

# JUB

## External Thermal Insulation Composite Systems

### Système d'isolation pour murs extérieurs

**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 the **Building Regulations 1997 to 2017**.



#### PRODUCT DESCRIPTION:

The JUB External Thermal Insulation Composite Systems (ETICS) comprise insulation board (bonded and mechanically fixed) with reinforced undercoat, and decorative finishes as described in the accompanying Detail Sheets:

- JUB - Jubizol EPS Systems (Detail Sheet 1)
- JUB - Jubizol MW System (Detail Sheet 2)

These external thermal insulation composite systems (ETICS) are each comprised of:

- Surface preparation of masonry or concrete substrate.
- Base profile and corner profile.
- Adhesive.
- Insulation board:
  - Expanded Polystyrene (EPS) - Standard white.
  - Mineral Wool (MW).
  - Expanded Polystyrene (EPS) - Grey/Graphite
- Mechanical fixings.
- Base coat with reinforcement.
- Glass fibre mesh reinforcement.
- Primer coat.

- Finishing coat.
- Weather-tight joints.
- Movement joints.
- Provision for limiting cold bridging at external wall/floor junctions in compliance with Acceptable Construction Details published by the DoEHLG (Department of the Environment, Heritage and Local Government).
- Provision for fire stopping at external compartment walls and floors.

JUB is responsible for the design manufacture and supply of all components to approved specifications, in accordance with the JUB approved supplier system.

The installation of each system is carried out by installers who have been trained by JUB and are approved by JUB and NSAI Agrément to install the system.

This Certificate certifies compliance with the requirements of the Building Regulations 1997 to 2017. Reference should be made to the appropriate data sheets for fire classification of each ETICS systems.

**USE:**

The systems are for use as an external insulation of for refurbishment/retrofit of existing masonry or concrete as follows:

- Systems that achieved a Class A2 or B (non-combustible or semi-combustible) Reaction to Fire Classification (see Table 3 of each of the Detail sheets) are suitable for use up to a maximum of six storeys (18m) in height on purpose groups 1(a), 1(c), 2(a), 2(b), 3, 4(a) and 4(b), and for use up to a maximum of five storeys (15m) in height in purpose group 1(b) as defined in TGD to Part B of the Building Regulations 1997 to 2017.
- Systems that achieved a Class C Reaction to Fire Classification (see Table 3 of each of the Detail sheets) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 15m high and for Flats and Maisonettes (Purpose Group 1(c)) not more than 10m high as defined in TGD to Part B of the Building Regulations 1997 to 2017. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.1 and 4.2 of TGD to Part B of the Building Regulations 1997 to 2017.
- Systems for which no Reaction to Fire performance has been determined (see Table 3 of each of Detail sheets 1 and 2) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 15m high. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.1 and 4.2 of TGD to Part B of the Building Regulations 1997 to 2017.

For all systems, reference should also be made to Table 2 of each of the Detail Sheets of this Certificate for the Impact Classifications that apply and any resulting restrictions imposed.

The systems have not been assessed for use with timber frame or steel frame construction.

In an Irish context, Category II 'Impact Resistance' (See Table 2 of each of the Detail sheets) excludes any wall at ground level adjacent to a public footpath, but includes one with its own private, walled in garden. Class III does not included any wall at ground level.

**MANUFACTURE, DESIGN AND MARKETING:**

The system is designed and manufactured by:

JUB d.o.o.  
Dol pri Ljubljani 28  
SI-1262 Dol pri Ljubljani  
Slovenia

Project Specific Design, Technical  
Support, Applicator Approval, Supply:

JUB Systems UK Ltd,  
The Meridian  
4 Copthall House  
Station Square  
Coventry  
CV1 2FL  
United Kingdom  
Tel: +44 845 688 9866  
Fax: +44 845 688 9877  
e-mail: [info@jub.org.uk](mailto:info@jub.org.uk)  
website: [www.jub.org.uk](http://www.jub.org.uk)

Installation:  
JUB Licensed Applicators.

JUB is responsible for the design and supply of all components to approved specifications, in accordance with the JUB approved supplier system.

**1.1 ASSESSMENT**

In the opinion of NSAI Agrément, the JUB External Thermal Insulation Composite Systems if used in accordance with this Certificate can meet the requirements of the Building Regulations 1997 to 2017, as indicated in Section 1.2 of this Agrément Certificate.

**1.2 BUILDING REGULATIONS 1997 to 2017****REQUIREMENTS:*****Part D – Materials and Workmanship*****D3 – Proper Materials**

The JUB External Thermal Insulation Composite Systems, as certified in this Certificate, are comprised of 'proper materials' fit for their intended use (see Part 3 and 4 of this Certificate).

**D1 – Materials & Workmanship**

The JUB External Thermal Insulation Composite Systems, as certified in this Certificate, meet the requirements for workmanship.

***Part A - Structure*****A1 – Loading**

The JUB External Thermal Insulation Composite Systems once appropriately detailed, designed and installed have adequate strength and stability to meet the requirements of this Regulation (see Part 3 of this Certificate).

**A2 – Ground Movement**

The JUB External Thermal Insulation Composite Systems can be incorporated into structures that will meet this requirement (see Parts 3 and 4 of this Certificate).

***Part B – Fire Safety******Part B Vol 2 – Fire Safety*****B4 & B9 – External Fire Spread**

The JUB External Thermal Insulation Composite Systems can be incorporated into structures that will meet this requirement (see Part 4 of this Certificate and Table 3 of each of the applicable Detail Sheets).

***Part C – Site Preparation and Resistance to Moisture*****C4 – Resistance to Weather and Ground Moisture**

External walls have adequate weather resistance in all exposures to prevent the passage of moisture from the external atmosphere into the building as specified in Part 3 and 4 of this Certificate.

***Part J – Heat Producing Appliances*****J3 – Protection of Building**

When the JUB External Thermal Insulation Composite Systems are used in accordance with this Certificate, wall lining, insulation and separation distances meet this requirement. See Part 4 of this Certificate.

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

The walls of the JUB External Thermal Insulation Composite Systems can be readily designed to incorporate the required thickness of insulation to meet the Elemental Heat Loss method calculations for walls as recommended in TGD to Part L of the Building Regulations 1997 to 2017 (see Table 1 Part 4 of this Certificate).

## 2.1 PRODUCT DESCRIPTION

Each of the JUB External Thermal Insulation Composite Systems is given a detailed description in the relevant Detail Sheets.

## 2.2 MANUFACTURE, SUPPLY AND INSTALLATION

JUB is responsible for the design manufacture and supply of all components to approved specifications, in accordance with the JUB approved supplier system. JUB and their approved Irish Agents/Distributors are responsible for:

- Project specific design in accordance with approved design process;
- Training, monitoring and review of licensed applicators in accordance with approved training and assessment procedures;
- Product supply;
- Technical support;
- Sales and marketing.

The installation of each system is carried out by the Certificate Holder's trained and approved installers in accordance with the Certificate Holder's project specific specifications and method statements.

Installers must also be approved and registered by NSAI Agrément as part under the NSAI Agrément Approval Scheme for installers of External Thermal Insulating Composite Systems (ETICS). See Cl. 2.4.1

### 2.2.1 Quality Control

The Certificate holder operates a quality management system and a quality plan is in place for system manufacture, design and installation.

## 2.3 DELIVERY, STORAGE AND MARKING

The insulation is delivered to site in packs. Each pack is marked with the manufacturer's details, product identification marks and batch numbers.

See Table 1 of each Detail Sheet for the designation code that must be included on the on the insulation identification label.

Insulation should be stored on a firm, clean, dry and level base, which is off the ground. The insulation should be protected from prolonged exposure to sunlight by storing opened packs under cover in dry conditions or by re-covering with opaque polythene sheeting.

Care should be taken when handling the insulation boards to avoid damage and contact with solvents or bitumen products. The boards must not be exposed to ignition sources.

Each container for other components, e.g. mesh cloth, primers, renders etc., bears the manufacturer's and product's identification marks, batch number and the NSAI Agrément logo incorporating the Certificate number. These components must be stored in accordance with the manufacturer's instructions, in dry conditions, and at the required storage temperatures. They should be used within the stated shelf life, where applicable.

## 2.4 INSTALLATION

### 2.4.1 Approved installers

Installation shall be carried out by the Certificate Holder's trained applicators who:

- 1) Are required to meet the requirements of an initial site installation check by NSAI Agrément prior to approval and are subject to the NSAI Agrément ETICS Approval Scheme.
- 2) Are approved by the Certificate Holder and NSAI Agrément to install the product.
- 3) Have undertaken to comply with the Certificate Holders installation Procedure.
- 4) Are employing Supervisors and Operatives who have been issued with appropriate identity cards by the Certificate Holder. Each team must consist of at least one ETICS Operative and ETICS Supervisor (can be the same person).
- 5) Are subject to supervision by the Certificate Holder including unannounced site inspections (and office records) by both the Certificate Holder/Distributor and NSAI Agrément, in accordance with the NSAI Agrément ETICS Approval Scheme.

### 2.4.2 General

The Certificate Holder prepares a bespoke site package for each project, including U-value calculations, requirements for materials handling and storage, method statements for installation, building details, fixing requirements, provision for impact resistance, maintenance requirements etc.

This document forms part of the contract documentation for circulation to the home owner and the installer. Installers will be expected to adhere to the specification. Deviations must be approved by a technical representative of the Certificate Holder.

The Certificate Holders technical representatives will visit the site on a regular basis to ensure that work is carried out in accordance with the project specific site package, including the Certificate holder's installation manual.

Mineral fibre board and lamella should be protected from moisture prior to and during installation. It may be necessary to remove and replace any unsuitable/wet material.

External works that leave the external appearance of the building inconsistent with neighbouring buildings may require planning permission. The status of this requirement should be checked with the local planning authority as required.

