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INDEPENDENT ASSESSMENTS
FOR THE EUROPEAN BUILDING AND
CONSTRUCTION INDUSTRY

CERTIFICATE OF ASSESSMENT

PRODUCT

MARMORIT RENDER SYSTEMS

SUPPLIED BY

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SUMMARY

Marmorit one-coat renders Presto, Mono 3, KR200, and finish renders Carrara, Noblo, Pico, Rolls KW220 and Conni-zwo, applied to UP210w basecoat, have been assessed to confirm their suitability for use as weather-resistant external decorative coatings for new or existing walls of either fired-clay brick, or of lightweight or dense aggregate concrete block, masonry or dense concrete construction, or existing rendering over this construction. They are one-coat or two-coat ready coloured render systems, providing various surface textures and colours. Characteristics of the render systems have been reviewed with respect to the Building Regulations current in the UK. The assessment has referred to the British Standards current in August 2000.

The assessment is described in the following pages, which form integral parts of this certificate.

LIMITATIONS OF USE

The Marmorit render systems are certified for use on buildings for forming a weather-resistant, external decorative finish to be applied to a sound, clean, correctly detailed, vertical masonry or dense concrete wall, above DPC level, that must provide an adequate key. The background must provide a minimum 0.3 N/mm^2 pull off strength. The minimum thickness at any point must be 10 mm. The maximum thickness must be not greater than 30 mm.

The Marmorit render systems applied to lightweight concrete blockwork of density less than 450 kg/m^2 or external insulation, have not been assessed. The render systems must not be considered as providing any contribution to the overall structural performance of the building. They have not been assessed for use on horizontal unprotected surfaces, or at or below ground level or in conditions of permanent contact with water, eg as tanking.

The Marmorit render systems must be applied and maintained strictly in accordance with the requirements of this certificate and with the manufacturer's instructions, as inspected by BRE Certification. Only approved specialist applicator firms employing operatives approved, trained and monitored by the supplier may undertake the application.

STATEMENT

It is the opinion of BRE Certification that the Marmorit render systems are satisfactory for use within the stated limitations provided they are used in accordance with the manufacturer's specifications, their instructions and the requirements of this certificate.

CONFIRMATION

For and on behalf of
BRE Certification

P J Field
Technical Director

UKAS PRODUCT CERTIFICATION
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ELECTRONIC VERSION

1. TECHNICAL SPECIFICATION

1.1 Description of product

1.1.1 Presto is a one-coat render system that is supplied as a pre-blended powder with 1.5 mm aggregate, and is based upon white cement and lime with selected aggregates. It is for application in a thickness of 10-30 mm for a rubbed-down finish and 12-30 mm for a scratch coat finish.

Mono 3 is a one-coat render system that is supplied as a pre-blended powder with 3 mm aggregate for application in a thickness of 12-25 mm. This is based upon white cement with selected aggregates. A scratch coat finish is obtained.

KR 200 is a one-coat render system that is supplied as a pre-blended powder with 4 mm aggregate for application in a thickness of 12-25 mm. This is based upon white cement with selected aggregates. A scratch coat finish is obtained.

UP210W is an undercoat for render systems that is supplied as a pre-blended powder. This is based upon cement with selected aggregates.

Carrera is a render system finish coat that is supplied as a pre-blended powder and is applied over UP210w base coat. This is based upon white cement with selected marble aggregate. A finish of nominal thickness 5 mm is obtained.

Pico is a render system finish coat that is supplied as a pre-blended powder and is applied over UP210w or SM700 base coat. This is based upon white cement with selected mineral aggregate and marble sand. A smooth float finish of nominal thickness 3 mm is obtained.

KW220 is a render system finish coat that is supplied as a pre-blended powder and is applied over UP210w base coat. This is based upon white cement with selected mineral aggregates. A wet dash finish of nominal thickness 7 mm or 10 mm is obtained.

