CI/SfB (29)



<b>VIRISH AGRÉMENT BOARD</b>	
CERTIFICATE NO. 25/0448	
Energystore Ltd	
21-23 Shore Road	
Holywood, Co. Down	
BT18 9HX	
T: 00 44 (0)800 028 3046	
E: info@energystoreltd.com	
W: www.energystoreltd.com	

# energystore TLA® System

NSAI Agrément (Irish Agrément Board) is designated by Government to issue European Technical Approvals.

NSAI Agrément Certificates establish proof that the certified products are **'proper materials'** suitable for their intended use under Irish site conditions, and in accordance with TGD Part D of the second schedule of the **Building Regulations 1997 to 2024.** 



# SCOPE

This Certificate relates to the energystore TLA<sup>®</sup> System, a bound EPS (BEPS) system consisting of EPS beads, CEM(I) and CEM (II) cement and EIA proprietary additive mixed on site using a purpose-built mobile EPS mortar delivery system to meet the requirements of I.S. EN 16025-1<sup>[1]</sup> and I.S. EN 16025-2<sup>[2]</sup>.

The product is used as a thermally insulating, nonstructural, bound expanding polystyrene (BEPS) system which can contribute to the thermal and acoustic performance of floors in either new or existing buildings. It is designed to be installed in accordance with I.S. EN 16025-2<sup>[2]</sup> by Energystore Ltd approved installers.

The product may be installed:

- 1. Below a concrete floor slab.
- 2. Below a floor screed on a concrete slab with a hardcore base.
- 3. Above a suspended concrete floor (e.g., block and beam) with a floor screed.
- 4. Below a floor screed with a hardcore base.

In the opinion of NSAI, the energystore TLA® System as described in this Certificate, complies with the requirements of the Building Regulations 1997 to 2024, hereafter referred to as the Building Regulations in this Certificate.

### MANUFACTURE AND MARKETING

The product is marketed by:

Energystore Itd 21-23 Shore Road Holywood, Co. Down. BT18 9HX

E: info@energystoretld.com W: www.energystoreltd.com

And manufactured by: Energystore Ltd, Beechwalk, Limerick Street, Roscrea, Co. Tipperary.



# Part One / Certification

1

Buildings incorporating the energystore TLA® system can be designed to meet the requirements of the following clauses of the Building Regulations:

Part A – Structure A1 – Loading A2 – Ground Movement

Part B – Vol 1 Fire Safety – Buildings other than Dwellings House Vol 2 Fire Safety – Dwelling Houses B3/B8 Internal Fire Spread (Structure)

Part C – Site Preparation and Resistance to Moisture

C4 - Resistance to Weather and Ground Moisture

#### Part D – Materials and Workmanship D1 – Materials & Workmanship D3 – Proper Materials

The energystore TLA<sup>®</sup> System is comprised of 'proper materials' i.e., materials which are fit for their intended use and for the conditions in which they are to be used.

Part E- Sound E1 – Sound

Part J – Heat Producing Appliances J3 – Protection of Building

Part L – Conservation of Fuel and Energy L1 – Conservation of Fuel and Energy



# Part Two / Technical Specification and Control Data

# 2.1 **PRODUCT DESCRIPTION**

This certificate relates to the energystore TLA® System, a thermally insulating, non-structural, pumpable bound expanding polystyrene (BEPS) ballasting. The system is for internal application to ground-supported and suspended floors in existing and new domestic and non-domestic building applications. The system is available in two grades, energystore TLA110 and TLA200 depending on thermal performance and loading requirements.

Ancillary items that can form part of the overall construction, but which are outside the scope of this Certificate include:

- concrete base/slab;
- other suitable non-structural applied floor screeds including NSAI certified screeds;
- damp-proof courses, damp-proof membranes, vapour control layers and NSAI Certified radon membranes – all of these must be compatible with EPS.