### 2.4.3 Site Survey and Preliminary Work

A pre-installation survey of the property shall be carried out and recorded to confirm suitability of substrate for application of the ETICS System including, modifications/repairs necessary, pullout resistance of proposed mechanical fixings etc. The substrate must be free of water repellents, dust, dirt, efflorescence and other harmful contaminants or materials that may interfere with the adhesive bond. Remove projecting mortar or concrete parts mechanically as required. Loose or flaking elements should be removed. Internal wet work e.g. screeding or plastering, should be completed and allowed to dry, prior to system application.

Where discrepancies preventing installation of the JUB External Thermal Insulation Composite Systems in accordance with this Certificate and the Certificate holder's instructions exist, these discrepancies should be discussed with the Certificate holder and a solution implemented with the approval of the Certificate holder.

### 2.4.4 Application Procedure

- Prepare substrate in accordance with the project specific site package. This will include brushing down of walls, washing with clean water and treatment with a fungicidal wash as required.
- Weather conditions must be monitored to ensure correct application and curing conditions. Application of coating materials should not be carried out below 5°C or above 25°C, nor if exposure to frost is likely. JUB ETICS adhesives can be applied in temperature between 0°C and 5°C on a rising scale only. Until fully cured, the coatings must be protected from rapid drying, precipitation, direct sunlight and strong wind.
- Refer to the site package for guidance on modifications of down pipes, soil and vent pipes, pipe extensions etc. Where possible, all pipe work should be relocated as required to accommodate the Insulation. Where pipe work can not be re-

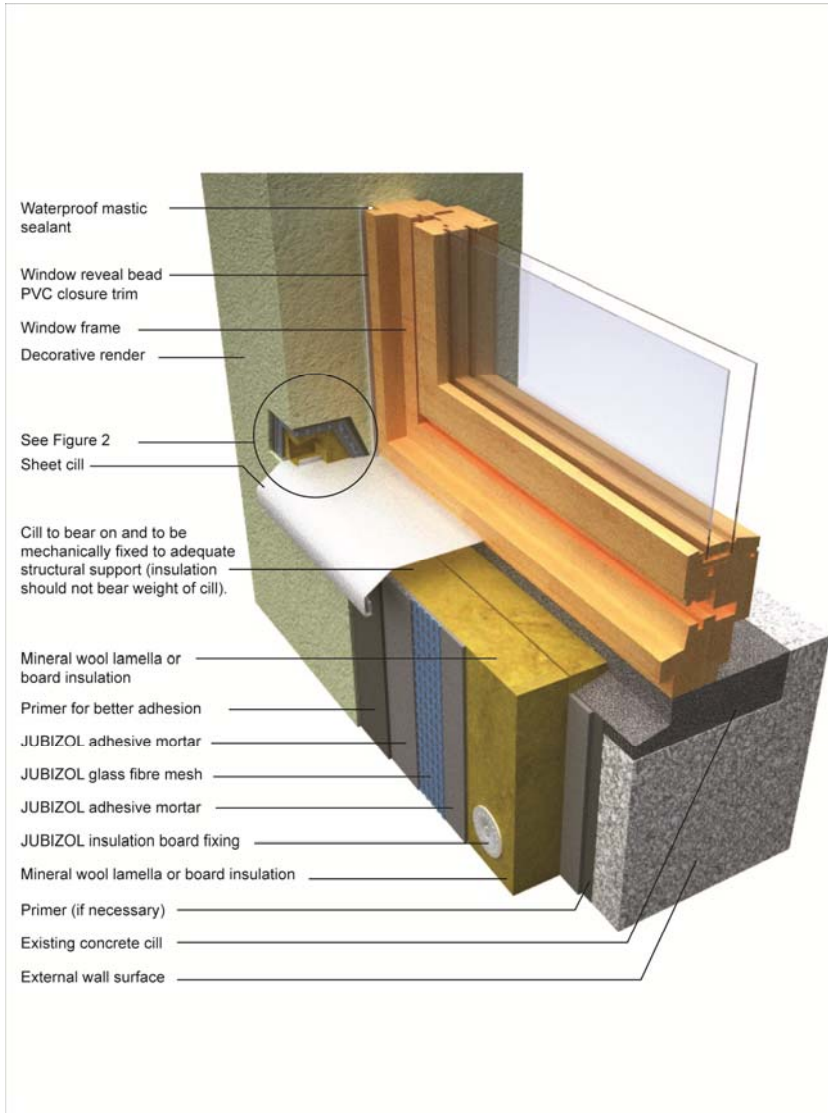
located and is to be housed in the depth of the system, access for maintenance must be maintained through the use of removable covers or alternative design to be approved by the Certificate holder.

- See Table 1 in each of the applicable Detail Sheets for approved range of Adhesive/Base Coats
- Base profile and corner profiles are fixed as specified in the site package. Existing structural expansion joints should be extended through to the surface of the ETICS system with full system expansion beads.
- A plinth strip/starter track is mechanically fixed to the substrate level with DPC level. This provides a horizontal line for the installation of insulation panels as well as providing reinforcement to the lower edge of the system. The starter track has a secondary function as an anti-vermin control.
- XPS skirting boards are then fixed to the wall below DPC to provide the necessary impact and capillary action resistance. To minimise the effects of cold bridging the XPS should extend below ground level where possible. Where this is not possible the first run of XPS insulation boards is positioned at ground level.
- The insulation boards are bonded to the wall by applying the specified adhesive (see Table 1 of each of the Detail Sheets) to the boards using the "strip-point" method. A circumferential ribbon of adhesive at least 3cm wide is applied to the insulation boards. 6 - 8 evenly distributed patches of adhesive 8 - 12 cm in diameter are then applied to the boards so that an adhesive surface of at least 40% is achieved (60% after application and pressing). Alternatively, for even and smooth substrates, the whole panel can be coated with adhesive using a notched trowel to produce a coat 2-5 mm in thickness. The insulation panel should be immediately placed on the substrate and pressed into place.
- Subsequent rows of insulation boards are installed above DPC, on top of the starter track and positioned so that the vertical board joints are staggered and overlapped at the building corners.
- To avoid thermal bridging ensure a tight adhesive free joint connection between adjacent insulation boards. A foam filler approved by the Certificate Holder may be used for filling gaps up to 5mm. Larger gaps shall be filled with strips of the ETICS insulation material.
- At façade openings e.g. windows and doors, insulation boards must be continued around the corner. Insulation boards must overlap at these locations and can be cut to size to facilitate this. Any projecting EPS boards should be levelled out using a rubbing board with local trimming as required on mineral wool boards.

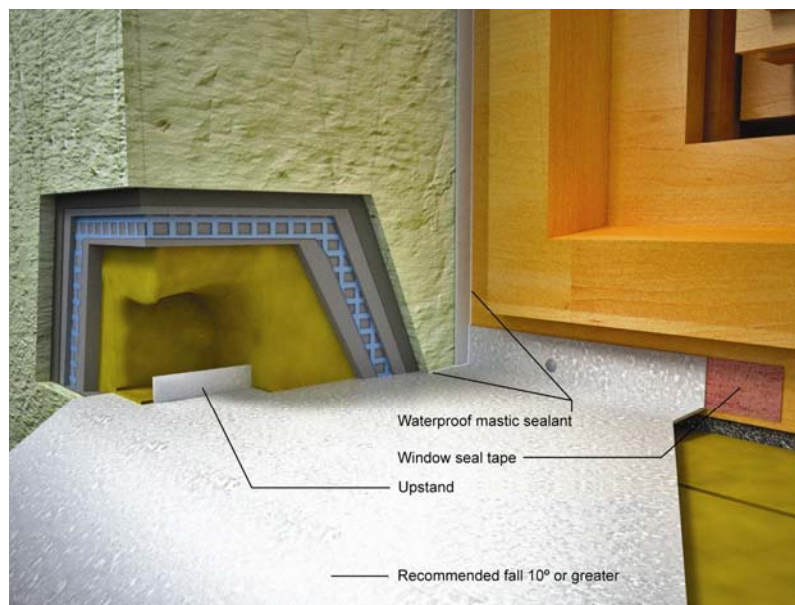
- Window and door reveals should be insulated to minimise the affects of a cold bridging in accordance with the recommendations of the Acceptable Construction Details Document (published by the DoEHLG), Section 2 – External Wall Insulation, Detail 2.21. to achieve an R-value of  $0.6\text{m}^2\text{K/W}$  as shown in Figure 1. The R-value of  $0.6\text{m}^2\text{K/W}$  at reveals relates to a wall U-value of  $0.27\text{ W/m}^2\text{K}$ . For improved U-values higher R-values are required in order to achieve the target liner thermal transmittance for all junctions. Where clearance is limited, strips of approved insulation should be installed to suit available margins and details recorded as outlined in Cl. 4.5 of this Certificate.
- To minimise the affects of cold bridging in all other junctions over and above window and doors, designers should consider the recommendations of the Acceptable Construction Details Document (published by the DoEHLG), Section 2 – External Wall Insulation. Where clearance is limited, strips of approved insulation (with better thermal resistance values) should be installed to suit available margins and details recorded as outlined in Cl. 4.5 of this Certificate.
- Details of mechanical fixings (including their arrangement in the insulation boards) are specified in the project specific design requirements based on pullout test results, substrate type and wind loading data. Installation of mechanical fasteners shall commence no earlier than 24 hours after the insulation panels have been adhesively fixed. A minimum of 4 mechanical fixings per  $\text{m}^2$  for EPS and 8 (minimum) per  $\text{m}^2$  for MW shall be installed unless otherwise specified in the project specific design. Above two stories an additional fire fixing is provided at a rate of 1 per  $\text{m}^2$ . See Table 1 in each of the applicable Detail Sheets for the list of approved fasteners that can be used. Holes are drilled into the substrate through the insulation, and the fixings are installed, fixed tightly to the insulation board, using the dedicated driving system, to ensure there is no risk of pull off.
- Purpose-made powder coated aluminum window sills (complete with welded side and rear upstands), are installed in accordance with the Certificate holders instructions. They are designed to prevent water ingress and incorporate drips to shed water clear of the system. See Figure 1 and 2.
- Lamella (Rockwool) fire stops are installed in accordance with the certificate holders instructions as defined in Cl. 4.2 of this Certificate, at locations defined in the project specific site package. See Figure 5.
- For EPS insulation, any high spots or irregularities should be removed by lightly planning with a rasp to ensure the application of an even thickness of Base Coat. After sufficient stabilisation of the installed insulation (normally 2 days, during which time the insulation should be protected from exposure to extreme weather conditions to prevent degradation), the insulated wall is ready for the application of the base and finish coats.
- EPS boards exposed to UV light for extended periods prior to the application of the render coatings are subject to breakdown and should be rasped down as required in preparation for rendering.
- Movement joints shall be provided in accordance with the project specific site package.
- At all locations where there is a risk of insulant exposure, e.g. window reveals or eaves, the system must be protected e.g. by an adequate overhang or by purpose made sub-cills, seals or flashing.
- Building corners, door and window heads and jambs are formed using angle beads bonded to the insulation in accordance with the manufacturer's instructions.
- To minimise the thermal bridge affect during the installation of railings, exterior lighting, shutter guide rails, canopies, aerials /dishes etc., the certificate holder offers a range of anchoring options. These anchors must be installed in accordance with the certificate holder's instruction (as defined in the project specific site package) during the installation of the insulation boards. For retro fit installation reference should be made to the Certificate Holder project specific site package.
- Prior to application of base coat and finish coat all necessary protective measures, such as taping off of existing timber window and covering of glass, should be in place.
- The Base Coat is prepared as described in Table 1 of the Detail sheets and is trowel applied to the surface of dry insulation boards to approximately 2/3 of the final base coat thickness. Base coats requiring the addition of water should be mixed mechanically using a drill and mixer. A 10mm toothed trowel (held at  $45^\circ$  to the insulation board) is used to leave castellations in the basecoat. A layer of alkali-resisting glass-fibre mesh is then applied (see Table 1 of the applicable details sheets for approved meshes) either vertically or horizontally ensuring the mesh is overlapped at joint by a minimum coverage of 100mm (overlaps in quoins should be min.150mm). The mesh should be pressed into the base coat using a notched float so that it is not visible, yet it should not make direct contact with the Insulation.
- The remaining 1/3 thickness of base coat is than applied as required to ensure the mesh is completely covered and the required minimum thickness of base coat is achieved.
- Additional pieces of reinforcing mesh are applied diagonally at the corners of openings to provide the necessary reinforcement prior

