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Agrément Certificate
99/3586
Product Sheet 2

GENERAL MEMBRANE ROOF WATERPROOFING MEMBRANES

PHOENIX SUPER AND PHOENIX SUPER MINERAL ROOF WATERPROOFING SYSTEMS

This Agrément Certificate Product Sheet(1) relates to Phoenix Super and Phoenix Super Mineral Roof Waterproofing Systems, torch-applied, polyester-reinforced, amorphous-poly-alpha-olefin (APAO) modified bitumen roof waterproofing membranes, for use as waterproofing on flat and pitched roofs.

(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

Weathertightness — the systems will resist the passage of moisture into the interior of a building (see section 6).
Properties in relation to fire — the systems are restricted in some cases under the national Building Regulations (see section 7).
Resistance to wind uplift — the systems will resist the effects of any likely wind suction acting on the roof (see section 8).
Resistance to mechanical damage — the systems will accept the limited foot traffic and loads associated with installation and maintenance (see section 9).
Durability — under normal service conditions, the systems will provide a durable roof waterproofing with a service life in excess of 30 years (see section 11).

The BBA has awarded this Certificate to the company named above for the systems described herein. These systems have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Fourth issue: 15 January 2021

Originally certificated on 18 April 2012

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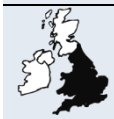
Regulations

In the opinion of the BBA, Phoenix Super and Phoenix Super Mineral Roof Waterproofing Systems, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying 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**
Comment:		The systems, in some circumstances, are restricted by this Requirement. See section 7.3 of this Certificate.
Requirement:	**B4(2)**	**External fire spread**
Comment:		On suitable substructures, the use of the systems can enable a roof to be unrestricted under the requirements of this Regulation. See sections 7.1, 7.2, 7.3, 7.5 (Wales only) and 7.6 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		The systems, including joints, will enable a roof to satisfy this Requirement. See section 6.1 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The systems are acceptable. See section 11.1 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Durability, workmanship and fitness of materials**
Comment:		The use of the systems satisfies the requirements of this Regulation. See sections 10.1 and 11.1 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	2.6	Spread to neighbouring buildings
Comment:		The system is restricted under clause 2.6.4(1)(2) of this Standard in some circumstances. See section 7.4 of this Certificate.
Standard:	2.8	Spread from neighbouring buildings
Comment:		The systems, when applied to a suitable substructure, can be regarded as having low vulnerability under clause 2.8.1(1)(2) of this Standard. See sections 7.1, 7.2 and 7.6 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The systems, including joints, will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1(1)(2) and 3.10.7(1)(2). See section 6.1 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The systems can contribute to satisfying 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:		Comments in relation to the systems 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 (as amended)

Regulation:	**23(a)(i)**	**Fitness of materials and workmanship**
Comment:	**(iii)(b)(i)**	The systems are acceptable. See section 11.1 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The systems, including joints, can enable a roof to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.
Regulation:	**36(b)**	**External fire**
Comment:		On suitable substructures, the use of the systems can be unrestricted by the requirements of this Regulation. See sections 7.1, 7.2, 7.5 and 7.6 of this Certificate.

Construction (Design and Management) Regulations 2015
Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 1 *Description* (1.2) and 3 *Delivery and site handling* (3.3 and 3.4) of this Certificate.

Additional Information

NHBC Standards 2021

In the opinion of the BBA, Phoenix Star and Phoenix Star Mineral Roof Waterproofing Systems, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*.

CE marking

The Certificate holder has taken the responsibility of CE marking the systems in accordance with harmonised European Standard EN 13707 : 2013.

Technical Specification

1 Description

1.1 Phoenix Super and Phoenix Super Mineral Roof Waterproofing Systems are torch-applied, polyester-reinforced, amorphous-poly-alpha-olefin (APAO) modified bitumen roof waterproofing membranes, with either a silica sand or slate finish upper surface and a thermofusible thermoplastic film on the lower surface.

