

Multi Award Winning UK based ICF system

Say goodbye to high energy bills,
build homes which utilise less
energy than they create!



R-WALL[®]

Insulating Concrete Formwork

The Future of Building



www.r-wall.co.uk 01288 377337

R-WALL Ltd: Registered in England & Wales No. 11524972; VAT Registration No. 336792862; Registered Office: Week Orchard,
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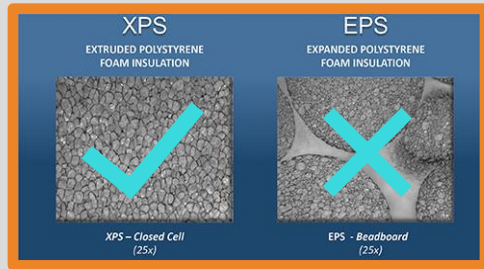


What is Insulating Concrete Formwork (ICF)?

Essentially ICF is a build method where layers of insulation are bound together to create a shuttering or formwork which remains in situ. This shuttering is then poured with concrete to form the main structure to the home. The performance of an ICF home exceeds that of other standard build methods.

What is R-WALL & how is it different?

R-WALL is a new type of ICF which offers developers, architects and homeowners an innovative new cutting-edge build system without compromise. The difference between R-WALL and other ICF systems is its use of a **higher-grade closed cell structural insulation** known as **XPS** (Extruded Polystyrene) and its **non-modularity** which **increases build speed, versatility and reduces complexity**. The XPS results in much stronger formwork and homes which **perform to a higher standard with increased longevity**.



- ✓ **Stronger higher performing formwork– use of closed cell (water impermeable) insulation**
- ✓ **Non- Modular = reduce complexity of design and build, less waste and a lower carbon footprint**
- ✓ **R-WALL is UK designed with horizontal fixing Points (every 298mm vertically) ensuring compatibility with UK metric building materials**
- ✓ **Uncongested Core, easier pouring and better concrete fill efficiencies**
- ✓ **Moveable R-Tie system and ability to alter insulation thicknesses in any location – easily accommodates I-beams, starter bars, ability to create appearance of flush claddings**

This **market leading** ICF system can achieve U-Values as low as **0.09 W/m²K** and is proud to offer one of the **lowest wall widths to U-Values** on the ICF market. The resulting superstructure boosts **lifespans in excess of 60 years, fire ratings of 4 hours and exceptional sound proofing** as well as **healthier low-cost living environments**. R-WALL is **fully BBA tested and approved and accepted by building regulations, warranty and mortgage providers**.

R-WALL is a Cornish based family run business which was founded in 2020. The entire system is **UK manufactured** and designed to meet and exceed current Building regulations R-WALL has been designed to revolutionise UK construction, building homes more quickly with less after care and with significantly reduced running costs. These homes deliver exceptional longevity, outstanding performance and more comfortable healthier living spaces. R-WALL builds have won multi awards and boosts the first home in the UK to be awarded the AECB CarbonLite plaque.



R-WALL construction in 6 easy steps!



1. Lay R-WALL starter course – onto standard footings, slab or block and beam. R-Ties move to accommodate starter bars if required.



2. Build formwork - R-Boards are 2.5m long and weigh less than 2 bags of sugar! Laying one section of R-WALL which can be completed in a matter of minutes is equivalent to laying 14 concrete blocks in one go! Lintels are formed monolithically within the system with re-bar placed in the formwork over openings (structural engineer specified)



3. Add alignment brace system & form window bucks - hired from R-WALL and placed on one side of the formwork to ensure plumb walls!



4. Pour concrete into formwork – using standard concrete mixes, placed via a concrete pump or line pump. Often to intermediate floor wall heights per pour. Once complete this is your finished superstructure and ready for the next stages.



5. Fit windows & Roof – R-WALL is compatible with any roof type, and due to the strength of the insulation, windows can be placed at any depth in the opening, fitted with conventional methods.



6. Apply internal & external Finishings – can be applied quickly and easily via battens fixed into the R-WALL, renders adhere directly to the R-WALL. Plasterboard screws into the R-Rails and electrics chase straight into the insulation – quick & simple!



So why choose R-WALL homes over other construction types?