to the application of the final layer of basecoat. Additional mesh patches 200x300mm are installed at a 45° angle in accordance with the Certificate holder's instructions. These patches provide additional reinforcement at locations of potentially high stress due to shrinkage /curing of the external renders.

- Refer to the certificate holder's instructions and the project specific site package regarding the installation method and location of the stainless steel (S.S.) fixings (normally at 0.4m centres) through the reinforcing mesh where fire stops have been installed. Additional layers of mesh are also applied at these locations. Stainless steel fire fixings to be provided at the rate of one per square metre above two stories. The fixing design should take account of the extra duty required under fire conditions.
- The base coat must be allowed to dry/cure (3 days approx.) prior to the application of the primer/finish coat. Prior to the application of the finishing coat, sealant should be applied as required as defined in the project specific site package in accordance with the certificate holders instructions.
- Primers (See Table 1 in Detail Sheets to this Certificate for approved list of primers and their compatibility with the finishing coats) shall be applied in accordance with the Certificate instructions and allowed to dry for approximately 12 hours prior to the application of the Finishing Coat. Render primers prevent penetration of impurities from the adhesive into the render, protects and reinforces the substrate, and increases the bond strength between the render and the substrate.
- Finishing Coats (See Table 1 in Detail Sheets to this Certificate for approved list of Finishing coats and their compatibility with the primer coats) shall be applied in accordance with the Certificate instructions.
- It is imperative that weather conditions are suitable for the application and curing of the JUB finishing coats. Finishing coats should not be applied when the air or wall temperature is below +5° C or above 25° C for the duration of the curing time. In wet weather the finished walls should be protected to prevent wash-off. It is also advisable that protective covers remain in place as required to maximise the drying process.
- In sunny weather, work should commence on the shady side of the building and be continued, following the sun to prevent the rendering drying out too rapidly.
- To minimise colour shade variations and to avoid dry line jointing, continuous surfaces should be completed without a break. If breaks cannot be avoided they should be made where services or architectural features, such as reveals or lines of doors and windows, help mask cold joints. Where long uninterrupted runs are planned, containers of the Finishing Coat should be checked for batch numbers. Bags with different batch numbers should be checked for colour consistency.
- All rendering should follow best practice guidelines e.g. BS 8000-0:2014 *Workmanship on construction sites – Introduction and general principles*, and IS EN 13914-1:2016 *Design, preparation and application of external rendering and internal plastering – External rendering*.
- On completion of the installation, external fittings, rainwater goods etc. are fixed through the system into the substrate in accordance with the Certificate holder's instructions.
- Proprietary thermally broken grounds should be included though the external wall insulation system at installation stage to provide suitable fixing for heavy, externally mounted, installations such as gates, cantilevered light stands, anchor points for electrical cables and telecommunication cables, large hanging baskets etc. When installing any of the above post installation of EWIS system advice should be sought from the certificate holder on best practice.
- When obstructions abut external wall such as boundary wall best practice would be to cut back the boundary wall to allow for continuation of the EWIS system or in the case of unheated lean-two buildings, the EWIS system should continue around the lean-two.
- If it is not possible to install the EWIS system to all external walls, alternate forms of thermal upgrades, such as cavity bead or internal dry lining, must be provided. There should be an adequate over lap at the junction between an EWIS system and the alternative insulation method selected to limit thermal bridging at this interface.
- All necessary post-application inspections should be performed and the JUB documentation (check/sign-off sheets and provision of the Maintenance/Homeowners manual and project specific documentation to the client) completed accordingly.