# 2.2 MANUFACTURE

energystore TLA® System, comprised of grey, spherical expanded polystyrene beads (NSAI Certificate 06/0168, energystore Superbead 35, hereafter, referred to as "EPS"), cement (CEM I or CEM II to I.S. EN 197-1<sup>[4]</sup>) and Edilteco Polterm EIA additive, mixed on site with water to defined and controlled proportions using purpose built mobile screed production units or concrete batching plant to form a homogeneous, pumpable, fresh mortar to meet the requirements of I.S. EN 16025-1<sup>[1]</sup> and I.S. EN 16025-2<sup>[2]</sup>.

# 2.2.1 Quality Control

Constituent products used in the manufacture of the ballasting mix are quality controlled as part of the Certificate holders ISO  $9001^{[5]}$  Quality System. The certificate holder is also certified against ISO  $14001^{[6]}$  and ISO  $45001^{[7]}$ .

The EPS beads, coated in EIA proprietary additive, cement and water are transported to site in separate material compartments on the mobile screed factory production unit. This unit utilizes a computer controlled automatic batching process to mix the required proportions of raw materials for the required grade of ballasting and record a batching record of same.

Samples of the mixed, bound EPS ballasting are taken and tested for both apparent density and installed density against the target requirements for the defined grade, to meet the requirements of I.S EN  $16025-1^{[1]}$  and I.S EN  $16025-2^{[2]}$ .

The installed thickness is also measured with declared results recorded on the Certificate holder's declaration sheet. See Cl. 2.4.7 of this certificate.

### 2.3 DELIVERY, STORAGE AND MARKING 2.3.1 Delivery

The energystore TLA<sup>®</sup> System is delivered to site by mobile production unit. Each delivery receives a printed docket bearing the product description, product characteristics, manufacturer's name, NSAI Agrément identification mark and NSAI Agrément Certificate number for the system.

#### 2.3.2 Storage

As materials are produced on site. Only the amount required for the individual project is produced, therefore no storage requirements are necessary on site.

The energystore TLA® system includes a traceability capability and records the quantity of all constituents in the mix used.

#### 2.3.3 Handling

Installation instructions and details, outlining the steps necessary to ensure correct and safe installation/application of the system, are included in the energystore TLA® Technical Manual.

#### 2.4 INSTALLATION

#### 2.4.1 General Installation Procedures

This Certificate does not contain a complete set of installation instructions, but an overview of the procedures involved. For a full list of these instructions, refer to the Certificate holder's manuals.

The energystore TLA<sup>®</sup> system is only installed by Energystore Ltd approved installers strictly in accordance with I.S. EN 16025-2<sup>[2]</sup>.

The energystore TLA<sup>®</sup> system shall be laid as a continuous pour. Vertical upstands of insulation with a minimum thermal resistance of  $1.0m^2$ K/W should be placed at the floor slab /screed perimeter to minimize thermal bridging if required to meet guidance of the Acceptable Construction Details<sup>[8]</sup> (ACD). In addition, where thermal lightweight blocks were used (outside the scope of this certificate) they must also meet the requirements of the ACD<sup>[8]</sup>. See figures 1 and 2. Prior to installation, the building shall be inspected by the installer, to determine whether it is suitable for application of energystore TLA<sup>®</sup>.





The installation of energystore TLA<sup>®</sup> shall be carried out in accordance with I.S. EN  $16025-2^{[2]}$  and the following recommendations. The requirements of S.R.54<sup>[9]</sup> should also be considered for all retrofit applications.

# 2.4.2 Site Conditions & Preparation

The ambient temperature should have a minimum of 3 °C and rising and a maximum of 40 °C and the temperature supporting substrate should be a minimum of 5°C. Weather conditions shall be monitored in preparation for the installation to ensure that it facilitates application. In addition, where required, freshly installed BEPS should be protected from rapid drying by the sun by covering with plastic sheeting. The substrate must be clean, reasonably dry, free of grease and other impurities. The supporting substrate and structure shall be sufficiently stable and comply with TGD Part A.

# 2.4.3 Location of Services

When pipes and conduits are laid within the thickness of the BEPS, they should be firmly anchored in position. energystore TLA<sup>®</sup> shall be installed to a minimum thickness of 50 mm above the pipes. If wiring cables are to be located in the energystore TLA<sup>®</sup> system, they must be placed in conduits or appropriately shielded and rated in accordance with the requirements of I.S. 10101<sup>[31]</sup>.