- ✓ **Quick build speed, reduced construction delays, no heavy lifting or specialist tools** - R-WALL can be built in all weathers reducing construction delays. Follow on trades also complete at a faster rate, electrics quickly and easily chasing into the insulation and plasterboard fixes directly to the system, say goodbye to dot and dabbing and hello to your new home!
- ✓ **Energy efficient homes with reduced running costs (a recent study showed an R-WALL home cost minus £25 a year to live in!), zero cold bridging and healthier Living standards** - R-WALL's closed cell double layered insulation and solid concrete core creates highly energy efficient homes which are naturally airtight. The homes do not warp and do not suffer post construction movement; therefore, air tightness is maintained. R-WALL boosts Zero Cold Bridging preventing mould and mildew formation.
- ✓ **Advantages of Thermal Mass – increased energy efficiency-** Thermal mass is the ability of a building material to absorb, retain and store heat energy. The walls buffer outside shifts in temperature resulting in improved energy efficiency, cost savings and overall comfort of the living environment. This advantage is currently not measured by energy efficiency calculations. A recent study has shown that ICF homes typically require 32% less energy to cool and 44% less energy to heat, compared to a timber frame built to the same energy efficiency standards!
- ✓ **Greater Sound proofing – tranquillity in your home!** - Adequate sound proofing is imperative to achieving a truly comfortable living environment. A recent study revealed that less than 1/3 of sound passes through an ICF wall compared to a timber frame, with STC ratings in excess of 50+
- ✓ **Increased resistance to Fire – feel safer in your home!** –R-WALL achieves the highest possible fire rating (4 hours) in accordance with the BBA. The concrete core which maintains its Integrity during a fire, acts as a fire break, resisting its spread and makes access to emergency services safer.
- ✓ **UK based, ensuring high standards, improved logistics & supply timescales**



- ✓ **High level Storm resistance** - ICF's can withstand windspeeds over 200mph, and projectile debris travelling over 100mph! Reassurance your home will withstand the worst of mother nature!
- ✓ **Durable and low maintenance** -Buying your dream home? Make sure you invest wisely! The superstructure is the main structure of your home and as such arguably the most important investment. Failure of the main structure would mean total loss to the value of your home, therefore longevity and material resistance is hugely important. A poured ICF home is 7 times stronger than a traditional block built and concrete only gets harder with time, R-WALL's fabric being closed cell insulation doesn't rot and is totally unaffected by water! R-WALL has been awarded the maximum longevity achievable by the BBA of 60+ years, compared to timber frames often around 25 years, that's 3 times the expected lifespan! If you consider the carbon footprint of an entire build you can see why longevity is the biggest consideration to reducing carbon footprint. With other construction methods, maintenance is usually considered a necessity, or an unavoidable cost. With ICF, very little to no maintenance is required to maintain the home.
- ✓ **Built sustainably – Climate conscious and Low Carbon footprint** - Build longevity, advanced home energy efficiency and a UK base are obvious major contributors to a low carbon footprint, but R-WALL doesn't stop there. R-WALL is 93% recycled plastics, and all components are being individual are fully recyclable. Off cuts do not become waste and are utilised back into the formwork, R-WALL sends zero waste to landfill and transports flat packed. The insulation created under new science is blown using industry waste CO2 and manufactured with electric generated from wind, resulting in BREEAM A+ ratings and Ozone Depletion Potential (ODP) of 0. An R-WALL home was the first in the UK to achieve the AECB CarbonLite plaque and currently costs -£25 to run per year, including charging 2 cars!
- ✓ **Resistance to pests** - keep out those pesky unwanted intruders! The solid concrete wall and non-organic material prevent infestations from unwanted pests such as Rodents or wood worm which can be costly in repairs and even detrimental to the structural integrity with other construction methods. No worries with R-WALL!

What can R-WALL Build and who can build with it?

With the same 4 components R-WALL can build anything! It means those funky projects with curves and angles can be a reality; the non modular system offers more freedom in design and construction! R-WALL must be installed by a trained installer. A list of trained installers can be provided on request, alternatively builders or self builders can complete **the R-WALL training program** to achieve Trained Installer status. This 2-day training is often conducted on the customers site and includes installation demonstration and training attendance at first pour. R-WALL also provides unlimited telephone customer support, a written instruction manual and a library of YouTube demonstration videos. Our training and support is well received by our customers, check out our 5 Star reviews on google!