Noblo is a render system finish coat that is supplied as a pre-blended powder and is applied over UP210w base coat. This is based upon white cement with selected marble aggregate. A smooth float finish of nominal thickness 1.5 mm, 2 mm or 3 mm is obtained.

Rolls is a render system finish coat that is supplied as a pre-blended powder and is applied over UP210w base coat. This is based upon white cement with selected marble aggregate. A drag finish of nominal thickness 3 mm is obtained.

Conni Zwo is a render finish coat supplied ready-mixed for application and is applied over UP210w base coat. This is based on silicone resin and selected mineral aggregates. A smooth float finish of nominal thickness 1.5 mm, 2 mm or 3 mm is obtained.

1.2 Product performance

1.2.1 Each Marmorit render system is intended to provide a rapid, simple, weather-resistant, decorative system for vertical masonry or dense concrete walls, whilst offering a wide choice of finishes and textures. It must not be used for repairing any defective wall, or for providing all the watertightness required to be provided by the element alone.

1.2.2 Each Marmorit render system, when employed as a method for providing an externally rendered finish to masonry or dense concrete walls, is considered suitable for use in domestic applications and in industrial and commercial buildings, provided that the requirements of this certificate are complied with.

1.2.3 The thermal resistance provided by each Marmorit render system should be considered to be only equivalent to that provided by a traditional render (see Clause 24 of BS 5262).

1.2.4 Each Marmorit render system, being composed of less than 1% organic constituents and therefore being non-combustible, can provide a Class 0 surface, with respect to the appropriate Building Regulations, irrespective of the colour or main aggregate combination. Consequently, there are no maximum surface area restrictions for the render for use near to unprotected areas or to (notional) boundaries.

The render must not be considered as providing any contribution to the overall fire resistance performance of the building.

1.2.5 Each Marmorit render system is considered to be durable for a minimum of 20 years, provided that the requirements of this certificate are complied with. The render may require periodic maintenance. In general, a spray-applied render would be more durable than a laid-on render. The render should not be expected to significantly delay carbonation or corrosion of any ferrous metals in the substrate.

A render finish in a dark colour, ie with a solar energy absorption coefficient of greater than 0.7, is not assessed for use on an area that would be directly lit by sunlight. This is due to the potential risk of excessive thermal movement leading to cracking. There is also the risk of the occurrence of efflorescence, for instance if a render in a dark colour were to be applied on an exposed area during a cold, damp period with the temperature at, or below 8°C.

1.2.6 Rendering masonry or dense concrete external walls above DPC level is not considered to adversely impair any existing risk of either internal surface, or interstitial, condensation, provided that the requirements of this certificate, and of the pertinent clauses of BS 5250, are complied with. Guidance is given in BRE document BR 262 (1994) 'Thermal insulation – avoiding risks'.

1.2.7 It is considered that masonry or dense concrete external walls above DPC level, finished using the Marmorit render system, can adequately resist the passage of moisture into a building and that they will be weather-resistant for the design life of the building; that is provided that the render is applied with at least a minimum thickness of 10 mm at all points in accordance with the requirements of this certificate and of the manufacturer's instructions, as inspected by BRE Certification. In addition, the details at openings, fixtures and penetrations must be maintained, using only materials specified in this certificate, in accordance with the requirements of this certificate and with the pertinent clauses of BS 5628:Part 3 or BS 8110:Parts 1 and 2, as appropriate.

In a situation where the render is to be used as the external finish to any wall classified as having a 'severe' exposure to local wind-driven rain, when assessed with reference to BS 5628: Part 3 and BS 8104, ie where the annual driving-rain index is, or exceeds, 7 m^2/seconds^{-1}, the wall must incorporate a full-height, minimum 50 mm wide, vented or ventilated, drained, clear cavity.

1.2.8 It is considered that the textured surface of the render systems will tend to reduce the risk of surface crazing and to break up and disperse the tendency for precipitation to flow down it in paths, that could otherwise lead to aesthetically unacceptable streaks and also to an uneven absorption of water into the render, as compared with a smooth finish.