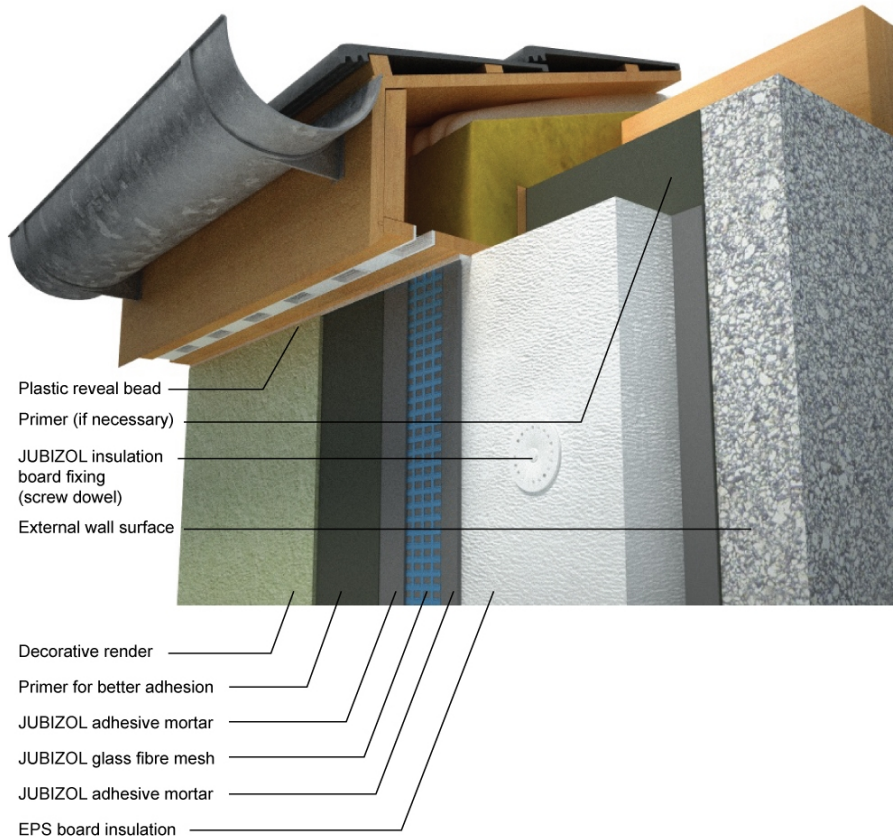


**Figure 1: Window Cill/Reveal Detail**

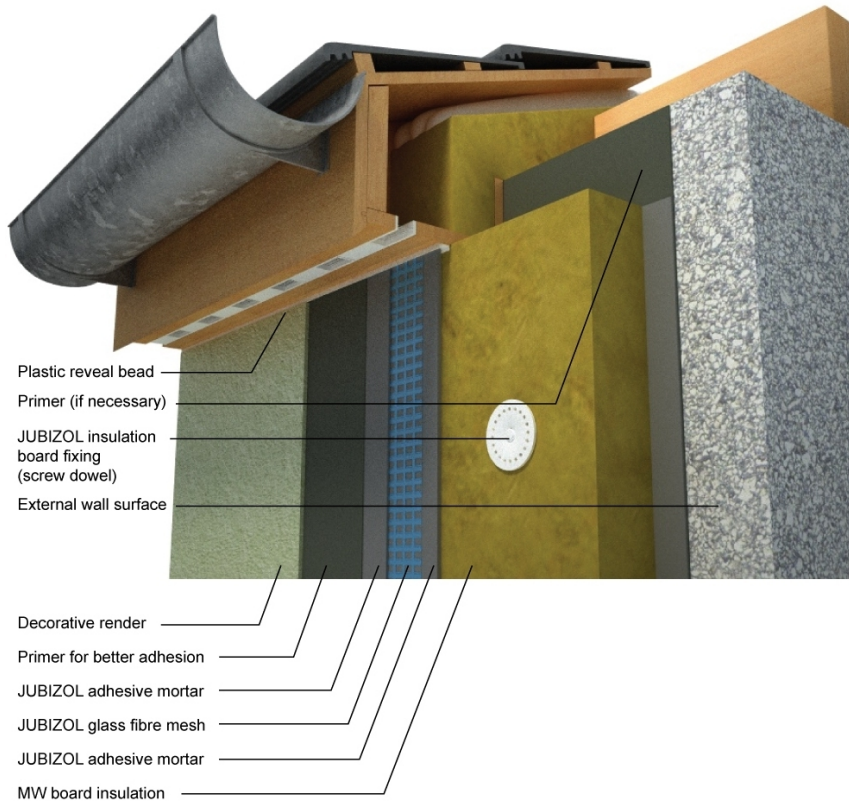


**Figure 2: Window Cill close up**

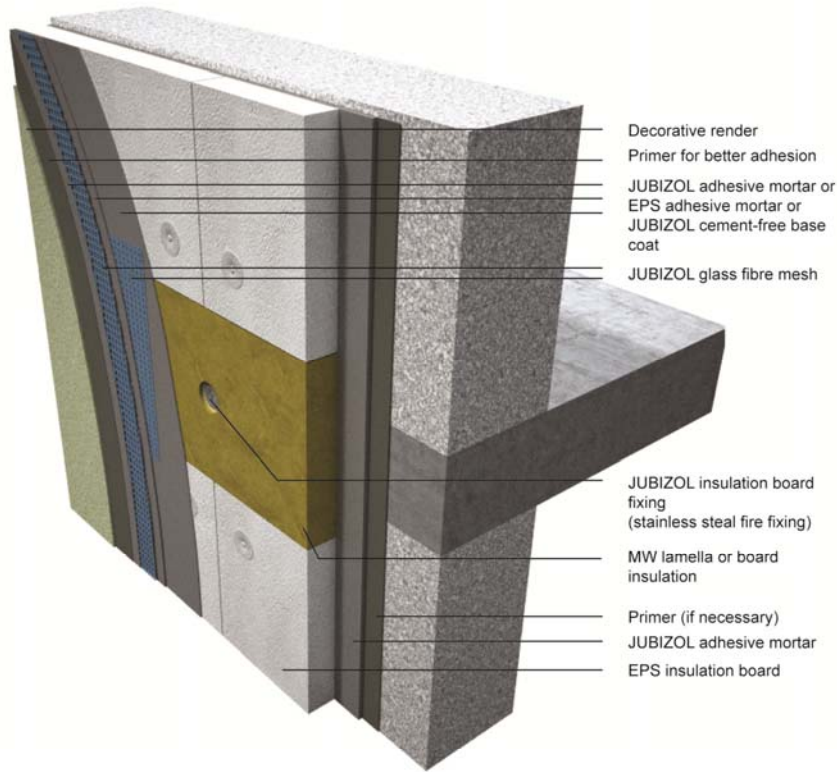




**Figure 3: Eaves Detail - EPS**



**Figure 4: Eaves Detail - MW**

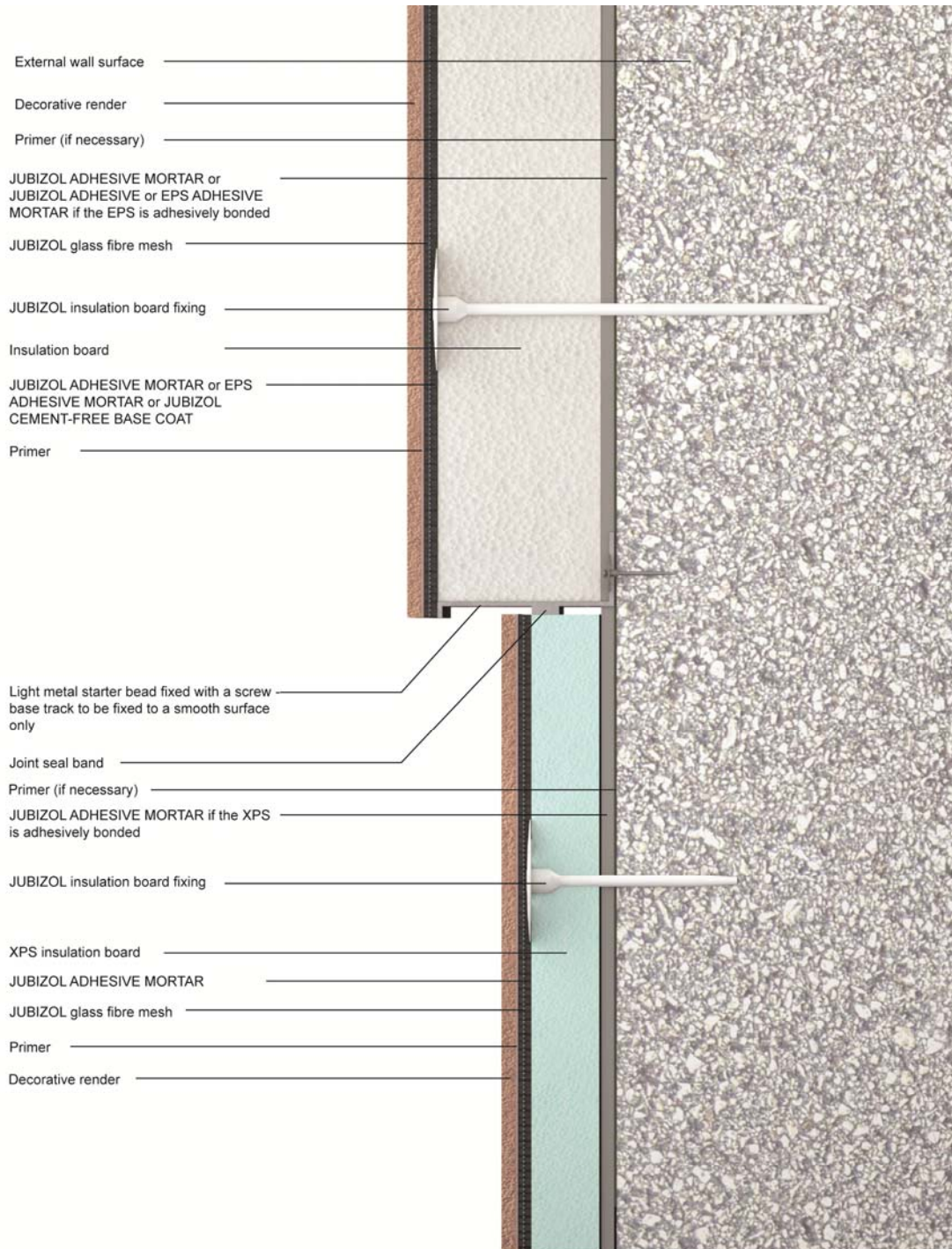


MW lamella or board surface has to be completely coated with adhesive mortar. Do not use dabs and/or ribbons.

**Figure 5: Horizontal Fire Barrier**



**Figure 6: Movement Joint Detail**



Plinth detail

**Figure 7: Plinth Detail**

### 3. GENERAL

The system is designed by the Certificate Holder on a standard or project specific basis. Where the external insulation system is being applied to improve the thermal performance of an existing building, the Certificate holder will assess the building and advise on how to maximise the benefits of the external insulation system for that building. The design will include for:

- a) The completion and recording of a site survey.
- b) Evaluation and preparation of substrate.
- c) Minimising risk of condensation in accordance with recommendations of BS 5250:2011+A1:2016 *Code of practice for control of condensation in buildings*. This includes the use of approved JUB incorporating the requirements of SR 54:2014 *Code of practice for the energy efficient retrofit of dwellings* and, where possible, meeting all of the Acceptable Construction Details published by the DHPLG.
- d) Thermal insulation provision to TGD to Part L of the Building Regulations 1997 to 2017.
- e) Resistance to impact and abrasion.
- f) Resistance to thermal stresses.
- g) Resistance to wind loading.
- h) Design of fixings to withstand design wind loadings, using a safety factor of 3 (three) for mechanical fixings and a safety factor of 9 (nine) for adhesive. In addition, fixings around window and door openings shall be at a maximum of 400mm centres in each board or section of board so as to provide positive and robust restraint over the life of the system.
- i) The design for wind loading on building greater than two stories should be checked by a chartered engineer in accordance with Eurocode 1: I.S EN 1991-1-4:2005+A1:2010 *General actions- Wind actions*. A general factor of safety of 1.5 is applied to design wind loads.
- j) Design for fire resistance, fire spread and fire stopping. As defined in Cl. 4.2 and 4.3 of this Certificate.
- k) Design of a water management system to prevent ingress of water at movement joints, windows, doors, openings for services etc. Particular attention is required to ensure that window and cill design are coordinated to achieve a fully integrated design as per the certificate holders technical details.
- l) Movement joints.
- m) A site specific maintenance programme for inclusion in the home owner's documentation.
- n) Durability requirements.

Detailing and construction must be to a high standard to prevent the ingress of water and to achieve the design thermal performance. Window details should be designed such that, where possible, they can be removed and replaced from within the building. Consideration should be given to maximising improvement of thermal insulation at window reveals, door openings etc. Adequate provision should be made at design and installation stage for the release of trapped moisture, e.g. above window heads.

When designed and installed in accordance with this Certificate, the systems will satisfy the requirements of TGD to Part L of the Building Regulations. The design shall include for the elimination/minimising of cold bridging at window and door reveals, eaves and at ground floor level in compliance with Acceptable Construction Details published by the DHPLG.

The system intended to improve the weather resistance of the external walls. Seals to windows and doors shall be provided in accordance with the project specific design and the Acceptable Construction Details. Care should be taken to ensure that any ventilation or drainage openings are not obstructed.

In areas where electric cables can come into contact with expanded polystyrene, in accordance with good construction practice, all PVC sheathed cables should be run through ducting or be re-routed. Domestic gas installations must not be adversely affected by the fitting of external insulation. If the external insulation has an impact on the gas service line/meter location, then Bord Gáis Networks must be contacted so that a suitable solution can be achieved. If altering a gas installation, a Registered Gas Installer (RGI) must be employed.