1.2 The systems are manufactured to the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristics (unit)	Phoenix Super	Phoenix Super Mineral
Thickness (mm)	4.0	4.0(1)
Width (m)(2)	1.0	1.0
Length (m)(2)	10	7.5
Mass per unit area (kg·m^{-2})	4.0	5.4
Roll weight (kg)	40	39
Head of water	pass	pass
Tensile force (N per 50 mm)		
longitudinal direction	900	900
transverse direction	650	650
Elongation		
longitudinal direction	40	40
transverse direction	45	45
Nail tear (N)		
longitudinal direction	200	200
transverse direction	200	200
Equivalent air layer thickness (s_d) (m)	480	480
Impact method A (mm)	1250	1250
Static loading method A (kg)	20	20
Dimensional stability (kg)		
longitudinal direction	± 0.3	± 0.3
transverse direction	± 0.3	± 0.3
Low temperature flexibility (°C)	-35	-35
Heat resistance (°C)	140	140

(1) Excluding slate finish.
(2) Different widths and lengths are available, which varies the roll weight.

1.3 The mineral finished product is available with Reflect Protection, a white mineral granule finish as an alternative to the slate finishes, to improve reflectivity and reduce solar gain. Reflect Protection is outside the scope of this Certificate.

1.4 Ancillary items for use with the systems include:

- General Rapid Primer — a solution of bitumen in solvents for priming substrates
- Pegasus Spot — a perforated layer for partially bonded applications.

1.5 Ancillary items for use with the systems, but which are outside the scope of this Certificate, include:

- Halley Alu Vap 3 mm — APP-modified bitumen, polyester-fleece-reinforced membrane for use as vapour control layer (vcl)
- Gemini Vapor 3 mm — modified bitumen, polyester-fleece-reinforced membrane for use as vcl
- Gemini V 3 mm — APP modified bitumen, glass-fleece-reinforced membrane for use as vcl
- Isolink P 4 kg — modified bitumen, polyester-fleece-reinforced membrane for use as vcl
- Gemini P — APP-modified, polyester-reinforced membrane
- Isopur — polyisocyanate insulation board
- Genefast Fasteners.

2 Manufacture

2.1 The systems are manufactured using conventional continuous bitumen coating techniques.

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 General Membrane SpA has been assessed and registered as meeting the requirements of EN ISO 9001 : 2015 by Certiquality (Certificate 7220).

3 Delivery and site handling

3.1 The systems are delivered to site in rolls sealed with tape. The tape bears the product name, roll dimensions, CE marking, third party Certificate numbers and company name.

3.2 Individual rolls must be stored in an upright position on a clean, level surface and kept dry.

3.3 The primer is supplied in 5, 10 or 20 litre cans.

3.4 The Certificate holder has taken the responsibility of classifying and labelling the systems under the *CLP Regulation (EC) No 1272/2008* on the *classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Phoenix Super and Phoenix Super Mineral Roof Waterproofing Systems.

Design Considerations

4 General

4.1 Phoenix Super and Phoenix Super Mineral Roof Waterproofing Systems are suitable for use as a roof waterproofing layer in:

- fully or partially bonded flat or pitched roofs with limited access, as part of a built-up specification and where necessary in conjunction with appropriate reinforced bitumen membranes to BS 8747 : 2007
- single-ply, loose-laid specifications, ballasted with aggregate on flat roofs with limited access
- single-ply, loose-laid specifications, under heavy protection (eg concrete slabs, etc) on flat roofs with regular pedestrian traffic.

4.2 Decks to which the systems are to be applied must comply with the relevant requirements of either BS 6229 : 2018 or BS 8217 : 2005 and, where appropriate, *NHBC Standards* 2021, Chapter 7.1.

4.3 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for maintenance of the roof covering, cleaning of gutters, etc. Where traffic in excess of this is envisaged, such as pedestrian access roofs, additional protection must be provided (see sections 9 and 12.4).

4.4 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. When designing flat roofs, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available including, for example, overall and local deflection and direction of falls.

4.5 Pitched roofs are defined for the purpose of this Certificate as those having falls greater than 1:6.

4.6 Insulation materials to be used in conjunction with the systems must be in accordance with the Certificate holder's instructions and be either:

- as described in the relevant Clauses of BS 8217 : 2005, or
- the subject of a current BBA Certificate and used in accordance with, and within the scope of, that Certificate.

5 Practicability of installation

The systems must be installed by installers trained and approved by the Certificate holder.