# 2.4.4 Production

energystore TLA<sup>®</sup> BEPS mortar is manufactured on site to the required quantity by a mobile insulation factory (e.g., Transmix or Bremat) using the predetermined recipes for energystore TLA110 and TLA200. The mortar must be mixed for the predetermined period of time in order to obtain a homogeneous mixture and must be pumped by means of an (on-board) rotor/stator pump.

# 2.4.5 Installation

energystore TLA<sup>®</sup> can be installed directly bonded onto a suitable load bearing floor or unbonded on a separating membrane (polythene). When installing energystore TLA<sup>®</sup> to the first and subsequent floors of a building, ensure the substrate is watertight, as water may be released from the wet mortar. In such instances the energystore TLA<sup>®</sup> can be installed unbonded on a separating membrane (polythene), with min. 100mm overlaps and taped. Highly absorbent substrates i.e., dehydrated concrete should be pre-dampened, prior to TLA installations. Structural movement joints in the substrate should be followed through in the energystore TLA<sup>®</sup> BEPS mortar.

# 2.4.6 Apparent Density of The Installed Fresh Mortar

During installation, the installer shall examine the apparent density of the fresh mortar at least every

10 m<sup>3</sup> as per I.S. EN 16025-2<sup>[2]</sup>. For that purpose, at least 5 L of fresh mortar shall be put into a suitable vessel in accordance with EN 12350-6<sup>[24]</sup>. The volume of the mortar contained in the vessel shall be determined with an accuracy of  $\pm$  0,5 % and its mass with an accuracy of  $\pm$  1g.

# **2.4.7** Declared installed thickness of the installed bound EPS (BEPS)

Minimum required thickness' is pre-determined by datum and continuously measured by staff and laser level during installation. The declared installed thickness shall be recorded on the energystore TLA<sup>®</sup> Site Completion Report.

# 2.4.8 Declared installed thermal resistance

The declared thermal resistance (R-value) is calculated in accordance with I.S. EN ISO  $6946^{[12]}$  and I.S. EN ISO  $13370^{[13]}$ . The value of the declared installed thermal resistance shall be rounded downwards to the nearest 0.05 m<sup>2</sup>K/W and recorded on the energystore TLA® completion report.

# 2.4.9 Declared Installed Bound EPS Density

The declared installed bound EPS density shall be determined with an accuracy of 1 kg/m3 and shall be recorded on the completion report as per I.S. EN  $16025-2^{[2]}$ .

# 2.4.10 Readiness for Covering

Before the energystore TLA<sup>®</sup> System can be covered a "Readiness for Covering" test is to be carried out in accordance with Clause 4.7 of I.S EN 16025-2. Depending on site conditions this test can be conducted 24 hours after the energystore TLA<sup>®</sup> system has been installed.

# 2.4.11 (Heated) Floor Screed

Depending on site conditions, a minimum of 24 hours after the Readiness to Cover test, as laid out in Cl. 4.7 of I.S EN 16025-2, has been conducted and the energystore TLA® has been deemed suitable, a > 125-micron, (500 gauge) separation membrane is installed, prior to installation of underfloor heating pipes (if applicable). Edge insulation of 8mm minimum should be formed around the perimeter (walls, columns, etc.) as per BS 8204<sup>[14]</sup>. After completion of these preparation works a self-smoothing screed to BS 8204-7[14] or sand & cement screed to BS 8204-1<sup>[15]</sup> can be installed. The heating pipes or cables should be fully secured to the surface of the BEPS to prevent flotation during screeding. The manufacturer of the heating system should provide their installation details, but it is essential to ensure that the heating elements cannot float.



### 2.4.12 Laying below the floor slab

Where the energystore TLA® system is to be used below the floor slab, the hardcore should be laid in layers to meet the requirements of TGD Part C to the Irish Building Regulations. Each layer should be well-compacted with the surface blinded with quarry dust or sand to provide a suitable surface for laying a DPM (damp proof membrane) and/or radon membrane.