1.2.9 Each Marmorit render system is considered to have a compressive strength of at least equivalent to a Type III traditional render to BS 5262, and so to have sufficient resistance to impact or abrasion for use in conventional domestic situations and for use on a next-to-the ground façade beside a communal or public area. As for any render system, there is the risk of damage to it when applied to the lowest 1.5 m height above pedestrian level of an elevation to which there is access, and especially as a result of impact from a vehicle. Guidance is presented in BRE Current Paper CP 6/81.

2. BUILDING REGULATIONS

The relevant Building Regulation requirements for this product are:

2.1 The Building Regulations 1991 (England and Wales) as amended

Requirement

B4(1) External fire spread – the Marmorit render systems can offer adequate resistance to the surface spread of fire over a masonry external wall.

C4 Resistance to weather and ground moisture – a wall above DPC level, finished with these render systems in accordance with the requirements of this certificate, can adequately resist the passage of moisture from the atmosphere into the wall, if applied to a wall designed and constructed to the pertinent clauses of BS 5628:Part 3 or BS 8110:Parts 1 and 2, as appropriate.

Regulation

7 Materials and workmanship – the render systems are manufactured from suitably safe and durable materials for their application and can be installed so as to perform satisfactorily.

2.2 The Building Standards (Scotland) Regulations 1994 (as amended)

Regulation

B2.1 Selection and use of materials, fittings, components and other manufactured products – the Marmorit render systems are manufactured from adequately safe and acceptable materials and are considered to be adequately resistant to deterioration and wear under normal service conditions, provided that they are installed and maintained in accordance with the requirements of this certificate.

D2.1/2.2/6.3 Non-combustibility, external claddings and separation of sides of buildings from boundaries – for these renders use is not restricted by these Standards.

G3.1 Resistance to precipitation – a masonry or dense concrete wall above DPC level, finished with the render systems, formed in accordance with the requirements of this certificate and with the pertinent clauses of BS 5628:Part 3 or BS 8110:Parts 1 and 2, as appropriate, can be designed and constructed to provide adequate weather resistance.

G4 Condensation – a masonry wall or dense concrete above DPC level finished using these render systems, in accordance with the requirements of this certificate and of BS 5250, can be designed and constructed so as not to be subject to undue interstitial or inner surface condensation.

2.3 The Building Regulations (Northern Ireland) 1994 (as amended)

Regulation

B2 Fitness of materials and workmanship – Marmorit render systems are manufactured from suitably safe materials that are acceptable for use in a system for forming externally rendered masonry or dense concrete vertical walls.

C5 Resistance to ground moisture and weather – an external masonry or dense concrete wall above DPC level, designed and constructed using the external render systems specified above in accordance with the requirements of this certificate and of BS 5628:Part 3 or BS 8110:Parts 1 and 2, as appropriate, and the relevant recommendations of BS5262, can provide adequate weather resistance.

C7 Condensation – an external masonry wall or dense concrete above DPC level designed and constructed to prevent any harmful effect from moisture in the form of interstitial condensation using the external render systems specified above, in accordance with requirements of this certificate and of BS 5250.

E8 External fire spread – the render systems can comply with these Regulations.

3. INSTALLATION/PRACTICAL APPLICATION

3.1 Storage and handling

3.1.1 Marmorit renders are delivered to site as a blended powder in bags, each containing 30 kg, on pallets. The brand name, the production date, and the batch number are printed on each bag. It must be stored with similar precautions as for cement, as recommended in BS 5262 and BS 8000:Part 2:Section 2.1 and Part 10, so that it is protected from excessive heat and from frost and retained in dry conditions. It can be expected to have a shelf life of 12 months if stored correctly in the original unopened bags as supplied. Conni-zwo finish is supplied as a ready-to-apply mixture in containers containing 25 kg, which should be stored with similar precautions to the bags.

3.2 Installation of Marmorit render systems

3.2.1 Marmorit render systems must be applied by an approved firm employing operatives trained, approved and monitored by the manufacturer. The manufacturer's site evaluation and specification report check sheet should be completed for each site.

