Enewall Ltd
4 Netherton Road
Wishaw
Lanarkshire ML2 0EQ
Tel: 01698 373305 Fax: 01698 374503
website: www.enewall.co.uk
e-mail: info@enegroup.co.uk

BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

Agrément Certificate
12/4952
Product Sheet 1

POWERWALL RENDERS

POWERWALL RENDER SYSTEM

This Agrément Certificate Product Sheet[1] relates to the Powerwall Render System, for use on new and existing buildings as a one-coat or two-coat render with a spar dash finish, applied to suitably prepared exterior substrates of existing cement render or brickwork, blockwork and concrete.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Weather resistance — the system is suitable for external use on new or existing buildings in areas where the local wind-driven rain spell is less than 75 litres per m^2 per spell (see section 6).

Strength and stability — the system has adequate resistance to impact damage and cracking (see section 7).

Performance in relation to fire — the system is classified as 'non-combustible' as defined in the national Building Regulations (see section 9).

Durability — the system applied to a suitably prepared sound substrate will perform satisfactorily for a period in excess of 30 years (see section 11).

The BBA has awarded this Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 10 December 2012

Simon Wroe
Head of Approvals — Materials

Greg Cooper
Chief Executive

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA

tel: 01923 665300
fax: 01923 665301
e-mail: mail@bba.star.co.uk
website: www.bbacerts.co.uk

Regulations

In the opinion of the BBA, the Powerwall Render System, if installed, used and maintained in accordance with this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):

The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	B4(1)	External fire spread (walls)
Comment:		The system is unrestricted by this Requirement. See section 9 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		Walls rendered with the system can satisfy this Requirement. See section 6.1 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The system is acceptable. See section 11.1 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The system can contribute to a construction meeting this Regulation. See sections 10.1, 10.2, 11.1 and the *Installation* part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.6	Spread to neighbouring buildings
Standard:	2.7	Spread on external walls
Comment:		The system is unrestricted by these Standards, with reference to clauses 2.6.4[1][2], 2.6.5[1], 2.6.6[2] and 2.7.1[1][2], respectively. See section 9 of this Certificate.
Standard:	3.10	Precipitation
Comment:		Walls rendered with the system can satisfy the requirements of this Standard, with reference to clauses 3.10.1[1][2], 3.10.2[1][2], 3.10.3[1][2] and 3.10.5[1][2]. See section 6.1 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The system can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for the system under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1[1][2] and Schedule 6[1][2].

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

The Building Regulations (Northern Ireland) 2012

Regulation:	23(a)(b)(i)	Fitness of materials and workmanship
Comment:		The system is acceptable. See section 11.1 and the *Installation* part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		Walls rendered with the system can satisfy this Regulation. See section 6.1 of this Certificate.
Regulation:	36(a)	External fire spread
Comment:		The system is unrestricted by this Regulation. See section 9 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 3 *Delivery and site handling* (3.1, 3.3 and 3.5) and 15 *Mixing* (15.2 and 15.3) of this Certificate.

Additional Information

NHBC Standards 2011

NHBC accepts the use of the Powerwall Render System, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 6.1 *External masonry walls*.

Technical Specification

1 Description

1.1 The Powerwall Render System comprises polymer resin, crushed rock aggregates, Portland cement, lightweight fillers, synthetic fibres, pigments and moisture retention admixtures.

1.2 The system can be used as a one- or two-coat system with the following components:

One coat	Powerwall Exposed Aggregate Mix (spar dash finish)
Two coat	Powerwall Base Coat Powerwall Exposed Aggregate Mix (spar dash finish).

1.3 Powerwall Exposed Aggregate Mix is available in a range of colours to suit the aggregate type selected for the spar dash finish.

1.4 Powerwall Smooth Band Render is available for use in window and door reveals where required.

1.5 Ancillary items used with the renders are:

- Powerwall Fungicidal Wash — used on existing buildings to remove organic growth from substrates
- Powerwall Fungicidal Sealer — a styrene butadiene polymer coating used on substrates as an anti-fungal barrier and a sealing/bond coat.
- Decorative, coloured spar aggregate — a range of dry dash aggregates.

1.6 Other items which may be used with the system, but which are outside the scope of this Certificate, are as follows:

- Bellcast beads, external corner beads, stop beads and expansion beads — various trims available for use around details to provide square finished edges
- Neutral cure silicone mastic — used to provide a watertight seal around penetrations.

2 Manufacture

2.1 The components of the system are manufactured using batch processes by blending measured quantities of ingredients in suitable mixers.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Enewall Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by United Register of Systems (URS) (Certifiate 1224/A/0001/UN/E).