A DPM, e.g., 1200-gauge polythene, or a NSAI Certified radon barrier, (subject to site conditions), should be laid over the blinding with joints taped to prevent the passage of ground moisture. The DPM should be carried up the wall until it meets and seals with the DPC (damp proof course). A radon membrane, where installed, should extend to the outside of the building, following the membrane manufacturers install details.

#### 2.4.13 Laying Without a Concrete Slab

energystore TLA200 System can be laid without the need for a concrete slab in dwellings with suitable ground conditions. The system requires a floor screed to BS 8204-1<sup>[15]</sup> with a minimum compressive strength class C20 and a flexural strength class of F4 or better.

Hardcore should be laid in layers to meet the requirements of TGD Part C to the Irish Building Regulations. Each layer should be well-compacted with the surface blinded with quary dust or sand to provide a suitable surface for laying a DPM (damp proof membrane) and/or radon membrane.

A DPM, e.g., 1200-gauge polythene, or a radon barrier, (subject to site conditions), should be laid over the blinding with joints taped to prevent the passage of ground moisture. The DPM should be carried up the wall until it meets and seals with the DPC (damp proof course). An NSAI certified radon membrane, where installed, should extend to the outside of the building, following the membrane manufacturers install details.



Figure 1 energystore TLA® Above Slab





Figure 2 energystore TLA® Below Slab



Figure 3 energystore TLA® Without Slab

# Part Three / Design Data

# 3.1 GENERAL

The energystore TLA® system, when used in conjunction with concrete base/slabs or well compacted gravel on a DPM//radon membrane, and suitable applied floor finishes as specified in this Certificate, is effective for use as an insulated screed mortar (BEPS).

# 3.2 STRENGTH

The system when installed in accordance with the manufacturer's instructions and this Certificate, including a suitable floor screed to BS  $8204^{[15]}$ , will resist the loads likely to be met during installation and in service. See table 2. The certificate holder can offer additional guidance in this regard.

3



# 3.3 SERVICES

The installed and cured energystore TLA® system can accommodate underfloor heating systems. The maximum continuous working temperature of EPS is 50°C. Where underfloor heating systems are to be used, the advice of the Certificate holder should be sought.

When the source of space heating is underfloor heating, the maximum floor U-value shall be 0.15  $W/m^2K$  as per TGD Part L, and the Energystore TLA<sup>®</sup> System will satisfy this requirement (See Table 3 - 4 of this certificate).

The energystore TLA<sup>®</sup> BEPS system fully encapsulates services where installed and leaves no uninsulated voids.

U-values may be affected by addition of any services installed prior to the application of the energystore  $TLA^{(R)}$  BEPS and should be considered when calculating the overall U-value of the floor.

# **3.4 THERMAL PERFORMANCE**

The overall floor U-value will depend significantly on the deck U-value, the ratio of the exposed (and semi-exposed) floor perimeter length to floor area (P/A), the amount of underfloor ventilation and the ground thermal conductivity. Each floor Uvalue should be calculated in accordance with I.S. EN ISO 13370<sup>[13]</sup>. See tables 3- 4 which offer sample U-Values for various P/A scenarios, highlighting current building regulation target values for retrofit and new build applications.

Where the target U-values cannot be achieved using the energystore TLA® system, additional measures may have to be considered. Reference shall always be made to the latest Building Regulation TGD Part L guidance when determining the required product thickness. The energystore TLA® system can help a floor to achieve and surpass back stop elemental U-values depending on the product/thickness used.

#### 3.5 LIMITING THERMAL BRIDGING

Care must be taken in the overall design and construction of junctions between the floor and external, internal and party walls, to limit excessive heat loss and air infiltration.

Where necessary, ' $\Psi'$  values for junctions should be assessed by a member of an approved thermal modellers scheme such as an NSAI approved thermal modeller.

# 3.6 SURFACE CONDENSATION

Floors will adequately limit the risk of surface condensation when the thermal transmittance (U-value) does not exceed  $0.7W/m^2K$  at any point and the junctions with walls are in accordance with the relevant requirements of BRE Information Paper IP  $1/06^{[18]}$ .