3.2.2 The renders should not be directly applied to a façade with surface mould spots and algal growths, bloom or loose materials or to which a waterproofing treatment had previously been applied, or that had already been finished with a gypsum-based coating, paintwork or a plastic coating. The render should not come into contact with timber recently treated with an organic solvent borne preservative, oils or other material harmful to it. For direct application to a fresh substrate, it must have been permitted to dry out sufficiently beforehand. At least 28 days, in good drying conditions, should be allowed prior to application.

3.2.3 The renders must not be used alone to correct gross irregularities, in line or level of the façade, eg that exceeding 5 mm in every 2 m as measured with a straight edge.

3.2.4 The renders must not be directly applied to any incorrectly detailed, or insufficiently lined chimney flue, or to a chimney stack without an adequate coping, or to a single-leaf parapet, freestanding wall or retaining wall not incorporating the equivalent to an adequate damp-proof membrane. A parapet must not be rendered on both sides.

3.2.5 Where the masonry is designed and constructed so that the protection from water penetration into the background does not prevent the work from becoming saturated for prolonged periods of time, precautions should be undertaken as recommended in BS 5262:1991. For a façade subject to such saturation, and which is of fired-clay blockwork or brickwork, and where the designation of the bricks or blocks is not known to be of low soluble salt content, or the substrate is weak or badly fragmented, or may otherwise be anticipated to be subject to undue sulfate attack, the render must not be directly applied to such a background. The render alone must not be directly applied to a relatively weaker substrate, such as a badly fragmented or spalled background or especially where the surface is also plain and smooth.

The instructions of the manufacturers of ordinary MN or ML grade fired-clay bricks, should they be the intended substrate, regarding the advisability of their use in combination with a render and full cavity fill and the potential risk of moisture build-up, must be followed.

3.2.6 The render must be applied in accordance with the requirements of the application guide of the manufacturer and of BS 5262 and BS 8000:Part 10. Any discrete area of the render must be formed from a single homogeneous layer made up from one batch (the batch number is to be found on the side of each bag) to achieve a consistent colour.

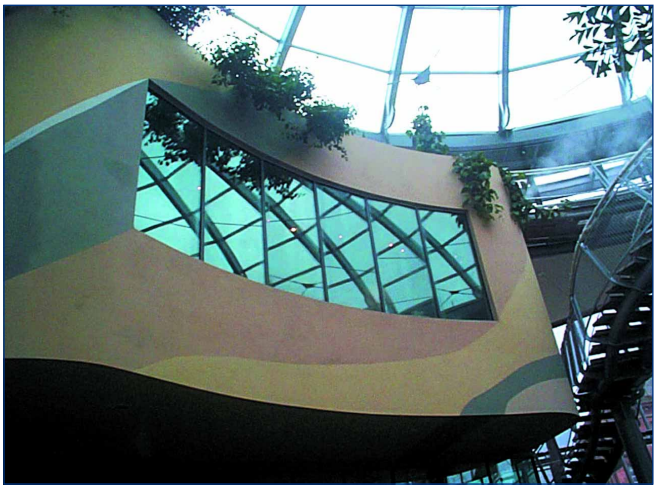

TABLE 1: Typical properties of hardened Marmorit render systems

Property		Typical value
Compressive strength	DIN 18 557	2.5 N/ mm^2
Flexural strength	DIN 18 557	1.7 N/ mm^2
Water vapour diffusion sd	DIN 52 615	0.08 m
Absorption of water by capillary action	DIN 52 615	0.19kg/m^{2}h$^{1/2}$
Apparent mass	DIN 18 557	1.8 kg/m^3

3.2.7 All joints, joinery, and trims applications must be fixed first where applicable. Proud trims, if installed on the lowest 3 m height above pedestrian level beside an area with public access, must be mechanically fixed in position through to the substrate, at maximum 600 mm centres. Other trims, if installed, may be adhered or mechanically fixed. Trim must be of adequate durability and alkali-resistance, as required by BS 5262, of corrosion resistance equivalent to at least that of grade Z275 to BS EN 10147.