3 Delivery and site handling

3.1 Powerwall renders and spar aggregate are available in sealed 25 kg polythene/paper bags on pallets. Each pallet contains 40 bags and weighs 1000 kg.

3.2 Powerwall renders are cementitious materials and must be stored in dry conditions, off the ground and in a proper store and protected from frost. To avoid 'warehouse set' caused by compaction, the height of bags stacked on a pallet must not exceed one metre and no more than four pallets should be stacked. Renders should be used in the order in which they are received and each delivery should be kept separate to avoid confusion. The expiry date is printed on the bags.

3.3 The renders are cement-based and must be handled using the normal precautions for handling Portland cement.

3.4 Each bag bears the manufacturer's legend, batch number and the BBA identification mark incorporating the number of this Certificate.

3.5 Powerwall Fungicidal Wash and Powerwall Fungicidal Sealer are delivered in 5 litre and 15 litre plastic containers and are classified as 'irritant' under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009* (CHIP4)/*Classification, Labelling and Packaging of Substances and Mixtures (CPL Regulations) 2009*. The packaging bears the product identification and appropriate hazard warning labels.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Powerwall Render System.

4 Use

4.1 The Powerwall Render System is satisfactory for external use as a one- or two-coat render on new or existing buildings. The one-coat system is used on suitably prepared, existing, sand-cement renders and the two-coat system is used on brickwork, blockwork and concrete substrates.

4.2 New constructions to be rendered should be designed and constructed in accordance with the relevant recommendations of BS EN 1996-2 : 2006 and the UK associated National Annex, and BS EN 13914-1 : 2005. The designer should select a construction appropriate to its location, paying due attention to design, detailing and workmanship and the materials to be used.

4.3 It is essential that all walls are designed and constructed to prevent moisture penetration and the formation of condensation.

4.4 Powerwall Exposed Aggregate Mix applied at a thickness of 6 mm to 8 mm may be taken to have a weight per unit area of between 8 kg·m^{-2} and 10 kg·m^{-2}. Powerwall Base Coat applied at a thickness of 8 mm to 10 mm may be taken to have a weight per unit area of between 10 kg·m^{-2} and 12 kg·m^{-2}.

4.5 The assessment covers the area of the wall above damp-proof course level. The system has not been assessed for use:

- on woodwool slabs
- on metal lathing
- over painted brickwork and similar backgrounds
- over timber-frame construction
- over metal-frame construction
- on the backs of parapet and screen walls rendered on the face
- on horizontal surfaces exposed to the weather such as ledges, sills and copings
- as rendering to chimney stacks.

4.6 The system will provide a new decorative finish and improve the weather resistance of a wall.

5 Practicability of installation

The system is designed to be installed by competent, experienced plasterers and renderers.

6 Weather resistance

6.1 The system is suitable for use in areas where the local wind-driven rain spell index calculated in accordance with BS 8104 : 1992 is less than 75 litres per m^2 per spell, and where two-coat traditional renders would normally be specified.

6.2 Walls to receive an application of the system must be designed and constructed in relation to local exposure conditions to minimise the incidence of rain penetration.

6.3 The system will tend to shed water and reduce considerably the amount of water absorbed by the substrate during rain.

7 Strength and stability

7.1 The system has adequate resistance to impact damage and cracking.

7.2 In common with traditional renders, it is essential that the surface to be rendered provides a sound mechanical key to ensure a satisfactory bond between the substrate and the system.

8 Water vapour resistance

The water vapour resistance of the two-coat system may be taken as 5.88 MN·s·g^{-1}.

9 Performance in relation to fire

The system is classified as 'non-combustible' as described in the national Building Regulations.

10 Maintenance

10.1 Regular maintenance checks should be carried out on architectural details and on external plumbing and fittings to ensure they are functioning correctly and to prevent water penetration into the system.

10.2 Damaged render should be repaired as soon as is practicable — see section 17 of this Certificate.

11 Durability

11.1 The system, applied to a suitable sound substrate, will perform satisfactorily as an external render for a period in excess of 30 years.

11.2 The spar dash finish will break up the flow of water on the surface and reduce the risk of discoloration by water runs. Care should be taken to ensure that normal architectural details for shedding water clear of the building are present and functioning, and the gutters and downpipes are in good condition.

11.3 The system may become discoloured with time, the rate depending on the local environment. Appearance can normally be restored by cleaning with water, mild detergent and a stiff, bristle brush. In industrial atmospheres light colours should be avoided.

11.4 The system may suffer from algae growth in a similar manner to traditional external rendered finishes.

11.5 In common with traditional renders the system may be subject to lime bloom. The occurrence of this may be reduced by providing proper protection and avoiding application in the winter or adverse weather conditions. The effect is less noticeable on lighter colours.