Junction designs are acceptable when the temperature factor,  $f_{Rsi}$ , modelled in accordance with I.S. EN ISO  $10211^{[19]}$  and BR  $497^{[20]}$ , meets or exceeds the critical temperature factors,  $f_{CRsi}$ , detailed in Tables 1 and 2 of BRE Information Paper IP  $1/06^{[18]}$  for the relevant building type.

The energystore TLA® system will prevent the inclusion of any gaps through the insulation at service penetrations thus minimising the risk of surface condensation at these locations.

# 3.7 WATER PROOFING

Floor screeds in bathrooms should be adequately waterproofed by using a continuous waterproofing membrane prior to the installation of the final floor finish. Additional guidance can be sought from the certificate holder as required.

# Part Four / Technical Investigations

#### 4.1 FIRE

In the event of a fire, energystore TLA<sup>®</sup> will be contained within the floor by a mineral underlay and screed overlay until the screed overlay itself is destroyed. Therefore, it is considered that the system will not contribute to the developmental stage of a fire or present a smoke or toxic hazard.

energystore TLA<sup>®</sup> 110 and 200 achieved an A2-s1, d0 reaction to fire classification per I.S. EN 13501- $1^{[21]}$ . See table 2.

#### 4.2 THERMAL PERFORMANCE

When tested in accordance with I.S. EN 12667<sup>[22]</sup> the thermal conductivity  $\lambda$  90/90 of the products have been declared as shown in Table 1.

Table 1					
Thermal Conductivity					
λ 90/90 per EN 12667 <sup>[22]</sup> - W/mK					
TLA110	0.043				
TLA200	0.054				

Examples of U-value calculation results are given in Table 3 & 4 of this Certificate for a range of P/A ratios.

In addition, in-situ measurements of apparent density of the installed fresh mortar, declared installed thickness of the bound EPS mortar and declared installed thermal resistance are determined and recorded in accordance with the requirements of I.S. EN 16025-2<sup>[2]</sup>.



# 4.3 STRENGTH

Density values for the energystore TLA® range of floor insulation products, tested in accordance with the requirements of I.S. EN 16025-1<sup>[1]</sup> are shown in Table 2 of this certificate. The Compressive strength, Compressibility, Creep and Dynamic Stiffness characteristics were also tested. See Table 2 for details.

# 4.4 **RESISTANCE TO MOISTURE**

Tests were performed to determine the resistance of the product range to water absorption by short term partial immersion, See Table 2 for details.

When installed in accordance with this certificate, with DPC and radon membrane (where applicable) the Energystore TLA<sup>®</sup> range of floor insulation products will not be exposed to ground moisture.

# 4.5 DURABILITY AND MAINTENANCE

The energystore TLA<sup>®</sup> System, has been assessed against the requirements of I.S. EN 16025-1<sup>[1]</sup> and I.S. EN 16025-2<sup>[2]</sup> and are judged to be stable and will remain effective as an insulation system for the life of the building, once designed, manufactured and installed in accordance with this Certificate and the manufacturer's instructions.

As the product is confined and protected under the top screed and final floor covering, it will remain durable without the necessity for maintenance.

It is important to note that alterations to the building structure, subsequent to the installation of energystore TLA<sup>®</sup> must take into account the integrity of the energystore TLA<sup>®</sup> System. Guidance from the certificate holder should be sought in all such instances.

# 4.6 SOUND

As per EN 16025-1<sup>[1]</sup>, dynamic stiffness, compressibility, and installed thickness have been tested and determined (see Table 2) to allow the calculation of the Impact Noise Transmission Index.

As per TGD Part E, all building, post completion must be subjected to acoustic testing. In all cases, where applicable, the values achieved for buildings incorporating the energystore TLA<sup>®</sup> System on separating floors design must meet TGD Part E requirements (i.e., impact  $\leq$ 58db, airbome  $\geq$ 53db).