The head of an elevation to be rendered should be protected by means of a minimum 50 mm overhang; a sill should project by a minimum 50 mm to the outside of the building line. It is recommended that any window or door should be inset by a minimum of 50 mm, or there should be a minimum of 50 mm external projection above to assist the throwing of water off the elevation.

3.2.8 Where the intended substrate is particularly porous and has a high suction, or is hot, the surface must be first dampened with water not more than a day prior to the first application. The render must not be applied in a period in which there is a risk of freezing, ie the ambient temperature must be above 5°C, and shall remain at or above 5°C for at least 24 hours following any application.

3.2.9 The render powders must be fully mixed on-site in accordance with the manufacturer's instructions, which have been inspected by BRE Certification. No admixture shall be added to the powder or to the paste. The manufacturer's advice regarding health and safety precautions should be followed; the render is alkaline, the pH of the powder is between 12 and 13 when mixed with water. The contents of a 30 kg bag of render powder must be mixed with approximately 6-6.5 litres of water, for up to 2 minutes. Presto render must be applied by pump or trowel and trowelled level to between 10-30 mm thickness, Mono 3 to 12 – 25 mm, or KR200 to 12-25 mm as single-coat renders systems.

In order to provide weather resistance performance, the finished render must have a minimum thickness of 10 mm at all points. UP210w backing mortar for render finishes must be applied in 10-30 mm thickness, to receive the finishes Noblo, Rolls, Carrara, Pico, KW220. The finishes are applied to the UP210w, after a minimum three days' drying time, depending on the weather conditions, in thicknesses of 2 mm to 5 mm depending on aggregate size, except for KW220, which is applied in a thickness 7 mm or 10 mm. Ready-mixed Conni-zwo finish is applied to UP210w backing-coat render, after a minimum three days' drying time depending on the weather conditions, as an approximately 2 mm thickness coating.

3.2.10 Corners, arrises, etc, that will be prone to impacts in normal service must be protected with a suitable profile. Technical consultation is provided by the manufacturer.

3.2.11 Render on elevations of communal buildings or adjacent to areas to which the public has access, will be prone to impacts in normal service, at edges or at corners of openings, and need additional protection. Technical consultation is provided by the manufacturer.

3.2.12 Expansion or movement joints within the masonry or dense concrete must be brought forward to the external surface of the render. Additional external movement joints in the render alone are not necessary. The adequacy of the design and frequency of the joints is determined by agreement between the applicator and the client, but must be in accordance with the appropriate requirements of BS 5262.

To avoid subsequent cracking due to differential thermal movement of the render and adjacent dissimilar materials, the junction between the render and any other construction must have a designed joint. This must be made as recommended in BS 5262, with an appropriate joint trim, or be of adequate width to enable the gap to be sealed with primer and sealant to BS 6213, with, for larger gaps or expansion joints, flexible foam backer rods, all to be in accordance with the sealant manufacturer's requirements.

Any gap wider than 5 mm, depression or recess in the substrate to be directly rendered, must be suitably dubbed-out, filled or pointed, as appropriate, prior to rendering, in accordance with BS 5262.

3.2.13 External fixtures, such as rainwater goods, service meter cupboards, balustrade rails, etc, must not be embedded within the render, but must be stood off from the finished line of the building. Ideally they should be fixed subsequent to the rendering. Their fixings, where they are to penetrate the render, must each be within a pliable sleeve or sealant. It is preferable if provision for the fixings are made prior to the rendering, where this is practical. Suitable provision must be made to prevent undue precipitation, or downflow from incomplete rainwater goods, falling on to the fresh render for the first 24 hours. Rainwater goods should be completed as soon as possible after the application of the render.