Installation

12 General

12.1 Application of the Powerwall Render System is carried out strictly in accordance with this Certificate, the Certificate holder's instructions and specifications, and the relevant recommendations of BS EN 13914-1 : 2005. On-site training will be given by the Certificate holder to rendering contractors considering the use of the system for the first time.

12.2 The system should not be applied in rain or mist, at temperatures below 5°C or above 40°C or if exposure to frost is likely to occur during curing. In common with traditional sand/cement renders, the system must not be applied to frost-bound walls.

12.3 In sunny weather, work should commence on the shady side of the building and be continued round, following the sun to prevent the rendering drying out too rapidly.

12.4 Wall surface temperatures above 40°C accelerate the chemical setting of the process and if the set is too rapid hydration may not take place.

12.5 To minimise colour shade variations and 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 drainpipes, reveals or lines of doors and windows, help mask cold joints. Where long, uninterrupted runs are planned, bags of the material should be checked for batch numbers; bags with different batch numbers should be checked for colour consistency.

13 Site survey and preliminary work

13.1 Advice concerning site survey and preliminary work is available to the designer or rendering contractor from the Certificate holder.

13.2 A pre-application survey of the property must be carried out to determine suitability of the substrate to receive the system and whether repairs to the building structure are necessary before application. The survey should include an assessment by the Certificate holder on the suitability of the substrate. A specification is prepared for each elevation indicating:

- preliminary treatment of the background
- position of beads
- detailing around windows, doors and at eaves
- damp-proof course level
- exact position of movement joints
- areas where flexible sealants must be used
- any alterations to external plumbing.

13.3 Tests to determine the salt content of brick substrates should be conducted in accordance with BS EN 772-5 : 2001. Results of the tests should be reported to the Certificate holder to enable advice on the suitability of the substrate to receive the system.

13.4 The mortar in new masonry must conform to the brick manufacturer's recommendations.

13.5 All necessary repairs to the building structure must be completed before application of the system.

13.6 It is recommended that external plumbing is removed and, where necessary, alterations are made to underground drainage to accommodate its repositioning on the finished face of the system.

13.7 On existing buildings, purpose-made over-sills may be necessary to extend beyond the finished face of the system. Sills should have an efficient throat or drip on the underside and be designed to prevent water running onto the wall below, or into the jambs. New buildings should incorporate suitably wide sills.

13.8 New walls to be rendered should be left as long as possible to minimise substrate movement.

13.9 At the top of walls, the system must be protected by an adequate overhang or by adequately sealed, purpose-made flashing. The Certificate holder can advise on suitable specifications for a particular installation.

14 Preparation of substrate

14.1 All damage to the substrate from frost attack, salts or corrosion must be carefully repaired. Damaged bricks or blocks must be replaced and any holes or insufficiently filled joints repaired. Loose and spalling render or projecting mortar joints must be removed and uneven surfaces levelled to avoid variations in the thickness of the system.

14.2 The relevant recommendations of BS EN 13914-1 : 2005 must be followed to achieve a satisfactory bond. In particular, the surface to be rendered must provide a good mechanical key and adequate suction and be free from paint, oil, soot, efflorescence, dust, lichens, moulds and similar growth which may prevent a satisfactory bond.

14.3 It is essential that new and existing substrates to be rendered are clean.

14.4 The system must not be used on water-repellent treated substrates, on plaster or plaster paint or coatings.

14.5 When the substrate consists of different materials or a material of variable suction the recommendations of BS EN 13914-1 : 2005 and the Certificate holder's instructions must be followed to ensure even quality and appearance of the system.

14.6 When applying the system to porous or high suction substrates particularly in warm weather, the surface should be wetted on the day before the render is applied. A further mist of clean water may be required before the application of the system.

14.7 On backgrounds of negligible suction the advice of the Certificate holder should be sought concerning special precautions necessary to provide an adequate key.

14.8 For very smooth or irregular surfaces, the advice of the Certificate holder should be sought.

14.9 Wherever possible, independent scaffolding should be used to avoid the need to subsequently make-good putlog holes and other breaks in the work.

14.10 Angles may be formed using render beads, the Certificate holder can advise on suitable materials.

15 Mixing

15.1 The renders are added to clean water, at a rate of approximately 3.9 litres of water to 25 kg of Powerwall Base Coat, 5.5 litres of water to 25 kg of Powerwall Exposed Aggregate Mix and 5.5 litres of water to 25 kg of Powerwall Smooth Band Render. The render is thoroughly mixed using a traditional mixer or in a tub with a mechanical paddle for a minimum of five minutes until the correct workability is achieved. Care must be taken to ensure even dispersion of the resins and fibre reinforcement.

