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Agrément Certificate
16/5301
Product Sheet 2

ANHYDRITEC SCREEDS

GYVLON THERMIO+

This Agrément Certificate Product Sheet⁽¹⁾ relates to Gylvon Thermio+⁽²⁾, a pumpable, anhydrite-based, liquid levelling screed for indoor use on both domestic and non-domestic buildings with underfloor heating systems, to produce a smooth, level surface for the subsequent application of textile or other resilient floor coverings.

(1) Hereinafter referred to as 'Certificate'.

(2) Thermio+ is a registered trademark of Anhydritec Ltd.

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

Strength and stability — when fully bonded, the product has a strong and durable bond to the base concrete and has similar movement characteristics to traditional sand/cement-based screed (see section 6).

Thermal conductivity — the product is suitable for use in conjunction with underfloor heating and has a thermal conductivity of $\geq 2.3 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ (nominal value 2.5) (see section 8).

Durability — the product, when correctly installed, covered by a suitable floor covering and maintained in a dry environment, will have a life equal to that of the building in which it is installed (see section 10).

The BBA has awarded this Certificate to the company named above for the product described herein. This product 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: 4 March 2016

John Albon — Head of Approvals
Construction Products

Claire Curtis-Thomas
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.

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Regulations

In the opinion of the BBA, the use of Gylon Thermio+ is not subject to the national Building Regulations.

Construction (Design and Management) Regulations 2015

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

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

See section: 3 *Delivery and site handling* (3.1, 3.5 and 3.6) of this Certificate.

Additional Information

NHBC Standards 2016

NHBC accepts the use of Gylon Thermio+, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 9.3 *Floor finishes*, clause D3 *Screeding*.

CE marking

The binder used to make the product is CE marked in accordance with harmonised European Standard BS EN 13454-1 : 2004.

Technical Specification

1 Description

1.1 Gylon Thermio+ is a fluid screed mortar based on a blend of calcium sulfate binder, Thermio+ additive, sand and water. The product is available in one colour, Rose.

1.2 The product has the following characteristics:

Wet density (kg·m ⁻³)	2200 ± 175
Dry density (kg·m ⁻³)	2050 ± 200
Flow ring diameter (mm)	230–270
Minimum compressive strength 28 days (N·mm ⁻²)	30
Flexural strength, F (N·mm ⁻²)	8.

1.3 Also for use with the product, but outside the scope of this Certificate, are primers and sealers.

2 Manufacture

2.1 The product is manufactured in a batch-blending process.

2.2 The incoming Gylon anhydrite, additive and sand are supplied to agreed specifications and quality-control checked upon receipt. All approved concrete plants are assessed under the Quality Scheme for Ready Mixed Concrete or are compliant with BS EN ISO 9001 : 2008. The product may also be supplied by mobile plants.

2.3 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.

2.4 The management system of the Certificate holder has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by BSI (Certificate CA14728).

3 Delivery and site handling

3.1 The products are delivered to site by ISO 9001-approved ready-mix truck suppliers.

3.2 The materials are batch weighed into ready-mix trucks with loads up to 7.5 m³, and the rheological properties of each load are checked.

3.3 Sand and graded aggregates must be stored in accordance with normal good practice, away from any possible contamination by soil or organic matter.

3.4 The mix is delivered to site, where the flow ring value is checked to ensure its compliance with the values given in section 1.2, prior to pumping being commenced.

3.5 The Certificate holder has taken the responsibility of classifying and labelling the product 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).

3.6 As when handling other calcium sulfate-based products, suitable personal protective clothing and equipment should be used when applying and sanding the product.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Gyylon Thermio+.

Design Considerations

4 Use

4.1 Gyylon Thermio+ is satisfactory for use as a self-levelling screed for fully-bonded, partially-bonded and unbonded floor construction on concrete substrates, in domestic and non-domestic buildings. The product is intended for use with underfloor heating systems and with both water underfloor heating and water underfloor cooling systems.