6 Weathertightness

6.1 The systems including joints, when completely sealed and consolidated, will adequately resist the passage of moisture to the interior of a building and so satisfy the requirements of the national Building Regulations.

6.2 The systems are impervious to water and will give a weathertight roofing capable of accepting minor structural movements without damage.

7 Properties in relation to fire

7.1 The following systems will be designated as unrestricted under the national Building Regulations:

- 20 mm thick particle board primed with General Primer at 250 g·m^{-2}, one layer of Gemini V 3 mm (as the first layer), torch-bonded to the particle board; one layer of 4 mm thick Phoenix Super capsheet, torch-bonded to the first layer(1)
- 20 mm thick particle board primed with General Primer at 250 g·m^{-2}, one layer of Gemini V 3 mm (as the first layer), torch-bonded to the particle board; one layer of 4 mm thick Phoenix Super Mineral capsheet torch-bonded to the first layer(2).

(1) WF Report Number 144906 issued by Warringtonfire; a copy is available from the Certificate holder.
(2) WF Report Number 146045 issued by Warringtonfire; a copy is available from the Certificate holder.

7.2 The systems when used in protected or loose-laid and ballasted roof specifications, including an inorganic covering listed in the Annex of Commission Decision 2000/553/EC, can also be considered to be unrestricted under the national Building Regulations.

7.3 The systems, when used in pitches greater than 70°, excluding upstands, should not be used on buildings in England and Wales that have a storey at least 18 m above ground level and contain: one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools.

7.4 The system, when used in pitches of greater than 70°, excluding upstands, should not be used on buildings in Scotland that have a storey at least 11 m above ground level

7.5 When used on flat roofs with one of the surface finishes defined in Part iii of Table A5 of Appendix A of The Building Regulations (Wales), or Technical Booklet E, Table 5.6, Part IV of The Building Regulations (Northern Ireland) (and listed below), the roof is deemed to be of designation B_{ROOF}(t4):

- bitumen-bedded stone chippings covering the whole surface to a depth of not less than 12.5 mm
- bitumen-bedded tiles of a non-combustible material
- sand and cement screed
- macadam.

7.6 The designation of other specifications should be confirmed by reference to the requirements of the documents supporting the national Building Regulations.

8 Resistance to wind uplift

8.1 The adhesion of bonded systems is sufficient to resist the effects of wind suction, thermal cycling or other minor structural movements likely to occur in service.

8.2 Where the systems are bonded to insulation boards, the resistance to wind uplift will be dependent on the cohesive strength of the insulation and the method by which they are secured to the roof deck. This must be taken into account when selecting a suitable insulation material.

8.3 The ballast requirements for loose-laid systems should be calculated by a suitably experienced and competent individual in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and its UK National Annex. The systems should always be ballasted with a minimum depth of 50 mm of aggregate. In areas of high-wind exposure, the Certificate holder's advice should be sought. Alternatively, concrete slabs on suitable supports can be used.

9 Resistance to mechanical damage

The systems can accept the limited foot traffic and light concentrated loads associated with the installation and maintenance. Reasonable care should be taken to avoid puncture by sharp objects or concentrated loads. Where traffic in excess of this is envisaged, such as maintenance of lift equipment or pedestrian access, suitable protection must be provided (for example, using concrete slabs supported on bearing pads).

10 Maintenance

10.1 The systems must be the subject of six-monthly inspections and maintenance in accordance with BS 6229 : 2018, Chapter 7, to ensure continued satisfactory performance.

10.2 Where damage has occurred it should be repaired in accordance with section 14 and the Certificate holder's instructions.

11 Durability

11.1 Phoenix Super and Phoenix Super Mineral Roof Waterproofing Systems, when subjected to normal conditions of exposure and use, will have a service life in excess of 30 years.

11.2 With the mineral surfaced product, some localised loss of the mineral surfacing may occur after some years in areas where complex detailing of the roof design is incorporated.

Installation

12 General

12.1 Installation of Phoenix Super and Phoenix Super Mineral Roof Waterproofing Systems must be carried out by installers trained and approved by the Certificate holder in accordance with the relevant clauses of BS 8000-0 : 2014, BS 8000-4 : 1989 and BS 8217 : 2005, the Certificate holder's instructions and this Certificate.