The durability of the render systems is influenced by the colour of the render used. Further information is available by contacting the Certificate holder.

In areas where frost heave is likely to occur, plinth insulation must be kept 10mm above ground level.

## 4.1 STRENGTH AND STABILITY

### 4.1.1 Wind Loading.

The JUB External Thermal Insulation Composite Systems can be designed to withstand the wind pressures (including suction) and thermal stresses in accordance with the Building Regulations 1997 to 2017. The design for wind loading on building greater than two stories should be checked by a chartered engineer in accordance with Eurocode 1 *Actions on Structures: I.S EN 1991-1-4:2005. General Actions- Wind Actions*. A general factor of safety of 1.5 is applied to design wind loads.

### 4.1.2 Impact Resistance

a/ The systems described in Table 1 of each of the Detail Sheets have been classified as defined in Table 2 of each detail sheet to be suitable for use as defined in ETAG 004 Cl 6.1.3.3 Table 8, as follows:

Category I: A zone readily accessible at ground level to the public and vulnerable to hard impacts but not subject to abnormally rough use. There are no restrictions on the use of Category I Systems.

Category II: A zone liable to impacts from thrown or kicked objects, but in public locations where the height of the system will limit the size of the impact; or at lower levels where access to the building is primarily to those with some incentive to exercise care. Class II excludes use on wall at ground level adjacent to a public footpath, but includes use on properties with their own private, walled in garden.

Category III: A zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects. Class III is taken to excluded the use on any wall at ground level.

Note: The above classifications do not include acts of vandalism.

b/ The design should include for preventing damage from impact by motor vehicles or other machinery. Preventative measures such a provision of protective barriers, or kerbs, should be considered.

## 4.2 BEHAVIOUR IN RELATION TO FIRE

See Table 3 of each of the applicable Detail Sheets for details of the fire classifications achieved.

- Systems that achieved a Class B (or better i.e. Class A) Reaction to Fire Classification (see Table 3 of each of the Detail sheets) are Suitable for use up to a maximum of six storeys (18m) in height on purpose groups 1(a), 1(c), 2(a), 2(b), 3, 4(a) and 4(b), and for use up to a maximum of five storeys (15m) in height on purpose group 1(b) as defined in TGD to Part B of the Building Regulations 1997 to 2017.
- Systems that achieved a Class C Reaction to Fire Classification (see Table 3 of each of the Detail sheets) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 15m high and for Flats and Maisonettes (Purpose Group 1(c)) not more than 10m high as defined in TGD to Part B of the Building Regulations 1997 to 2017. These systems may no be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.1 and 4.2 of TGD to Part B of the Building Regulations 1997 to 2017.
- Systems for which no Reaction to Fire performance has been determined (see Table 3 of each of Detail sheets 1 and 2) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 15m high. These systems may no be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.1 and 4.2 of TGD to Part B of the Building Regulations 1997 to 2017

The mineral wool board is classed as non-combustible as per Table A8 (d) of TGD to Part B of the Building Regulations 1997 to 2017.

With regard to fire stopping of cavities and limitations on use of combustible materials, walls must comply with Sections 3.2, 3.3, 3.4 and 4 of TGD to Part B of the Building Regulations 1997 to 2017, and Sections 3.5, 3.6, 3.7 and 4 of TGD to Part B Volume 2 of the Building Regulations 1997 to 2017. Stainless steel fire fixings to be provided at the rate of one per square metre above two stories. The fixing design should take account of the extra duty required under fire conditions.

**Table 1 – Typical U-Values<sup>3</sup>**

ETICS Insulation	<sup>2</sup> Declared Thermal Conductivity ( $\lambda_{90/90}$ ) of insulation (W/mK)	Thickness of insulation (mm)	U-Value (W/m <sup>2</sup> K)
<b>No ETICS system</b>	-	-	2.38
<b>EPS 70 White<sup>1</sup></b>	0.038	130	0.27
		170	0.21
<b>EPS 70 Grey (Graphite)<sup>1</sup></b>	0.031	100	0.27
		140	0.21
<b>Mineral Wool<sup>1</sup></b>	0.038	130	0.27
		170	0.21
	0.036	120	0.27
		160	0.21

<sup>1</sup> Designation Code of approved Insulation defined in Table 1 of each of the Detail Sheets

<sup>2</sup> The thermal conductivity ( $\lambda$ ) value of the insulation to be used in all U-value calculations must be the  $\lambda_{90/90}$  value

<sup>3</sup> These values are based on the a typical house of 215mm hollow block construction (Building Regulations 2009 Part L) with the following construction to (internal to external):

- Render (BS5250) – 20mm
- Hollow block - 215mm (10mm Mortar joint)
- Jubizol Adhesive Mortar - 5mm
- Insulation board as specified (where applicable)
- Render finish with base-coat with mesh (where applicable) as defined in the application Detail Sheet **Note:** Calculation of U-Values will be required on individual projects to confirm a U-Value of 0.27 W/m<sup>2</sup>K, 0.21 W/m<sup>2</sup>K (or better) has been achieved, based on the wall construction and the lambda ( $\lambda$ ) value of the insulation used.

Vertical and horizontal lamella fire barriers shall be provided at each compartment floor and wall, including the second floor level of a three-storey single occupancy house (see Diagram 12 of TGD to Part B Volume 2 of the Building Regulations 1997 to 2017. Firebreaks should be completely adhesively bonded to the substrate (i.e. Ribbons or dabs of adhesive is not acceptable) and mechanically fixed with stainless steel fire fixings at 400mm centres. The firestop should be of non-combustible material, i.e. Rockwool (slab of minimum density 120kg/m<sup>3</sup>), be at least 200mm high, continuous and unbroken for the full perimeter of the building and for the full thickness of the insulation, see Figure 13. Glass wool is not suitable for use as a firestop.

#### 4.3 PROXIMITY OF HEAT PRODUCING APPLIANCES

Combustible material must be separated from a brick or block work chimney by at least 200mm from a flue, or 40mm from the outer surface of the brick or block work chimney, in accordance with Clause 2.15 of TGD to Part J of the Building Regulations 1997 to 2017. Metal fixings in contact with combustible materials should be at least 50mm from a flue.

#### 4.4 THERMAL INSULATION

Assessments were carried out to verify that the requirements of Part L of the Building Regulations

1997 to 2017 can be achieved using the JUB External Thermal Insulation Composite Systems. The manufacturer's declared thermal conductivity values ( $\lambda_{90/90}$ ) taken from their CE Marking Declarations of Performance are 0.038 W/mK for the standard white EPS70 board, 0.031W/mK for the carbon-enhanced EPS 70 board, 0.036W/mK for the mineral wool board density 115Kg/m<sup>3</sup> and 0.038W/mK for the mineral wool board density 140Kg/m<sup>3</sup>. These have not been assessed by NSAI Agrément.

Table 1 shows typical insulation thickness to achieve the required 0.27 W/m<sup>2</sup>K U-Value, in addition to thickness of insulation to achieve the improved U-value of 0.21 W/m<sup>2</sup>K.

Calculation of U-Values will be required on individual projects to confirm a U-Value of 0.27 W/m<sup>2</sup>K has been achieved, based on the wall construction and the insulation used. The thermal conductivity ( $\lambda$ ) value of the insulation to be used in all U-value calculations must be the declared  $\lambda_{90/90}$  value.

When the external insulation system is applied to a masonry cavity wall construction, consideration should be given to the treatment of the ventilated cavity. In order to ensure the thermal effectiveness of the external insulation system, it is critical to eliminate the airflow within the cavity void. It is essential to seal the cavity to achieve

an unventilated air layer. This eliminates heat losses due to airflow within the cavity circumventing the external insulation system. Best practice is to fill the void with an NSAI Agrément approved Cavity Wall Insulation (CWI) system. Ventilation to the building must be maintained in accordance with the requirements of TGD to Part F of the Building Regulations 1997 to 2017.

#### **4.5 LIMITING THERMAL BRIDGING**

The linear thermal transmittance  $\psi$  (Psi) describes the heat loss associated with junctions and around openings. Window and door reveal design used on the JUB External Thermal Insulation Composite Systems have been assessed and when detailed in accordance with this certificate, can meet the requirements of Table D1 of Appendix D of TGD to Part L of the Building Regulations 1997 to 2017. When **all** bridged junctions within a building comply with the requirements of Table D1 of appendix D of TGD to Part L, the improved 'y' factor of 0.08 can be entered into the Dwelling Energy Assessment Procedure (DEAP) Building Energy Rating (BER) calculation.

Alternatively if **all** junctions can be shown to be equivalent or better than the Acceptable Construction Details, published by the DoEHLG then the improved 'y' factor of 0.08 can be used i.e. R value =  $0.6\text{m}^2\text{K}/\text{W}$  for window/door reveals.

Where either of the above options are shown to be valid, or when the required values can not be achieved, all relevant details should be recorded on the 'Certificate of Compliance' for that project for use in future BER calculations.

' $\Psi$ ' values for other junction outside the scope of this certificate should be assessed in accordance with the BRE IP1/06 "Assessing the effects of thermal bridging at junctions and around openings" and BRE Report BR 497 "Conventions for calculating linear thermal transmittance and temperature factors" in accordance with appendix D of TGD to Part L of the Building Regulations 1997 to 2017.

#### **4.6 CONDENSATION RISK**

Areas where there is a significant risk of condensation due to high levels of humidity should be identified during the initial site survey.

##### **4.6.1 Internal Surface condensation.**

When improving the thermal performance of the external envelope of a building, thought external wall insulation, designers need to consider the impact of these improvements on other untouched elements of the building. As discussed in section 4.5 of this certificate thermally bridged section of the envelope such as window jambs, cills and eaves will experience a lower level of

increased thermal performance. The degree of improvement to these junctions can be limited due to physical restrictions on site i.e. footpaths, soffit boards or hinges for windows.