4.2 The product is applied to a suitably-prepared, adequately strong concrete base, and covered with a textile or resilient floor covering. It is bonded to a dry concrete base or applied over a damp-proof/debonding membrane in an unbonded or floating construction.

4.3 The product is for use on rigid concrete bases of:

- in-situ suspended floors
- precast floor slabs
- ground-floor slabs
- beam and block floors
- underfloor heating floors.

4.4 The designer should ensure that the construction programme allows sufficient time for a base slab to dry adequately before the product is applied. Where these conditions cannot be met, a damp-proof membrane should be installed between the base and the screed, in unbonded or floating screed construction.

4.5 The product can be applied at temperatures between 5°C and 30°C using normal floor screeding techniques, at the thicknesses shown in Table 1, depending on installation details, the use of the building and the imposed loads.

Table 1 Minimum screed thicknesses

Application	Minimum screed thickness (mm)
Bonded	25
Partially bonded	30
Unbonded over a solid base	30
Floating commercial	40
Floating domestic	35
Nominal thickness above conduits and heating pipes	20 (25 if minimum overall thickness of 40 mm is used)

4.6 The product is suitable for use as floating screed, applied to insulating board laid on a prepared concrete base. Precautions are necessary to prevent the screed from penetrating below the board, by means of lapped and taped membranes. Aluminium foil-backed tapes should not be used

5 Practicability of installation

The product is only applied by contractors approved by the Certificate holder, using conventional screed-laying techniques.

6 Strength and stability

6.1 The product has adequate strength for use in floor structures and has adequate resistance to normal loading, point loading and loads associated with light-wheeled traffic (eg trolleys used in hospitals and offices). It is, in this respect, comparable with sand/cement floor screeds.

6.2 The product has satisfactory resistance to impact and may be laid without serious cracking, and will have a sound surface. The product may be installed effectively to comply with categories A, B or C of BS 8204-1 : 2003 as shown in Table 2.

Table 2 Floor use categories

Category	Type of use	Examples of types of use
A	Areas expected to take very heavy traffic and/or where later disruption would be unacceptable	Hospital operating theatres, X-ray rooms Research rooms where radioactive material is handled Store rooms with heavy use Telecommunications rooms Areas of heavy trucking Workshop areas
B	Areas expected to take heavy traffic	Areas where heavy trolleys are used Public areas, corridors, main lift and lobby areas Canteens and restaurants Public rooms in residential accommodation Classrooms, hospital wards
C	Other areas subjected to mainly foot traffic and light use	Light office use, consulting rooms, domestic housing

6.3 The product has similar movement characteristics to concrete and traditional sand/cement-based mortars.

7 Resistance to wear and surface hardness

The product, under normal circumstances, will resist the wear from light foot traffic better than sand/cement levelling screeds. However, where following trades are to work on an uncovered screed, it is recommended that the screed be protected until the permanent floor covering is applied.

8 Thermal conductivity

8.1 The product has a high thermal conductivity and a low installed thickness compared with conventional screeds, and will therefore enable the underfloor heating system to respond more rapidly to thermostat changes. For the purposes of estimating heat output to BS EN 1264-5 : 2008, the product properties in Table 3 may be used.

Table 3 Thermal properties

Property (unit)	Value
Thermal conductivity ($\text{W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) λ_E	≥ 2.3 (nominal value 2.5)
Density ($\text{kg}\cdot\text{m}^{-3}$) ρ	2000
Specific heat capacity ($\text{J}\cdot\text{kg}^{-1}\cdot\text{K}^{-1}$)	1200
Thickness above pipe (mm) s_u	>20

8.2 Gylvon Thermio+ is not suitable for use in applications where there is a likelihood of a significant temperature increase of $>50^\circ\text{C}$.

9 Maintenance

9.1 Under normal circumstances, maintenance or repair will not be necessary. However, in common with other calcium sulfate based-screeds the product should be maintained in a dry state at all times.