Residential housing -
detached, terraced, flats (up to
11m in height)



**Swimming Pools & Swim
Ponds**



Commercial buildings
including schools



**Basements & Retaining
Walls**



**Extensions & Period
features**



Cantilevers



**Any degree of curve &
any angle Corner**



**Any size and location of
opening**



Concrete Core Variations –
vertically or horizontally eg
retaining to non retaining



**Create Flush appearance
cladding** by altering R-Board
thicknesses



**Accommodate any
location of starter bars**
with moveable R-Ties



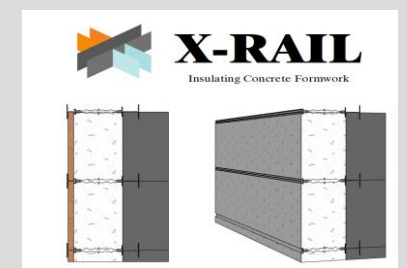
Incorporate I-beams
overcoming Thermal bridging



**Compatible with any
Roof type**



**Compatible with any
intermediate floor type**



**Create Insulated or
concrete faced walls** or a
combination of the two!

Cladding and Finishes, the unlimited choice!

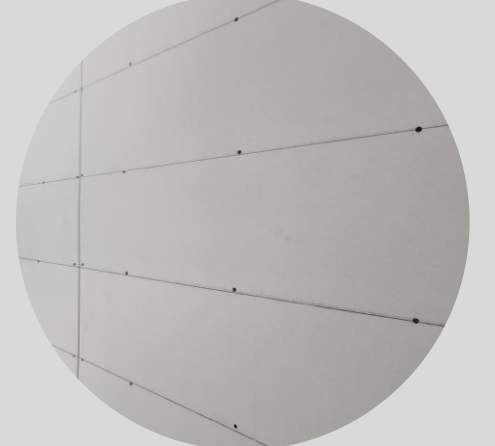
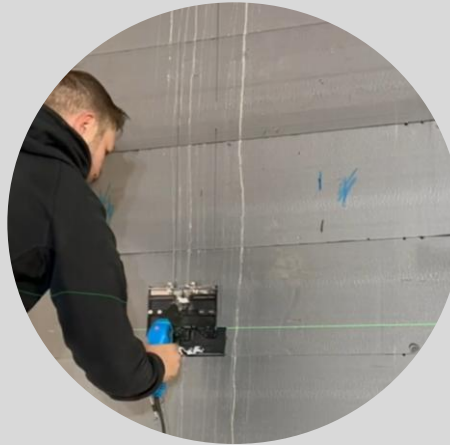
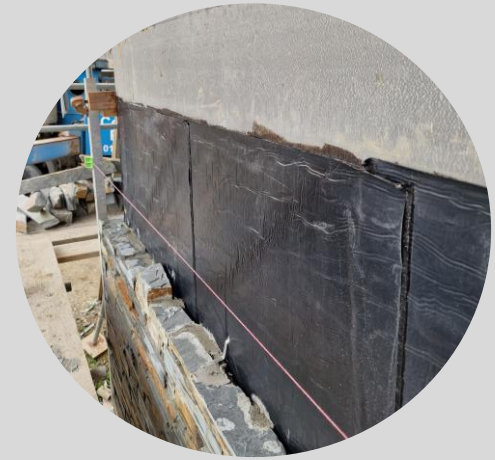
R-WALL's choice of finishes are virtually limitless. They can include, Wood, Render, Stone, Brick, Steel/Zinc and the list goes on. **Renderers are applied directly onto R-WALL** and other finishes are applied via battens secured to the R-Rails and occasional fixings to the concrete core for the heavier claddings.

Any type of doors and windows can be incorporated and due to the strength of the Insulation **windows and doors can be located anywhere** within the wall cavity not just limited to over the concrete core.

R-WALL is compatible with the UK Metric building materials unlike many other imported ICF systems. This has huge advantages both in cost and speed when applying finishes.

Plasterboard is applied directly onto the insulation, fixed to the R-Rails, no need for dot and dabbing, no need for battening off walls, no need for cutting plasterboard!

Electrics are easily chased into the polystyrene with a multitool or hot knife or simply placed in a service void. R-WALL's insulation does not contain plastic webbing and therefore this process is extremely quick and easy.