When bridged junctions meet the requirements of TGD L appendix D table D1, the coldest internal surface temperature will satisfy the requirements of section D2, namely that the temperature factor shall be equal to or greater than 0.75. As a result best practice will have been adopted in order to limit the risk of internal surface condensation which can result in dampness and mould growth.

When site limiting factors give rise to substandard level of insulation at bridged junctions, guidance should be sought from the certificate holder as to acceptable minimum requirements.

##### **4.6.2 Interstitial Condensation**

An interstitial condensation risk analysis will be carried out by the Certificate Holder in accordance with BS 5250:2011+A1:2016, and the design modified as appropriate to reduce the risk of interstitial condensation to acceptable levels.

##### **4.6.3 Ventilation**

When installing the external insulation system, the works to be undertaken must not compromise the existing ventilation provisions in the home, including the ventilation of suspended timber floors, where existing vents must be sleeved across the rising wall and sealed.

#### **4.7 MAINTENANCE**

Adequate provision should be made for access and maintenance over the life of the system.

The system shall be inspected and maintained in accordance with the Certificate holder's instructions, as detailed in their Repair and Maintenance Method Statement, which is incorporated into the Home Owner's Manual.

Necessary repairs should be affected immediately and should be carried out in accordance with the Certificate holder's instructions.

Repairs to plumbing etc. should also be carried out as required to prevent deterioration or damage, and to protect the integrity of the system.

Synthetic finishes may be subject to aesthetic deterioration due to exposure to UV light. They should be re-painted every 18 to 20 years to maintain appearance. Care should be taken to ensure that the synthetic finish used is compatible with the original system and that the water vapour transmission or fire characteristics are not adversely affected.

Sealants shall be subject to regular inspection (at least annually). They should be replaced as required and fully replaced every 18 to 20 years to maintain performance.

#### **4.8 WEATHERTIGHTNESS**

When designed and detailed in accordance with this Certificate, the system will prevent moisture from the ground coming in contact with the insulation.

The external render has adequate resistance to water penetration when applied in accordance with the Certificate holder's instructions.

Joint designs, sealant specifications and recommendations for detailing at windows and doors were assessed and are considered adequate to ensure that water penetration will not occur, assuming that regular maintenance is carried out in accordance with the Certificate holder's instructions. See Figure 1.

#### **4.9 DURABILITY**

##### **4.9.1 Design Life**

An assessment of the life of the system was carried out. This included an assessment of:

- Design and installation controls;
- Proposed building heights;
- Render thickness and specification;
- Material specifications, including insulant, mesh, beading and fixings specifications;
- Joint design;
- Construction details;
- Maintenance requirements.

The assessment indicates that the system should remain effective for at least 30 years, providing that it is designed, installed and maintained in accordance with this Certificate. Any damage to the surface finish shall be repaired immediately and regular maintenance shall be undertaken as outlined in Section 4.7 of this Certificate.

##### **4.9.2 Aesthetic Performance**

As with traditional renders, the aesthetic performance of the systems, e.g. due to discolouration, soiling, staining, algal growth or lime bloom, is dependent on a range of factors such as:

- Type, colour and texture of surface finish;
- Water retaining properties of the finish;
- Architectural form and detailing;
- Building orientation/elevation;
- Local climate/atmospheric pollution.

Adequate consideration should be given at the design stage to all of the above to ensure that the level of maintenance necessary to preserve the aesthetics of the building is acceptable.

#### **4.10 PRACTICABILITY**

The practicability of construction and the adequacy of site supervision arrangements were

assessed and considered adequate. The project specific designs and method statements for application, inspection and repair were reviewed and found to be satisfactory.

#### **4.11 TESTS AND ASSESSMENTS WERE CARRIED OUT TO DETERMINE THE FOLLOWING**

- Structural strength and stability.
- Behaviour in relation to fire.
- Impact resistance.
- Pull-out resistance of fixings.
- Thermal resistance.
- Hygrothermal Behaviour
- Condensation risk.
- Site erection controls.
- Durability of components.
- Dimensional stability of insulants.

#### **4.12 OTHER INVESTIGATIONS**

- (i) Existing data on product properties in relation for fire, toxicity, environmental impact and the effect on mechanical strength/stability and durability were assessed.
- (ii) 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.
- (iii) Special building details (e.g. ground level, window and door openings, window sill and movement joints) were assessed and approved for use in conjunction with this Certificate.
- (iv) Site visits were conducted to assess the practicability of installation the history of performance in use of the product.



**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 issue so long as:

- (a) the specification of the product is unchanged.
- (b) the Building Regulations 1997 to 2017 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 Agrément 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.

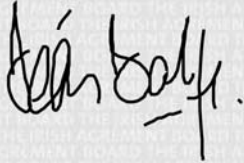
**5.7** Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it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

## NSAI Agrément

This Certificate No. **10/0351** is accordingly granted by the NSAI to JUB d.o.o. on behalf of NSAI Agrément.

Date of Issue: **November 2010**

Signed



**Seán Balfe**  
**Director of NSAI Agrément**

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. [www.nsai.ie](http://www.nsai.ie)

### Revisions

**15<sup>th</sup> January 2018:** References to Building Regulations and standards updated.



# JUB - Jubizol EPS System

## External Thermal Insulation Composite Systems

### PRODUCT DESCRIPTION

This Detail Sheet relates to:

- The Jubizol EPS Systems as defined in NSAI Agrément Certificate 10/0351 and as detailed in Table 1 of this Detail Sheet.

### USE:

This Jubizol EPS Systems is for use as an external insulation system for refurbishment/retrofit of existing masonry or concrete dwellings as follows:

- Systems that achieved a Class B Reaction to Fire Classification (see Table 3 of this Detail sheet) are suitable for use up to a maximum of six storeys (18m) in height on purpose groups 1(a), 1(c), 2(a), 2(b), 3, 4(a) and 4(b), and for use up to a maximum of five storeys (15m) in height on purpose group 1(b) as defined in TGD to Part B of the Building Regulations 1997 to 2017.

- Systems for which no Reaction to Fire performance has been determined (see Table 3 of this Detail sheet) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 15m high. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.1 and 4.2 of TGD to Part B of the Building Regulations 1997 to 2017.

### 1.1 ASSESSMENT

In the opinion of NSAI Agrément, the Jubizol EPS Systems, if used in accordance with this Detail Sheet, meets the requirements of the Building Regulations 1997 - 2017 as indicated in Section 1.2 of Certificate 10/0351.

### 1.2 BUILDING REGULATIONS 1997 to 2017

This matter is dealt with in NSAI Agrément Certificate 10/0351.

## 2.1 PRODUCT DESCRIPTION

The Jubizol EPS Systems consist of fixing thermal insulation made of EPS (expanded polystyrene) boards (See Table 1 of this Detail sheet) to the substrate. The EPS boards are adhesively fixed to the substrate with supplementary mechanical fixings as required. A layer of reinforced is embedded in the base coat layer. The base coat is cementitious and the decorative finishes are available in a range of colours and textures and are based on either cement, silicate, silicone or acrylic materials.

The system can be applied on a variety of existing external surfaces such as brick or rendered masonry walls. The EPS system is suitable for both dry and wet dashed external walls however loose dry dashing or predominant sections of dashing should be removed. Loose dashing would reduce the effective adhesion of the boards and peaks of dry dashing may serve to locally reduce the thermal effective of the insulation layer. Over rendering of an existing dashed finishes would serve to level the substrate.

The EPS system is suitable for soffits of overhangs or the underside of building projections, provided the installation in no way impinges on the fire certification of the existing dwelling. It can also be fixed on inclined or sloped surfaces provided that they are not directly exposed to precipitation. The system is not suitable for horizontal surfaces exposed to precipitation.

The substrate on which the JUB EPS system will be used should have reaction to fire class: A1 or A2-s1 d0 according to EN 13501-1.

See Table 1 for the full list of components of the JUB EPS Systems.

## 2.2 INSTALLATION

See Cl 2.4 of Certificate No. 10/0351 for the installation instructions for the JUB EPS Systems.