15.2 When mixing, a filter respirator should be worn. Where excessive concentrations of dust may accumulate, the measures defined in the Health and Safety Executive Publication EH40/05 *Occupational Exposure Limits* 2005 for unlisted substances should be followed. Note that EH40 is published annually, and the current edition should be followed.

15.3 The fibres used in the renders may irritate the skin. Protective clothing should be worn to avoid contact with both dry, unmixed material and with wet mortar. Great care must be taken to avoid contact with the eyes.

15.4 The renders are applied by hand trowel as a traditional render or by pump. The Certificate holder can advise on suitable equipment.

15.5 In common with traditional renders, slumping of the material may occur if the mix is too wet, and will increase the risk of settlement cracks developing.

15.6 The renders will remain workable for approximately 1½ hours after mixing and must not be regauged after they begin to set.

16 Application

16.1 On existing buildings it is recommended that one coat of Powerwall Fungicidal Wash is applied to the entire surface by roller or knapsack spray and allowed to dry. All organic growth must be removed by a stiff, bristle brush before rendering commences.

16.2 Before application of the render, one coat of Powerwall Fungidal Sealer must be applied by roller or knapsack spray to the entire wall surface to be rendered and allowed to dry.

16.3 A neutral cure silicone mastic is gun-applied around window frames, door frames, eaves fascia and other details in accordance with the Certificate holder's instructions. The Certificate holder must be consulted for suitable products.

16.4 Bellcast beads, external corner beads, stop beads and expansion beads are fixed as recommended by the Certificate holder.

16.5 When the existing surface to be rendered is very uneven or when joints are deeply recessed, a preliminary coat of the Powerwall Base Coat should be applied to part or the whole of the existing surface to achieve a level surface. Any such preliminary coat must be allowed to dry for 24 hours before the application of the system commences.

16.6 The system is applied by traditional methods commencing from the top of the building to avoid drips and staining previously applied materials:

- for the one-coat system — Powerwall Exposed Aggregate Mix is applied in a thickness of 8 mm to 10 mm
- for the two-coat system — Powerwall Base Coat is applied in a thickness of 8 mm to 10 mm and after 24 hours Powerwall Exposed Aggregate Mix is applied in a thickness of 6 mm to 8 mm
- for reveals — Powerwall Smooth Band Render is applied in a thickness of 6 mm to 8 mm.

16.7 While the render is still soft, selected clean spar aggregate may be dashed or sprayed onto the surface in a traditional manner. Where necessary the aggregate should be lightly tamped into the render to ensure that a good bond is obtained.

16.8 On completion of the rendering, the surface must be checked to ensure an even coverage of render and spar dash where used.

Curing

16.9 The system must be protected from rain, mist or cold (less than 3°C on a falling thermometer) conditions, or drying may be excessively prolonged.

16.10 The use of polythene sheeting is recommended during curing and should be arranged to hang clear of the face of the wall in such a way that it does not form a tunnel through which the wind could increase the evaporation of water from the system.

16.11 Care must be taken to protect the system from rapid drying due to exposure to direct sun or drying wind.

17 Repair

Damage to the system must be repaired immediately in accordance with the relevant recommendations of BS EN 13914-1 : 2005. Conventional rendering techniques and materials may be used to repair damage to the system. The advice of the Certificate holder should be sought for particular installations.

Technical Investigations

18 Tests

18.1 Tests were carried out on the system to determine:

- product characteristics
- water vapour permeability
- effect of freeze/thaw
- water resistance
- thermal cycling.

18.2 An assessment was made of data relating to:

- bond strength
- fire properties
- compressive strength
- impact resistance
- shrinkage cracking.

19 Investigations

The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

BS EN 772-5 : 2001 *Methods of test for masonry units — Determination of the active soluble salts content of clay masonry units*

BS 8104 : 1992 *Code of practice for assessing exposure of walls to wind-driven rain*

BS EN 1996-2 : 2006 *Eurocode 6 : Design of masonry structures — Design considerations, selection of materials and execution of masonry*
NA to BS EN 1996-2 : 2006 *UK National Annex to Eurocode 6 : Design of masonry structures — Design considerations, selection of materials and execution of masonry*

BS EN 13914-1 : 2005 *Design, preparation and application of external rendering and internal plastering — External rendering*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

20 Conditions

20.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

20.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

20.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

20.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

20.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

20.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA
tel: 01923 665300
fax: 01923 665301
e-mail: mail@bba.star.co.uk
website: www.bbacerts.co.uk