#### 4.7 TESTS AND ASSESSMENTS WERE CARRIED OUT IN ACCORDANCE WITH I.S. EN 16025-1<sup>[1]</sup> TO DETERMINE THE FOLLOWING (See table 2 for details):

- Density (Apparent and Bound)
- Thermal conductivity
- Reaction to Fire
- Compressive strength
- Compressibility
- Creep
- Dynamic stiffness
- Water vapour diffusion resistance retransmission
- Water absorption
- Efficiency of the installation/application process
- Determination of product designation code

# 4.8 OTHER INVESTIGATIONS

- (i) The manufacturing process was examined, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.
- (ii) Site visits were conducted to assess the practicability of installation and the history of performance in use of the product.
- (iii) The certificate holder's installation control documentation was assessed, as well as the technical support to, and control of, installers of the system.
- (iv) All relevant installation control requirements of I.S. EN 16025-2<sup>[2]</sup> were reviewed and considered satisfactory.



Table 2energystore TLA® Characteristics to I.S. EN 16025-1 <sup>[1]</sup>					
Essential	Perfor	Test Standard			
Characteristics	110	200			
Designation Code	BEPS-EN16025-1-PS6-D0-N- FMD190-DMD110-MU20- CS(10)200-CC(0.7/0.7/10)6.5- SD71-CP1.25	BEPS-EN16025-1-PS6-D0-N- FMD335-DMD200-MU20- CS(10)600-CC(0.5/0.5/10)6.5- SD148-CP0.8	EN 16025-1		
Particle size group of EPS	≤ 6mm	≤ 6mm	EN 933-1		
Apparent density of fresh mortar $\pm 10\%$	190 kg/m3	335 kg/m3	EN12350-6		
Thermal Conductivity $\lambda$ 90/90	0.043 W/mK	0.054 W/mK	EN 12667		
Bound EPS Density $\pm$ 10%	110 kg/m3	200 kg/m3	EN 1602		
Reaction to Fire	Class A2, S1-d0	Class A2, S1-d0	EN 13501-1		
Compressive Strength $\sigma_{10}$	CS (10) 200 kPa	CS (10) 600 kPa	EN 826		
Compressibility	1.25mm	0.8mm	EN 12431		
Creep	CC (0.7/0.7/10) 3.5 CC (0.5/0.5/   CC (0.7/0.7/10) 6.5 CC (0.5/0.5/   CC (0.75/0.75/10) 10 CC (0.5/0.5/		3.5 6.5 EN 1606 10		
Water Vapour Diffusion Resistance	5 to 20	5 to 20	EN 12086		
Water absorption by short term partial immersion	≤2.6 kg/m2	≤2.6 kg/m2	EN 1609		
Dynamic Stiffness	71 MN/m3	148 MN/m3	EN 29052-1		



Table 3: Ground Floor Construction Typical U-values (W/m <sup>2</sup> K)						
New/Existing Buildings Part L 2019						
energystore TLA 110   $\lambda$ 90/90 = 0.043 W/mK   $\lambda$ Ground 2.0 (soil) / Wall thickness 350mm						
	Perimeter/Area (m <sup>2</sup> )					
energystore TLA <sup>®</sup> Thickness	0.2	0.3	0.4	0.5	0.6	0.7
100mm	0.21	0.24	0.26	0.28	0.29	0.30
110mm	0.20	0.23	0.24	0.26	0.27	0.28
120mm	0.19	0.22	0.23	0.25	0.25	0.26
130mm	0.18	0.20	0.22	0.23	0.24	0.25
140mm	0.17	0.19	0.21	0.22	0.23	0.23
150mm	0.17	0.19	0.20	0.21	0.22	0.22
160mm	0.16	0.18	0.19	0.20	0.21	0.21
170mm	0.15	0.17	0.18	0.19	0.20	0.20
180mm	0.15	0.16	0.18	0.18	0.19	0.19
190mm	0.14	0.16	0.17	0.18	0.18	0.18
200mm	0.14	0.15	0.16	0.17	0.17	0.18
210mm	0.13	0.15	0.16	0.16	0.17	0.17
220mm	0.13	0.14	0.15	0.16	0.16	0.16
230mm	0.12	0.14	0.15	0.15	0.15	0.16
240mm	0.12	0.13	0.14	0.15	0.15	0.15
250mm	0.12	0.13	0.14	0.14	0.14	0.15

• Those values shown in blue text fall below the required target values for new build (are relevant for retrofit applications only).