	<b>Table 1 – Jubizol EPS Systems Components</b>	<b>Thickness (mm)</b>	<b>Coverage (kg/m<sup>2</sup>)</b>
<b>Adhesives<sup>(1)</sup></b>	<p><b>JUBIZOL ADHESIVE MORTAR</b> – dry mix cement based adhesive requiring addition of approximately 20 % water</p> <p><b>JUBIZOL ADHESIVE</b> – dry mix cement based adhesive requiring addition of 20 % water</p> <p><b>EPS ADHESIVE MORTAR</b> – powdered high-elasticity cement-based mortar, refined with polymer binder, requiring addition of approximately 20 % water</p>	-	3.5 - 5 <sup>(2)</sup> (powder) 3.5 - 5 <sup>(2)</sup> (powder) 3.5 - 5 <sup>(2)</sup> (powder)
<b>Insulation</b>	<b>EPS-EN</b> 13163-T2-L1-W2-S2-P4-DS(N)2-DS(70,-)1-TR150-BS100	50 to 300	-
<b>Anchors</b>	<p><b>EJOT</b> Ejoterm ST U *, Ejoterm STR-U***, SDM-T plus*, SDF-K plus*, Ejoterm NT-U*, Ejoterm NK-U*, Ejoterm NTK-U*, Hilti SX-FV*, SD-FV 8**, XI-FV*, D-FV * and D-FV T* Fischer Termoz 8U**, Termoz 8N**, Termoz KS8**, Leskovec Plastično pritrđilo PP** and Pritrdilno sidro PSK**, Ranit IsoFux NDT8LZ*, ND8LZ*, ND8LZ K*, NDS8Z*, NDM8Z*, NDS90Z*, NDM90Z* and IsoFux*</p> <p><b>FIRE PIN</b> EJOT TID-M or other anchors covered by ETA's issued against the requirements of ETAG 004.</p>	-	-
<b>Base coats</b>	<p><b>JUBIZOL ADHESIVE MORTAR</b> – dry mix cement base coat powder requiring addition of 20 % water. JUBIZOL ADHESIVE MORTAR consists of aggregates, cement, dispersion powder, special additives</p> <p><b>JUBIZOL CEMENT FREE BASE COAT</b> – polymer based adhesive, paste form. JUBIZOL CEMENT FREE BASE COAT consists of aggregates, polymer, binders, special additives</p> <p><b>EPS ADHESIVE MORTAR</b> – powdered high-elasticity cement-based mortar, refined with polymer binder, requiring addition of 20 % water. EPS ADHESIVE MORTAR consists of aggregates, cement, polymer binders, special additives</p>	4.2 – 8.4 (powder)  3.8 – 4.5 (paste)  4.2 – 5.6 (powder)	max (dry): 6 min (dry): 3  max (dry): 3 min (dry): 2.5  max (dry): 4 min (dry): 3
<b>Glass fibre meshes</b>	<b>JUBIZOL GLASS FIBRE MESH</b> Standard meshes (glass fibres meshes with mesh size between 3.5 and 4.7 mm) Weight 145 g/m <sup>2</sup> and 160 g /m <sup>2</sup>	-	-
<b>Primers</b>	<p><b>UNIGRUND</b> – liquid, water based acrylic slurry primer intended as a primer for all finishing coats (except mineral based finishing coats : Mineral Trowelled Render, Mineral Smooth Render and Nivellin D + Revitalcolor AG)</p> <p><b>AKRIL EMULSION</b> - liquid, water based acrylic primer intended as a primer for the acrylic and mineral based finishing coats</p> <p><b>ACRYLCOLOR</b> - liquid exterior acrylic waterborne facade paint as a primer for the acrylic and mineral based finishing coats</p> <p><b>JUBOSIL GX</b> - liquid, water based silicate primer intended as a primer for the silicate based finishing coats</p> <p><b>JUBOSIL G</b> - liquid, water based silicone primer intended as a primer for the silicone based finishing coats</p>	0.15 - 0.20  about 0.1  about 0.1 L/m <sup>2</sup> about 0.1 L/m <sup>2</sup> about 0.1 L/m <sup>2</sup>	
<b>Finishing coats</b>	<p><b>Mineral Trowelled Render 2.0 / 2.5</b> – ready-mixed lime-cement based mortar requiring addition of water 20-23 %, based on lime, cement, aggregates, additives (only in combination with base coats <b>JUBIZOL ADHESIVE MORTAR</b> and <b>EPS ADHESIVE MORTAR</b>)</p> <p><b>Mineral Smooth Render 1.5 / 2.5</b> – ready-mixed lime-cement based mortar requiring addition of water 20-23 %, based on lime, cement, aggregates, additives (only in combination with base coats <b>JUBIZOL ADHESIVE MORTAR</b> and <b>EPS ADHESIVE MORTAR</b>)</p> <p>Ready to use paste – <b>Silicate Trowelled Render 2.0 / 2.5</b> - based on potassium silicate and water-based acrylic binder, aggregates, additives. (only in combination with base coats <b>JUBIZOL ADHESIVE MORTAR</b> and <b>EPS ADHESIVE MORTAR</b>)</p> <p>Ready to use paste – <b>Silicate Smooth Render 1.5 / 2.0 / 2.5</b> - based on potassium silicate and water-based acrylic binder, aggregates, additives (only in combination with base coats <b>JUBIZOL ADHESIVE MORTAR</b> and <b>EPS ADHESIVE MORTAR</b>)</p> <p>Ready to use paste – <b>Silicone Trowelled Render 2.0 / 2.5</b> - based on silicone emulsion and water-based acrylic binder, aggregates, additives (in combination with all three base coats)</p>	2.6 to 3.1 (powder)  2.6 to 3.6 (powder)  2.5 to 3.2 (paste)  3.0 to 5.5 (paste)  2.8 to 3.5 (paste)	Regulated by particles size

<b>Finishing coats</b>	Ready to use paste – <b>Silicone Smooth Render 1.5 / 2.0 / 2.5</b> - based on silicone emulsion and water-based acrylic binder, aggregates, additives (in combination with all three base coats)	2.4 to 4.7 (paste)	Regulated by particles size
	Ready to use paste – <b>Acrylic Trowelled Render 2.0 / 2.5</b> - based on water-based acrylic binder, aggregates, additives (in combination with all three base coats)	2.5 to 3.2 (paste)	
	Ready to use paste – <b>Acrylic Smooth Render 1.5 / 2.0 / 2.5</b> - based on water-based acrylic binder, aggregates, additives (in combination with all three base coats)	2.5 to 5.0 (paste)	
	<b>Nivellin D + Revitalcolor AG*</b> – ready-mixed polymer based mortar requiring addition of water ~ 30 %, based on polymer, lime, cement, aggregates, additives + liquid exterior micro reinforced acrylic waterborne anti-mildew paint (only in combination with base coat <b>JUBIZOL ADHESIVE MORTAR</b> )	~ 4.5 + (~ 0.5 l/m <sup>2</sup> ) (powder + liquid)	
	Ready to use paste – <b>Jubolit 1.5 / 2.5</b> , acrylic spray render; based on water-based acrylic binder, aggregates, additives (in combination with all three base coats)	2.5 to 3.5 (paste)	
	Ready to use paste – <b>Unixil G - Siloxanised Acrylic Smooth Render 1.5 / 2.0 / 2.5</b> - based on water-based acrylic binders, mineral fillers, special additives (in combination with all three base coats)	2.5 to 5.0 (paste)	
	Ready to use paste – <b>Unixil Z - Siloxanised Acrylic Trowelled Render 2.0 / 2.5</b> - based on water-based acrylic binders, mineral fillers, special additives (in combination with all three base coats)	2.5 to 3.2 (paste)	
	Ready to use paste – <b>Nanoxil G - Self-cleaning Silicone Smooth Render 1,5 / 2,0 / 2,5</b> - based on water-based silicone and acrylic binders, nano structures, mineral fillers and special additives (in combination with all three base coats)	2.6 to 4.7 (paste)	
Ready to use paste – <b>Nanoxil Z - Self-cleaning Silicone Trowelled Render 2,0 / 2,5</b> - based on water-based silicone and acrylic binders, nano structures, mineral filling and special additives (in combination with all three base coats)	2.8 to 3.5 (paste)		
<b>Ancillary materials</b>	Ancillary materials (mastics, corner strips) must be approved by the Certificate holder.	-	-
<sup>(1)</sup> Partially bonded (bonded surface shall be at least 40%) or fully bonded <sup>(2)</sup> Refers to fully bonded system * Note: Finishing coat Nivellin D + Revitalcolor AG is applied without primer.			

This matter is dealt with in NSAI Agrément Certificate 10/0351.

Table 2 - Jubizol EPS Systems Impact resistance Category Matrix									
		Base Coat							
		Granulations (mm)	JUBIZOL Adhesive Mortar		JUBIZOL Cement Free Base Coat		EPS Adhesive Mortar		
			S	D	S	D	S		D
<b>Finishing coat</b>	Mineral Render and NIVELIN D + REVITALCOLOR AG	(all)	II	-	-	-	III	II	
			-	II	-	-	-	-	
	Silicate Render	1.5	II	-	-	-	-	-	
		2.0 - 2.5	I	-	-	-	-	-	
		(all)	-	I	-	-	II	II	
	Silicone Render	1.5	II	-	-	-	-	-	
		2.0 - 2.5	I	-	-	-	-	-	
		(all)	-	I	I	-	II	II	
	Acrylic Render and JUBOLIT	1.5	II	-	-	-	-	-	
		1.5							
		2.0 - 2.5 2.5	I	-	-	-	-	-	
		(all)	-	I	I	-	II	II	
Jubolit		(all)	-	-	I	-	I	I	
UNIXIL		(all)	II	II	I	-	II	II	
	NANOXIL	(all)	II	I	I	-	II	II	

Note :- further explanation of Impact resistance Category I, II and III under Clause 4.1.2  
**S** = Single layer of Standard Mesh. **D** = Double layer of Standard Mesh.

Table 3 – Jubizol EPS Systems Reaction to Fire				
Configuration	Maximum declared organic content of the finishing coat	Declared flame retardant content of the rendering system	Thickness (mm)	Reaction to fire class according to SIST EN 13501-1
ETICS JUBIZOL EPS - in combination with base coats JUBIZOL ADHESIVE MORTAR and EPS ADHESIVE MORTAR and all finishing coats described in this ETA	14 %	0 %	≤ 300	B – s1, d0
ETICS JUBIZOL EPS - in combination with base coat JUBIZOL CEMENT FREE BASE COAT and all belonging finishing coats acc. to Clause 1.1	14 %	0 %	≤ 160	B – s1, d0
	-	-	≥ 160	F



## **JUB - Jubizol MW System**

# **External Thermal Insulation Composite Systems**

### **PRODUCT DESCRIPTION**

This Detail Sheet relates to:

- The JUB - Jubizol MW Systems as defined in NSAI Agrément Certificate 10/0351 and as detailed in Table 1 of this Detail Sheet.

### **USE:**

The systems are for use as an external insulation for refurbishment/retrofit of existing masonry or concrete as follows:

- Systems that achieved a Class A2 or B Reaction to Fire Classification (see Table 3 of each of the Detail sheets) are Suitable for use up to a maximum of six storeys (18m) in height on purpose groups 1(a), 1(c), 2(a), 2(b), 3, 4(a) and 4(b), and for use up to a maximum of five storeys (15m) in height on purpose group 1(b) as defined in Technical Guidance Document (TGD) to Part B of the Building Regulations 1997 to 2017.

- Systems for which no Reaction to Fire performance has been determined (see Table 3 of each of Detail sheets 1 and 2) are suitable for use on Residential Dwellings (Purpose Groups 1(a) and 1(b), not more than 15m high. These systems may not be used on a wall which is less than 1m away for a boundary. Reference should be made to Section 4.1 and 4.2 of TGD to Part B of the Building Regulations 1997 to 2017

See Table 2 for the Impact Resistance of the various base coat/finish coat combinations. Cl 4.1.2 of NSAI Agrément Certificate 10/0351 should be referenced for restrictions on use that apply.