R-WALL System choices & Achievable U-Values

R-WALL can achieve U-Values as low as **0.09W/m²K**. The table to the right displays the full range of available R-WALL options, their achievable U-Values and associated wall thickness prior to finishings. To select your R-WALL system you can choose from the following;

1 Choose the R-Tie to vary the concrete core thickness

The options are as follows with core use guides (please note cores would be structural engineer specified);

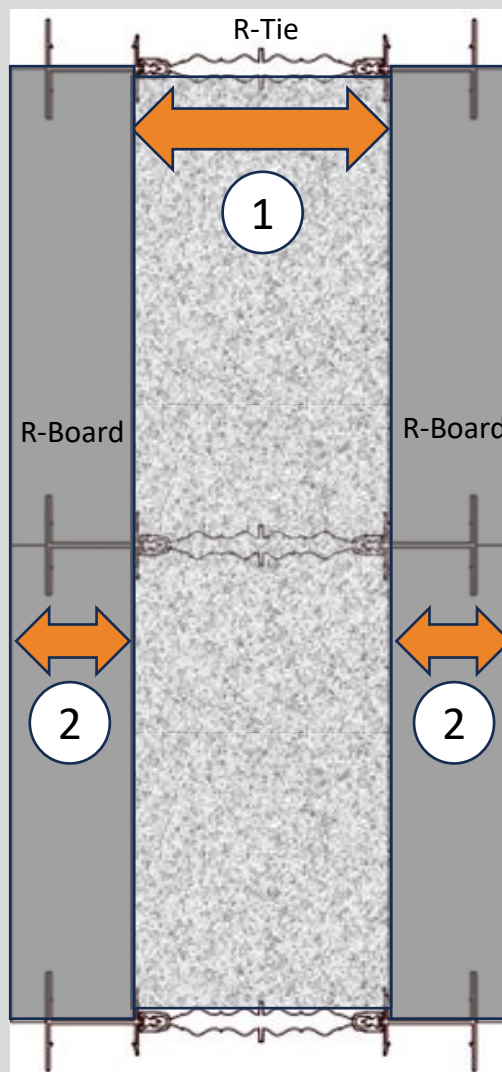
1. **105 mm (4 inch)** – Internal Walls
2. **159 mm (6 inch)** – Standard walls
3. **212 mm (8 inch)** – Retaining up to 3m
4. **262 mm (10 inch)** – Retaining 3m- 6m
5. **313 mm (12 inch)** – Retaining 6m plus

2 Choose the R-Board thickness internally and externally to decrease the U-Value and increase the energy efficiency

The options available are:

1. **Eco – 50mm**
2. **Standard – 75mm**
3. **Supreme – 100mm**
4. **Superior – 125mm**
5. **Ultimate – 150mm**

The R-Board thickness can be varied internally and externally anywhere in build making better use of thermal mass or perhaps for aesthetics eg accommodating varying thickness of wall claddings to achieve a flush finish.



R-WALL System	External Wall Insulation (mm)	Internal Wall Insulation (mm)	Achievable U-Value W/m ² K	Wall Width mm (with 159mm core)
Ultimate	150	150	0.09	459
Superior +	150	125	0.10	434
Superior	125	125	0.11	409
Supreme 150	150	100	0.11	409
Supreme +	125	100	0.12	384
Supreme	100	100	0.14	359
Standard 150	150	75	0.12	384
Standard 125	125	75	0.14	359
Standard +	100	75	0.16	334
Standard	75	75	0.18	309
Eco 150	150	50	0.14	359
Eco 125	125	50	0.16	334
Eco 100	100	50	0.18	309
Eco +	75	50	0.21	284
Eco	50	50	0.25	259

Construction Time reduction and Cost savings case studies

The cost savings achieved with using R-WALL come from quicker build speed, reduced labour costs, improved construction timescales and reduced living costs. Let's have a look at a few case studies below;

Case study 1: Canceleave, Cornwall

A luxury 4 bed bungalow set on the rugged Cornish coast. The R-WALL construction commenced in January mid Cornish winter. It was the builders first time using R-WALL and the time scale quoted for completion includes our training program (2 days onsite including pour day) and all aspects from unloading the first delivery, to completed superstructure ready for finishings internally and externally, roof and window install. The Walls and gables were poured in one day.

Build Type: **Detached 4-bedroom luxury bungalow** Date of Build: **January 2021**

Build Footprint: **165 SQM (158.71 sqm Formwork)** Formwork cost: **£12,087.36 Excl VAT**

Concrete: **25 Cubic Meters** Builders on site: **3 first time builders**

U-Value achieved: **0.14 (R-WALL Supreme system)** Airtightness: **0.65**

EPC rating: **A (102)**

R-WALL Superstructure completion time: **8 days**

Case study 2: Birdsong, Devon

A qualified Architect's own Self build family home achieving Passivhaus certification and AECB CarbonLite standards. Birdsong is the first home in the UK to be awarded the AECB CarbonLite plaque. The home utilizes Solar Panels, air source heat pumps, an MVHR system and R-WALL's under slab floor insulated system. The resulting home creates more energy than it uses, with the client's yearly cost to live in the property totaling - £25! More details can be found online by searching Birdsong self build.