Table 4: Ground Floor Construction Typical U-values (W/m <sup>2</sup> K)						
New Buildings Part L 2019						
energystore TLA 200   $\lambda$ 90/90 = 0.054 W/mK / $\lambda$ Ground 2.0 (soil) / Wall thickness 350mm						
	Perimeter/Area (m <sup>2</sup> )					
energystore TLA <sup>®</sup> Thickness	0.2	0.3	0.4	0.5	0.6	0.7
100mm	0.23	0.27	0.30	0.32	0.33	0.35
110mm	0.22	0.26	0.28	0.30	0.31	0.33
120mm	0.21	0.25	0.27	0.28	0.30	0.31
130mm	0.20	0.24	0.25	0.27	0.28	0.29
140mm	0.20	0.22	0.24	0.26	0.27	0.28
150mm	0.19	0.21	0.23	0.25	0.26	0.26
160mm	0.18	0.21	0.22	0.24	0.24	0.25
170mm	0.18	0.20	0.21	0.23	0.23	0.24
180mm	0.17	0.19	0.21	0.22	0.22	0.23
190mm	0.17	0.18	0.20	0.21	0.22	0.22
200mm	0.16	0.18	0.19	0.20	0.21	0.21
210mm	0.15	0.17	0.19	0.19	0.20	0.20
220mm	0.15	0.17	0.18	0.19	0.19	0.20
230mm	0.15	0.16	0.17	0.18	0.19	0.19
240mm	0.14	0.16	0.17	0.17	0.18	0.18
250mm	0.14	0.15	0.16	0.17	0.17	0.18

• Those values shown in blue text fall below the required target values for new build (are relevant for retrofit applications only).



# Part Five / Conditions of Certification

**5.1** National Standards Authority of Ireland ("NSAI") following consultation with NSAI Agrément has assessed the performance and method of installation of the product/process and the quality of the materials used in its manufacture and certifies the product/process to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this Certificate and in accordance with the manufacturer's instructions and usual trade practice. This Certificate shall remain valid for five years from date of latest revision so long as:

- (a) the specification of the product is unchanged.
- (b) the Building Regulations and any other regulation or standard applicable to the product/process, its use or installation remains unchanged.
- (c) the product continues to be assessed for the quality of its manufacture and marking by NSAI.
- (d) no new information becomes available which in the opinion of the NSAI, would preclude the granting of the Certificate.
- (e) the product or process continues to be manufactured, installed, used, and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.
- (f) the registration and/or surveillance fees due to NSAI are paid.

**5.2** The NSAI Agrément mark and certification number may only be used on or in relation to product/processes in respect of which a valid Certificate exists. If the Certificate becomes invalid the Certificate holder must not use the NSAI Agrément mark and certification number and must remove them from the products already marked.

**5.3** In granting Certification, the NSAI makes no representation as to;

- (a) the absence or presence of patent rights subsisting in the product/process; or
- (b) the legal right of the Certificate holder to market, install or maintain the product/process; or
- (c) whether individual products have been manufactured or installed by the Certificate holder in accordance with the descriptions and specifications set out in this Certificate.

**5.4** This Certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.

**5.5** Any recommendations contained in this Certificate relating to the safe use of the certified product/process are preconditions to the validity of the Certificate. However, the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this Certificate will satisfy the requirements of the Safety, Health and Welfare at Work Act 2005, or of any other current or future common law duty of care owed by the manufacturer or by the Certificate holder.

**5.6** The NSAI is not responsible to any person or body for loss or damage including personal injury arising as a direct or indirect result of the use of this product or process.

**5.7** Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certification.





# NSAI Agrément

This Certificate No. **25/0448** is accordingly granted by the NSAI to **Energystore Limited** on behalf of NSAI Agrément.