### **1.1 ASSESSMENT**

In the opinion of NSAI Agrément, the JUB - Jubizol MW Systems, if used in accordance with this Detail Sheet, meets the requirements of the Building Regulations 1997 - 2017 as indicated in Section 1.2 of Certificate 10/0351.

### **1.2 BUILDING REGULATIONS 1997 to 2017**

This matter is dealt with in NSAI Agrément Certificate 10/0351.



**2.1 PRODUCT DESCRIPTION**

The JUB - Jubizol MW Systems consist of fixing thermal insulation made of mineral wool (MW) boards (See Table 1 of this Detail sheet) to the substrate. The MW boards are adhesively fixed to the substrate with supplementary mechanical fixings as required. A layer of reinforced is embedded in the base coat layer. The base coat is cementitious and the decorative finishes are available in a range of colours and textures and are based on either cement, silicate, silicone or acrylic materials.

The system can be applied on a variety of existing external surfaces such as brick or rendered masonry walls. The MW system is particularly suitable for both dry and wet dashed external walls however loose dry dashing should be removed. Loose dashing would reduce the effective adhesion of the boards. MW due to its compressibility can best accommodate the uneven substrate formation of dry dashing.

The Jubizol MW system is suitable for soffits of over hangs or the underside of building projections, provided the installation in no way impinges on the fire certification of the existing dwelling. It can also be fixed on inclined or sloped surfaces provided that they are not directly exposed to precipitation. The system is not suitable for horizontal surfaces exposed to precipitation.

The substrate on which Jubizol MW will be used should have reaction to fire class: A1 or A2-s1 d0 according to EN 13501-1.

See Table 1 for the full list of components of the Jubizol MW System.

**2.1 INSTALLATION**

See CI 2.4 of Certificate No. 10/0351 for the installation instructions for the Jubizol MW Systems.

This matter is dealt with in NSAI Agrément Certificate 10/0351.

	<b>Table 1 – Jubizol MW Systems Components</b>	<b>Coverage (kg/m<sup>2</sup>)</b>	<b>Thickness (mm)</b>
<b>Adhesives</b>	JUBIZOL ADHESIVE MORTAR – dry mix cement based adhesive requiring addition of ~20 % water	3.5 - 5 (powder)	
	JUBIZOL ADHESIVE – dry mix cement based adhesive requiring addition of ~20 % water	3.5 - 5 (powder)	
<b>Insulation</b>	Mineral Fibre Boards CFC/HCFC-free to IS EN 13162:2001 Thermal insulation products for buildings ; Factory made mineral wool (MW) products. Minimum compressive strength 30 kPa.		50 to 200
<b>Anchors</b>	EJOT <b>Ejoterm ST U , Ejoterm STR-U, SDM-T plus, SDF-K plus, Ejoterm NT-U, Ejoterm NK-U, Ejoterm NTK-U</b> Hilti <b>SX-FV , SD-FV 8, XI-FV</b> Fischer <b>Termoz 8 U, 8 N</b> Leskovec <b>Plastično pritrđilo PP and Pritrdilno sidro PSK</b>		
<b>Base coat</b>	<b>JUBIZOL ADHESIVE MORTAR – dry mix cement base coat powder</b> requiring addition of ~20 % water. JUBIZOL ADHESIVE MORTAR consists of aggregates, cement, dispersion powder, special additives	5.6 – 8.4 (powder)	maximal (dry): 6 minimal (dry): 4
<b>Glass fibres meshes</b>	<b>JUBIZOL GLASS FIBRE MESH</b> Standard meshes (glass fibres meshes with mesh size between 3.5 and 4.7 mm) Weight 145 g/m <sup>2</sup> and 160 g /m <sup>2</sup>	/	/
<b>Primer</b>	<b>UNIGRUND</b> – liquid, water based acrylic slurry primer intended as a primer for all finishing coats (except mineral based finishing coats Mineral Trowelled Render, Mineral Smooth Render and Nivellin D + Revitalcolor AG)	0.15 - 0.20	/
	<b>AKRIL EMULSION</b> - liquid, water based acrylic primer intended as a primer for the acrylic and mineral based finishing coats	about 0.1	/
	<b>ACRYLCOLOR</b> - liquid exterior acrylic waterborne facade paint as a primer for the acrylic and mineral based finishing coats	about 0.1 L/ m <sup>2</sup>	/
	<b>JUBOSIL GX</b> - liquid, water based silicate primer intended as a primer for the silicate based finishing coats	about 0.1 L/ m <sup>2</sup>	/
	<b>JUBOSIL G</b> - liquid, water based silicone primer intended as a primer for the silicone based finishing coats	about 0.1 L/ m <sup>2</sup>	/

<b>Table 1 (Cont) – Jubizol MW Systems Components</b>		<b>Coverage (kg/m<sup>2</sup>)</b>	<b>Thickness (mm)</b>
<b>Finishing coats</b>	<b>Mineral Trowelled Render 2.0 / 2.5</b> – ready-mixed lime-cement based mortar requiring addition of water 20-23 %, based on lime, cement, aggregates, additives	2.6 to 3.1 (powder)	Regulated by particles size
	<b>Mineral Smooth Render 1.5 / 2.5</b> – ready-mixed lime-cement based mortar requiring addition of water 20-23 %, based on lime, cement, aggregates, additives	2.6 to 3.6 (powder)	
	Ready to use paste – <b>Silicate Trowelled Render 2.0 / 2.5</b> - based on potassium silicate and water-based acrylic binder, aggregates, additives.	2.5 to 3.2 (paste)	
	Ready to use paste – <b>Silicate Smooth Render 1.5 / 2.0 / 2.5</b> - based on potassium silicate and water-based acrylic binder, aggregates, additives	3.0 to 5.5 (paste)	
	Ready to use paste – <b>Silicone Trowelled Render 2.0 / 2.5</b> - based on silicone emulsion and water-based acrylic binder, aggregates, additives	2.8 to 3.5 (paste)	
	Ready to use paste – <b>Silicone Smooth Render 1.5 / 2.0 / 2.5</b> - based on silicone emulsion and water-based acrylic binder, aggregates, additives	2.4 to 4.7 (paste)	
	Ready to use paste – <b>Acrylic Trowelled Render 2.0 / 2.5</b> - based on water-based acrylic binder, aggregates, additives	2.5 to 3.2 (paste)	
	Ready to use paste – <b>Acrylic Smooth Render 1.5 / 2.0 / 2.5</b> - based on water-based acrylic binder, aggregates, additives	2.5 to 5.0 (paste)	
	<b>Nivellin D + Revitalcolor AG*</b> – ready-mixed polymer based mortar requiring addition of water ~ 30 %, based on polymer, lime, cement, aggregates, additives + liquid exterior micro reinforced acrylic waterborne anti-mildew paint	~ 4.5 + (~ 0.5 l/m <sup>2</sup> ) (powder + liquid)	
	Ready to use paste – <b>Jubolit 1.5 / 2.5</b> , acrylic spray render; based on water-based acrylic binder, aggregates, additives	2.5 to 3.5 (paste)	
	Ready to use paste – <b>Unixil G - Siloxanised Acrylic Smooth Render 1.5 / 2.0 / 2.5</b> - based on water-based acrylic binders, mineral fillers, special additives	2.5 to 5.0 (paste)	
	Ready to use paste – <b>Unixil Z - Siloxanised Acrylic Trowelled Render 2.0 / 2.5</b> - based on water-based acrylic binders, mineral fillers, special additives	2.5 to 3.2 (paste)	
Ready to use paste – <b>Nanoxil G - Self-cleaning Silicone Smooth Render 1,5 / 2,0 / 2,5</b> - based on water-based silicone and acrylic binders, nano structures, mineral fillers and special additives	2.6 to 4.7 (paste)		
Ready to use paste – <b>Nanoxil Z - Self-cleaning Silicone Trowelled Render 2,0 / 2,5</b> - based on water-based silicone and acrylic binders, nano structures, mineral filling and special additives	2.8 to 3.5 (paste)		
<b>Ancillary materials</b>	Ancillary materials and decorative coatings must be approved by the certificate holder.		
<b>* Note: Finishing coat Nivellin D + Revitalcolor AG is applied without primer.</b>			

<b>Table 2 – JUB - Jubizol MW System</b>			
<b><u>Impact Resistance</u></b>			
		<b>Single standard mesh</b>	<b>Double standard mesh</b>
Rendering systems: base coats JUBIZOL ADHESIVE MORTAR + finishing coat indicated hereafter (including primer acc. to clause 1.1):	MINERAL RENDER (*)	Category II	Category I
	SILICATE RENDER (*)	Category I	Category I
	SILICONE RENDER (*)	Category I	Category I
	ACRYLIC RENDER (*)	Category I	Category I
	NIVELIN D + REVITALCOLOR AG	Category II	Category I
	JUBOLIT (*)	Category I	Category I
	UNIXIL (*)	Category I	Category I
	NANOXIL (*)	Category I	Category I
* = All granulations			

<b>Table 3 – JUB - Jubizol MW System</b>				
<b><u>Reaction to Fire</u></b>				
Configuration	Maximum declared organic content of the finishing coat	Declared flame retardant content of the rendering system	Thickness (mm)	Euroclass according to SIST EN 13501-1
ETICS JUBIZOL MW - in combination with insulation product mineral wool slabs and following finishing coats: Mineral Trowelled Render, Mineral Smooth Render, Silicone Trowelled Render, Silicone Smooth Render, Silicate Trowelled Render, Silicate Smooth Render, Nivellin D + Revitalcolor AG, Nanoxil G, Nanoxil Z	11 %	0 %	~ 100	A2 – s1, d0
all other configurations	-	-	~ 100	F (no performance determined)