWh/yr per m^2.

VENTILATION:

System 1
Intermittent fans and background ventilation.

System 2
Passive Stack ventilation (PSV) This utilises a mixture of the air flowing across the ceiling and the natural buoyancy of hot humid air to raise the humid, stale air from the kitchen bathroom, cloakroom, etc. up to the point of the roof ridge where it flows into the atmosphere.

System 3
Continuous Mechanical Extraction Ventilation (MEV) continuous mechanical extract ventilation system designed with multiple extract points to simultaneously draw moisture laden air out of the wet rooms (bathrooms and kitchen) providing a quieter and more efficient system compared to separate fans.

System 4
Continuous mechanical supply and extract ventilation with heat recovery (MVHR) works quite simply by extracting the air from the polluted sources e.g. kitchen, bathroom, toilets and utility rooms and supplying air to the 'living' rooms e.g. bedrooms, living rooms, studies etc. The extracted air is taken through a central heat exchanger and the heat recovered into the supply air. This works both ways, if the air temperature inside the building is colder than the outside air temperature then the cool air is maintained in the building.

Weather Compensator
WC mechanisms monitor both the internal and external temperatures and adjust the boiler's operation accordingly. Instead of the boiler firing up or turning off when a house is too cold or too hot, weather compensation monitors and maintains correct flow and return temperatures which can help reduce fluctuations in the boiler's operation.

WWHR – Waste Water Heat Recovery
This works by extracting heat out of the water from your bathtub or shower that goes down the drain pipe. The extracted heat is then used to heat the incoming mains water, so reducing the energy needed to warm your water up to temperature and reducing the workload of your boiler.(e.g. Showersave).

KNAUFINSULATION

Specification perfection.
Not as hard as it looks.

Insulation advice, tools and guidance are just a click away.

Part L 2021 is now in force for all new homes in England, but achieving compliance might not be the challenge you're expecting it to be.
The Knauf Insulation Housebuilders Hub is full of free, useful resources on Part L and the wider housebuilding sector, to help you build your ideal specification.

Scan the QR code to get started.

knaufinsulation.co.uk

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