Date of Issue: 20th May 2025

Signed

15 only

Kevin D. Mullaney Director of Certification, NSAI

Readers may check that the status of this Certificate has not changed by contacting NSAI Agrément, NSAI, 1 Swift Square, Northwood, Santry, Dublin 9, Ireland. Telephone: (01) 807 3800. Fax: (01) 807 3842. <u>www.nsai.ie</u>



#### **Bibliography**

- [1] I.S. EN 16025-1: 2013: Thermal and/or sound insulating products in building construction Bound EPS ballastings Part 1: Requirements for factory premixed EPS dry plaster.
- [2] I.S. EN 16025-2. 2013: Thermal and/or sound insulating products in building construction Bound EPS ballastings Part 2: Processing of the factory premixed EPS dry plaster.
- [3] I.S. EN 13163:2012+A1:2016; Thermal insulation products for buildings Factory made expanded polystyrene (EPS) products Specification.
- [4] I.S. EN 197-1:2011 Cement Part 1: Composition, specifications and conformity criteria for common cements.
- [5] ISO 9001: 2015: Quality management systems Requirements.
- [6] ISO 14001: 2015: Environmental management systems Requirements with guidance for use.
- [7] ISO 45001: 2018: Occupational health and safety Requirements with guidance for use.
- [8] Acceptable Construction Details (ACD) to TGD Part L: 2021 Edition. Published by DoHLGH
- [9] S.R.54: 2019: Code of practice for the energy efficient retrofit of homes.
- [10] I.S. EN 1991-1-1: 2002: Eurocode 1: Actions on structures part 1-1: general actions densities, self-weight, imposed loads for buildings (including Irish national annex 2013).
- [11] I.S. EN 1602:2013: Thermal insulation products for building applications Determination of the apparent density.
- [12] I.S. EN ISO 6946:2017: Building components and building elements Thermal resistance and thermal transmittance Calculation method.
- [13] I.S. EN ISO 13370:2017: Thermal performance of buildings Heat transfer via the ground Calculation methods.
- [14] BS 8204-7: 2003: Screeds, bases and in-situ floorings Pumpable self-smoothing screeds Code of Practice.
- [15] BS 8204-1: 2003+A1:2009: Screeds, bases and insitu flooring Concrete bases and cementitious levelling screeds to receive floorings Code of Practice.
- [16] BS 8102:2022: Protection of below ground structures against water ingress. Code of practice .
- [17] CP 102:1973: Code of practice for the protection of buildings against water from the ground (as read with AMD 1511, AMD 2196 and AMD 2470.
- [18] BRE IP 1/06: Assessing the effects of thermal bridging at junctions and around openings.
- [19] I.S. EN ISO 10211:2017: Thermal bridges in building construction Heat flows and surface temperatures Detailed calculations.
- [20] BRE Report BR 497: Conventions for calculation linear thermal transmittance and temperature factors.
- [21] I.S. EN 13501-1:2018: Fire classification of construction products and building elements Part 1: Classification using data from reaction to fire tests.
- [22] I.S. EN12667: Thermal performance of building materials and products Determination of thermal resistance by means of guarded hot plate and heat flow meter methods Products of high and medium thermal resistance.
- [23] I.S. EN 993-1: Tests for geometrical properties of aggregates Part 1: Determination of particle size distribution Sieving method.
- [24] I.S. EN 12350-6: Testing fresh concrete Part 6: Density.
- [25] I.S. EN 826: Thermal insulating products for building applications Determination of compression behaviour.
- [26] I.S. EN 12431: Thermal insulating products for building applications Determination of thickness for floating floor insulating products.
- [27] I.S. EN 1606: Thermal insulating products for building applications Determination of compressive creep.
- [28] I.S. EN 12086: Thermal insulating products for building applications Determination of water vapour transmission properties.



- [29] I.S. EN 1609: Thermal insulating products for building applications Determination of short-term water absorption by partial immersion.
- [30] I.S. EN 29052-1: Acoustics Determination of dynamic stiffness Part 1: Materials used under floating floors in dwellings.
- [31] I.S. 10101: 2020: National Rules for Electrical Installations.