9.2 If damage or cracking occurs, repairs may be readily achieved by cutting out the damaged area and re-laying. Minor cracks may be repaired using a suitable smoothing compound.

9.3 When the product is installed and maintained as described in this Certificate, sulphate attack will not occur.

10 Durability

Gylvon Thermio+ is durable and, when correctly installed, covered by a resilient floor covering and maintained in a dry environment, will have a life equal to that of the building in which it is installed.

Installation

11 General

11.1 A specification advice service is offered by the Certificate holder to advise specifiers on the preparation of the base and on screeding. Periodically, sites are attended by the Certificate holder to monitor the progress of the screed installation and to conduct random in-situ tests on the completed screeds.

11.2 The product is not intended for use in areas which are permanently wet or that could become saturated in service, as considerable loss in strength could result. Where these service conditions exist, the screed should be protected with a resilient floor covering with welded joints and coved skirtings.

11.3 The product can be applied more easily, quickly and at reduced thicknesses than traditional sand/cement screeds. It does not require reinforcement and can be installed over large areas with minimal shrinkage and curling, with expansion joints in accordance with BS 8204-7: 2003:

- at maximum 20 m intervals
- at changes of direction and large aspect ratios
- in corridors and on areas over 300 m².

11.4 The product must be installed within three hours of manufacture.

11.5 The screed must not be applied at temperatures above 30°C as this may reduce the final strength.

11.6 The screed must not be applied during freezing conditions, and must be protected from frost for 7 days after application.

11.7 If the finished screed is to be left uncovered for an extended period, the surface must be primed with an acrylic primer recommended by the Certificate holder.

11.8 Light ventilation during and after laying is recommended. The screed must not be subjected to severe draughts, direct sunlight, heating or the use of dehumidifiers for the first 72 hours.

12 Preparation

12.1 The concrete sub-floor must be prepared in accordance with BS 8204-1 : 2003 and BS 8204-7 : 2003, and be structurally sound, clean, and free from laitance and organic or other extraneous matter which might impair adhesion of the screed. Any weak or yielding substrate must be removed.

12.2 The concrete base is cleaned, and any projections are removed and cavities filled to achieve a reasonably regular surface.

12.3 The product is applied by pump direct from the ready-mix truck. Owing to the very fluid nature of the product, the substrate must be capable of holding liquid to the required depth.

12.4 Ground floors must have an effective damp-proof membrane (DPM) below the screed or base slab, installed in accordance with CP 102 : 1973, BS 8215 : 1991 and BS 8102 : 2009.

12.5 When the substrate cannot be guaranteed to have an existing DPM below to eliminate moisture migration, it is imperative that either a physical or chemical DPM is applied to its surface.

Bonded screeds

12.6 The concrete base is either shot-blasted, scabbled, or vacuum-cleaned to completely remove any laitance, and sealed with a suitable approved primer.

12.7 Any holes or gaps in the substrate are filled, sealed and left to set prior to screeding in accordance with the Certificate holder's instructions.

Partially-bonded screeds

12.8 Where a high degree of bond is not required, the concrete must have a suitable, tamped surface, free from excessive laitance or loose material, and the surface should be sealed with a suitable approved primer.

Unbonded and floating screeds

12.9 Where the product is to be laid over a DPM, reference should be made to BRE Current Paper 94/74 *The rippling of thin floor finishes over discontinuous screeds*. This gives guidance on measures to be adopted after the screed has been laid, to prevent curling of the screed and subsequent rippling of a thin floor finish. These recommendations should also be followed in situations where the product is applied over insulation.

12.10 The DPM must be well bonded to the concrete substrate and the surface kept clean prior to screeding.

12.11 For floating construction, the concrete base must be lapped and taped, using polythene sheeting of appropriate thickness. Compressible foam strips must be placed around perimeters and vertical upstands, and thresholds, stairs and drain gullies should be isolated prior to the screed laying.

13 Priming

13.1 For bonded screeds, the concrete surface is primed with a suitable compatible primer, not less than 12 hours before screeding.