Build Type: **Passivhaus standard 3 Bedroom 2 storey home** Date of Build: **October 2023**

Build Footprint: **96 SQM (247 Sqm Formwork)** Formwork cost: **£25,333.34 Excl VAT**

Concrete: **39.27 Cubic Meters** Builders on site: **4 first time builders**

U-Value achieved: **0.11 (R-WALL Supreme 150)** Air tightness: **0.24**

EPC rating: **A (112)**

R-WALL Superstructure completion time: **14 days**



R-WALL Under Slab system

R-Wall's Under slab system compliments the R-WALL Formwork by eliminating cold bridging from the ground. Enveloping the entire build in a uniform layer of insulation which connects seamlessly to the R-WALL formwork further enhancing the energy efficiency of a building. This method also reduces concrete usage and enhances the positive effects of Thermal mass. Laid effectively as a slab foundation straight onto a suitable substrate, without the need for standard foundations.

This system can be used above or below ground. The insulation is closed cell and water resistant, manufactured in the same environmental conscious way as the R-Boards.

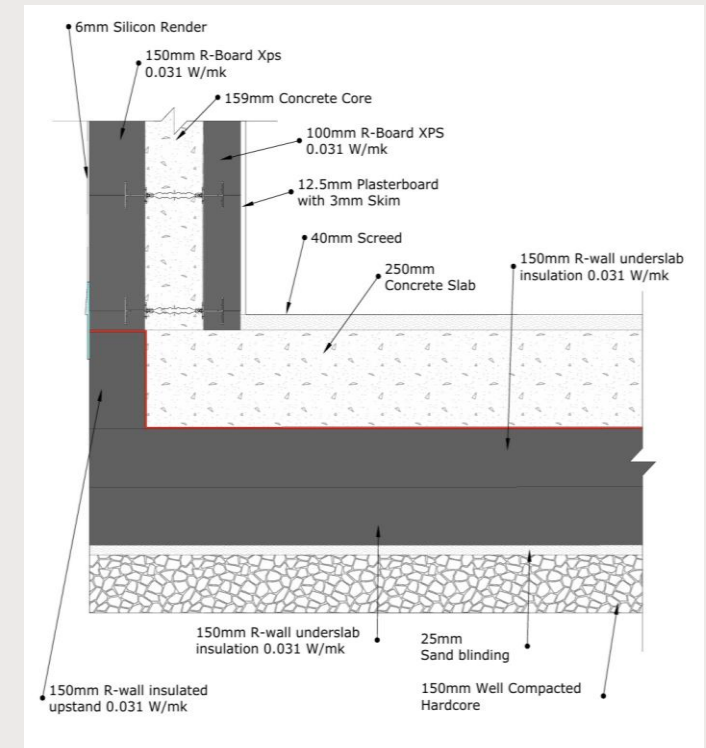
Available in thicknesses **50mm, 75mm, 100mm, 125mm and 150mm.**

Thermal Conductivity: **0.030 W/m.K (thickness below 120mm) 0.031 W/m.K (above 120mm)**

Board sizes are **2500mm x 600mm** and require double layer cross lamination.

Available in a **300 Kpa** compressive strength as standard (Domestic applications), **500 Kpa** (commercial use) and **700 Kpa** (heavy industrial).

For more details see www.R-WALL.co.uk/r-wallfloorinsulationsystem



R-WALL Tested and Approved

✓ **R-WALL is fully BBA tested and approved.** Approval certification by the BBA is considered gold standard and represents the highest level of testing in the construction industry. This level of testing results in R-WALL acceptance for;

✓ **Building regulations**

✓ **Warranty providers**

✓ **Mortgages**

R-WALL has been designed tested and approved to meet or exceed compliance bench-marks for use in loadbearing and non-loadbearing internal or external and separating walls, in domestic and non-domestic buildings subject to structural and fire considerations and building use. Certified by the BBA (if installed, used and maintained in accordance with their Certificate) to satisfy or contribute to satisfying the relevant requirements of the Building Regulations 2010 England and Wales, Building (Scotland) Regulations 2004, The Building Regulations (Northern Ireland) 2012 (See BBA Cert. 20/5809)