12.2 Substrates to which the systems are applied must be sound, dry, clean and free from sharp projections such as nail heads and concrete nibs. When used over a rough substrate, a suitable protection layer must be placed over the substrate.

12.3 Installation should not be carried out during inclement weather (eg rain, fog or snow) or when the temperature is below 5°C.

12.4 If the roof is likely to be subject to uncontrolled pedestrian access, the substructure must satisfy the requirements of BS 8217 : 2005; and to prevent damage to the roof covering, one of the appropriate surface finishes referred to in clause 6.12 of the Code must be used.

12.5 At falls in excess of 1:11, the provision for mechanical fixings as required by BS 8217 : 2005 should be observed.

12.6 On completion of the roof, the sand-finished product, when used as a top layer, may have a surface finish applied in accordance with BS 8217 : 2005, clause 8.19. Surface finishes in the Code of Practice include:

- stone aggregate in dressing compound
- precast concrete paving slabs
- proprietary tiles on bonding compound.

12.7 When using the mineral-surface-finished product, further surface protection is not required when it is used on roofs with limited access.

12.8 Detailing must be formed in accordance with the Certificate holder's instructions.

13 Procedure

13.1 When required for fully and partially bonded applications, the substrate is primed using General Rapid Primer at a rate of between 200 and 350 $g \cdot m^{-2}$, depending on the porosity of the substrate.

Fully bonded applications

13.2 Bonding is achieved by melting the lower surface by torching and pressing the product down. Care must be taken not to overheat the coating.

Partially bonded applications

13.3 Pegasus Spot perforated venting layer is loose-laid edge to edge, over the substrate.

13.4 The product is then fully torch-welded onto the perforated layer, ensuring that the bitumen seeps into the perforations.

13.5 At the perimeter, the waterproofing system must be fully bonded to the substrate for at least one metre from the edge of the roof.

Loose-laid applications

13.6 The product is loose-laid over the substrate with the required overlaps (see section 14.9). At the perimeter, the product must be fully bonded to the substrate for at least one metre from the edge of the roof.

13.7 To combat the effects of wind uplift the product must be ballasted, for example, by:

- a covering of at least 50 mm of well-rounded gravel on 0.2 mm thick polyethylene protective sheet
- paving on plastic pads.

13.8 When using paving on plastic pads, a separation layer must be placed between the product and the pads.

Lap joints

13.9 Side and end lap specifications are a minimum of 100 and 150 mm respectively.

13.10 Joints are sealed by torching and then consolidated using a roller of suitable width and weight.

13.11 A bead of molten material must exude from all laps to indicate a satisfactory seal, and which should be levelled out using a heated, rounded-tip trowel.

14 Repair

In the event of damage, the systems can be effectively repaired, after cleaning, with pieces of the product torch-welded to the damaged area.

Technical Investigations

15 Tests

An assessment was made on test data relating to:

- thickness
- width
- length
- mass per unit area
- watertightness
- tensile force
- elongation at break
- static indentation (soft support)
- dynamic indentation (rigid support)
- nail tear
- peel resistance of joint
- shear resistance of joints
- low temperature flexibility
- dimensional stability
- fatigue cycling
- heat resistance
- sliding resistance
- peel resistance from substrate
- adhesion of granules
- heat ageing to 80°C for 100 days
- effect of UV ageing
- effect of water immersion.

16 Investigations

16.1 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.

16.2 An assessment of the installation instructions was made on the practicability of installation.

16.3 Existing data on fire performance were assessed.

Bibliography

BS 6229 : 2018 *Flat roofs with continuously supported flexible coverings — Code of practice*

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*
BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for excavation and filling*

BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*

BS 8747 : 2007 *Reinforced bitumen membranes (RBMs) for roofing — Guide to selection and specification*

BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*
NA to BS EN 1991-1-4 : 2005 *UK National Annex to Eurocode 1 : Actions on structures — General actions — Wind actions*

EN 13707 : 2004 *Flexible sheets for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics*

EN ISO 9001 : 2015 *Quality management systems — Requirements*

17 Conditions

17.1 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.

17.2 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.

17.3 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.

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

17.5 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.

17.6 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.

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