13.2 The primer is applied evenly to the prepared concrete surface using a soft brush, to avoid ponding, and allowed to dry.

13.3 To ensure the correct application and curing properties, the primer must not be applied at temperatures below 10°C.

14 Application

14.1 Application of Gylon Thermio+ must be conducted in accordance with this Certificate and the Certificate holder's instructions. The Certificate holder can advise on suitable materials for this purpose.

14.2 Upon delivery to site and rheological check, the Gylon Thermio+ mix is pumped onto the prepared surface via a discharge hose. The hose is moved across the surface at a constant rate and dappled twice, in order to achieve a uniform screed thickness. The second pass is carried out at right angles to the first.

14.3 Prior to completion of screeding, checks must be made on the thickness using levelling tripods and/or laser levelling.

15 Finishing

15.1 Once laid, the product can be subjected to light foot traffic after 36 to 48 hours, depending on ambient conditions, provided it is protected with a suitable temporary covering. This time will be extended at lower temperatures.

15.2 The flooring contractor must check the moisture content of the screed before commencing to lay the floorcovering in accordance with the recommendations of BS 8203 : 2001. Typically, floor coverings can be installed after one to three weeks, depending on the screed thickness and drying conditions.

15.3 Where a bonded floor covering is to be applied, the surface of the screed should be lightly sanded after four days using a single-disc sander to remove any fine laitance, and the dust removed.

15.4 For permeable floor finishes such as carpets where no adhesive is required, the screed needs no further treatment.

15.5 For application of moisture-sensitive floor finishes, the relative humidity must be below 75% before the screed is treated with a gypsum-compatible primer and prior to the final floor finish being laid.

15.6 If a cement-based product is to be installed in contact with Gyvlon Thermio+, the dry screed must be primed with a suitable primer.

15.7 If the floor is in an area likely to become wet, the floor covering must provide the screed with protection against the ingress of water, eg watertight seams should be used.

15.8 Prior to the initial heating up of the underfloor heating system, the screed should be maintained above 5°C for at least 7 days after installation, in accordance with BS EN 1264-4 : 2009. After this period has elapsed, a temperature of 20°C to 25°C should be maintained for at least three days, followed by the maximum heat setting for another four days. The whole of this process should be monitored and documented.

Technical Investigations

16 Tests

16.1 Tests were carried out and the results assessed to determine:

- compressive strength
- flexural strength.

16.2 An assessment was made of existing data to determine:

- bond strength
- resistance to static loading
- resistance to impact
- effect of water on strength
- shrinkage/expansion
- pot life
- cure time.

17 Investigations

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

17.2 An assessment was made of the product's scope of use and durability in service.

17.3 An assessment of data related to the verification of the thermal conductivity of Gyvlon Thermio+ was made based on the CSTB Avis Technique 13/12-1184.

17.4 An assessment was made of the Certificate holder's criteria for appointing and monitoring their approved licensees.

Bibliography

BS 8102 : 2009 *Code of practice for protection of below ground structures against water from the ground*

BS 8203 : 2001 + A1 : 2009 *Code of practice for installation of resilient floor coverings*

BS 8204-1 : 2003 + A1 : 2009 *Screeds, bases and in situ floorings — Concrete bases and cementitious levelling screeds to receive floorings — Code of practice*

BS 8204-7 : 2003 *Screeds, bases and in-situ floorings — Pumpable self-smoothing screeds — Code of practice*

BS 8215 : 1991 *Code of practice for design and installation of damp-proof courses in masonry construction*

BS EN 1264-4 : 2009 *Water based surface embedded heating and cooling systems — Installation*

BS EN 1264-5 : 2008 *Water based surface embedded heating and cooling systems — Heating and cooling surfaces embedded in floors, ceilings and walls — Determination of the thermal output*

Conditions of Certification

18 Conditions

18.1 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.

18.2 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.

18.3 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.

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

18.5 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.

18.6 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.