Steel Reinforcement: Not required as standard, but can be installed to structural engineer's specifications where required —should comply with BS 4449 : 2005

NHBC Standards 2020: In the opinion of the BBA, the R-WALL Insulating Concrete Formwork (ICF) System, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to NHBC Standards

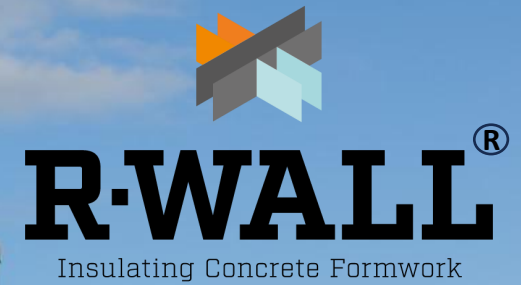


R-Board Data Sheet

Properties	Value			Unit	Standard	EN13164 Designation Code		
Thermal Conductivity Declared	0.030	≤ 120mm		W/m.K	EN 13164	λD		
	0.031	> 120mm		W/m.K				
Compressive stress or compressive strength@ 10% deformation	300			kPa	EN 826	CS(10\Y)		
Compressive Creep max after 50 years < 2% deformation under stress σC	130			kPa	EN 1606	CC(2/1.5/50)σ		
Water vapour diffusion resistance factor μ (tabulated value)	150			-	EN 12086	MU		
Long term water absorption by total immersion	< 0.7			%	EN 12087	WL(T)		
Water pick-up by diffusion	2	< 80mm		%	EN 12088	WD(V)		
	1	≥ 80mm						
Water pick up after Freeze Thaw	< 1			%	EN 12091	FTCD		
Dimensional stability under specified temperature (70°C) and humidity conditions (90%rh)	< 5			%	EN 1604	DS(70,90)		
Deformation under specified compressive load (40kPa) and temperature (70°C) conditions	< 5			%	EN 1605	DLT(2)5		
Coefficient of linear thermal expansion (typical value)	0.07			mm/(m.K)	-	-		
Fire Performance	E			Euroclass	EN 13501-1			
Temperature limits	-50/+75			°C	-			
Thickness tolerances	1			Class	EN 823	T		
Dimensions	Width	600		mm	EN 822			
	Length	2500		mm	EN 822			
Edge Profile	Butt Edge							
Surface finish	Skin							
Thermal resistance ¹								
Thickness(mm)	30	40	50	60	75	100	125	150
R _g m².K/W	1.00	1.30	1.65	2.00	2.50	3.30	4.00	4.80
DESIGNATION CODE: XPS-EN 13164-T1-CS(10\Y)300-CC(2/1.5/50)130-DS(70,90)-DLT(2)5-WL(T)0.7- WD(V)1,2,3(1)-FTCD1								

This brochure or any information provided by R-WALL or any of its representative's, should not be used as a substitute for professional structural engineering consultation which should always be sort prior to use. R-WALL does not supply any warranties as the applicability of the produce, to all or any situation, for which a designer has designated to use it. Build modifications or amendments to the product, is the responsibility of the project designer. As R-WALL has no control over installation or assembly of its product, R-WALL will not be held responsible or liable for any direct, indirect, consequential damage, special, general, or those damages, including but not limited to physical harm and/or damages of any kind suffered by any person or their property, including and not limited to the home, building or land owner, installer, contractor, architect, any member of the general public or service provider, due to installation, use or assembly of R-WALL products. Claims with respect to "fire resistance" rating taken from BS EN 1992-1-2 and based on test conducted at the wind Engineering Research Centre, for a concrete core wall of 158mm + thickness. Claims with regard to lifespan or longevity are approximate and cannot be guaranteed. R-WALL must be installed by a trained R-WALL installer in accordance with R-WALL instructions. Pouring Concrete and constructing R-WALL on building sites can be hazardous, appropriate safety measures must be adopted at all times. R-WALL components are patent protected under Intellectual property Design protection. R-WALL is a registered trademark of R-WALL Ltd.

**Build Fast
Build Energy Efficient
Build healthier
Build to last**



**Check out R-WALL's
5 Star Reviews:**

"I would highly recommend using R-WALL to anyone, It's a great building system that's simple and highly effective. The team over at R-WALL have been great throughout my build, always happy to answer the phone and to chat about any questions I may have. If I was to do another self build in the future I would definitely use R-WALL again"

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