3.2.14 In a case where it is intended to apply the Marmorit render system to an existing sand/cement render, the background must be sound and clean, it must provide an adequate key, and there must be no risk of interstitial condensation. The key must be established by tapping and pull off tests. The values obtained from the pull off tests must each exceed 0.3 N/ mm^2.

3.2.15 The technical consulting service must be from the manufacturer, who must continue to provide it.

3.2.16 Periodic maintenance checks should be undertaken on the external finish, once installed, particularly on joints, the juncture with flashings and sills, and around any penetration through the render, eg for plumbing, flues, etc, as for any render system. The inner face of solid external walls so finished should be inspected periodically for any signs of dampness. Any repairs revealed to be necessary must be effected immediately with Marmorit render. The render may require surface maintenance within 10 years, eg cleaning with high-pressure water, if exposed to certain forms of urban or industrial pollution, or due to surface mould spots or algal growth, as for any render system.

4. TECHNICAL APPRAISAL

4.1 Performance tests

Investigations have been carried out to determine physical properties and of the condensation risk, durability, fire and weather-resistance performances of the products and walls finished using the Marmorit render systems. Typical properties are outlined in Table 1.

Assessment has been made of the product and practicality of installation, both in Britain and in Germany. Rendered buildings of various types have been inspected.

4.2 Quality control

In the opinion of BRE Certification the materials and procedures of the manufacturer are suitable for the products.

The manufacturer carries out checks at intervals to ensure that the quality of the renders is maintained within the product specification. Marmorit Gmbh has been assessed and independently certificated as a registered firm to ISO 9002.

The quality control procedures for the renders include inspection of raw materials before formulation. After formulation the procedures include inspection of the density, consistency, particle size, water retention, drying time, colours, and cured appearance, and also the retention for a one-year period of a reference sample bearing the batch number. The flexural strength and dynamic elasticity modulus, of the render products are each also subject to control.

4.3 British Standards

The following British Standards have been referred to for this assessment:

BS 5250: 1989	Code of practice for control of condensation in buildings
BS 5262: 1991	Code of practice for external renderings
BS 5628: Part 3:1985	Code of practice for use of masonry: materials and components, design and workmanship
BS 6213: 1982	Guide to selection of constructional sealants
BS 8000: Part 2:Section 2.1:1990	Workmanship on building sites: code of practice for concrete work: mixing and transporting concrete.
Part 10:1995	Code of practice for plastering and rendering
BS 8104: 1992	Code of practice for assessing exposure of walls to wind-driven rain
BS 8110: Part 1:1985	Structural use of concrete: code of practice for design and construction
Part 2:1985	Code of practice for special circumstances
BS EN ISO 9002: 1994	Quality systems: model for quality assurance in production, installation and servicing
BS EN 10147: 1992	Continuously hot-dip zinc coated structural steel sheet and strip. Technical delivery conditions
DIN 18 550	Specifications for mortars: properties
DIN 18 557	Specifications for mortars: methods of test

5. CONDITIONS OF CERTIFICATE ISSUE

5.1 Validity

This certificate will be valid for a period of three years. It will remain valid in so far as:

a) The materials and methods of manufacture are unchanged.

b) The designs and specifications are unaltered from those examined by BRE Certification.

c) Marmorit UK GmbH continues to have the products checked by BRE Certification.

5.2 Health and Safety

This certificate and the recommendations herein do not purport in any way to restate the requirements of the Health and Safety at Work Act 1974 or any statutory or common law duty of care which exists now or in the future; nor is compliance with these recommendations to be assumed as satisfying the requirements of the said Act or any existing or future statutory or common law duty of care.

5.3 Reference to Other Documentation

Where reference is made in this certificate to any Act of Parliament, Regulation, Code of Practice, British or other Standard or other publications, it shall be construed as reference to such publication in the form in which it is in force at the date of the certificate.

5.4 Patents

BRE Certification makes no representational warranty that any patent or similar industrial property right is valid or that the manufacture, use, sale, lease or any dealing or disposition of the products in whole or in part is not an infringement of any patent or industrial property not owned by Marmorit UK GmbH.

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