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Agrément Certificate
No 89/2138

PRODUCT SHEET 1 – THOROSEAL AND THOROSEAL SUPER

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate of Confirmation replaces Certificate No 85/1500/C and relates to Thoroseal and Thoroseal Super, cementitious waterproofing components for use in internal and external waterproofing of new or existing structures.

AGRÉMENT 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

Resistance to water penetration — when applied to a suitable substrate in two coats the products adequately resist the penetration of water (see section 5).

Sulfate resistance — the products may be used in class DS1 soils or groundwater as defined in BRE Digest 1 : 2005 (see section 6).

Durability — the products will provide an effective barrier to the transmission of groundwater for the life of the building to which they are applied (see section 12).

The BBA has awarded this Agrément Certificate for Thoroseal and Thoroseal Super to BASF Construction Chemicals (UK) Ltd as fit for their intended use provided they are installed, used and maintained as set out in this Agrément Certificate.

On behalf of the British Board of Agrément

Date of First issue: 11 January 1989

Date of Fifth issue: 23 July 2008

Head of Approvals
— Materials

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 Thorseal and Thorseal Super if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



The Building Regulations 2000 (as amended) (England and Wales)

Requirement:	C2(a)(b)	Resistance to moisture
Comment:		The products adequately resist the passage of moisture. See section 5 of this Certificate
Requirement:	Regulation 7	Materials and workmanship
Comment:		The products are acceptable. See section 12 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The use of the products can satisfy the requirements of this Regulation. See sections 11, 12 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	3.3	Flooding and ground water
Standard:	3.4	Moisture from the ground
Standard:	3.10	Precipitation
Comment:		The products adequately resist the passage of moisture and can contribute to satisfying these Standards, with reference to clauses 3.3.2 ⁽¹⁾⁽²⁾ , 3.4.1 ⁽¹⁾⁽²⁾ , 3.4.5 ⁽¹⁾⁽²⁾ , 3.4.6 ⁽¹⁾⁽²⁾ , 3.4.7 ⁽¹⁾⁽²⁾ and 3.10.1 ⁽¹⁾⁽²⁾ . See section 5 of this Certificate.
Regulation:	12	Building standards – conversions
Comment:		All comments given for the products under Regulation 9, also apply to this Regulation, with reference to clause 0.12.0 ⁽¹⁾⁽²⁾ and schedule 6 ⁽¹⁾⁽²⁾ (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The products are acceptable. See section 12 and the <i>Installation</i> part of this Certificate
Regulation:	B3(2)	Suitability of certain materials
Comment:		The products do not normally require maintenance. See section 11 of this Certificate.
Regulation:	C4(a)(b)	Resistance to ground moisture and weather
Comment:		The products adequately resist the passage of moisture. See sections 5 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 section: 2 *Delivery and site handling* (2.1 and 2.2).

Non-regulatory Information

NHBC Standards 2007

NHBC accepts the use of the Thorseal and Thorseal Super, as a remedial measure, when installed and used in accordance with this Certificate, in relation to *NHBC Standards for Conversions and Renovations*, on a project specific basis, taking account of the relevant factors.

Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA, the use of Thorseal and Thorseal Super when installed and used in accordance with this Certificate is capable of satisfying the requirements of the *Zurich Building Guarantee Technical Manual 2007*, Section 6 *Additional guidance for conversions*, Sub-section *Introduction to conversions*.

General

The Certificate relates to Thorseal and Thorseal Super for use in waterproofing new or existing structures or to waterproof water-retaining structures.

Confirmation of Belgian Agrément No ATG 1727 issued by the Union Belge pour l'Agrément technique dans la construction (UBAtc) to Thoro NV.

Technical Specification

1 Description

- 1.1 Thoroseal and Thoroseal Super are cementitious compounds containing cement, graded sands, aggregates and chemical additives. They are supplied in powder form to be mixed with water on site and applied as a slurry.
- 1.2 Thoroseal contains no polymer additive but may be mixed with Acryl 60 (acrylic bonding agent admixture) when application is to be made over smooth and non-absorbent substrates.
- 1.3 Thoroseal Super is a one-part product, whose formulation includes a spray-dried acrylic polymer.
- 1.4 The products are produced by a continuous batch blending process and are available in grey and white.
- 1.5 Quality control checks are carried out on the raw materials, and the finished products.
- 1.6 Waterplug is a cement-based, quick-setting hydraulic compound, used to staunch running water or seepage through concrete or masonry.

2 Delivery and site handling

- 2.1 Thoroseal and Thoroseal Super are packed in 25 kg moisture-proof paper sacks or metal containers. Each container carries a label bearing the BBA identification mark incorporating the number of the Certificate.
- 2.2 The products are cement-based and must be handled using routine precautions for cement-based materials and must be stored in dry conditions.
- 2.3 Acryl 60 is supplied in 5 litre and 25 litre bottles and must be protected from frost.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Thoroseal and Thoroseal Super.

Design Considerations

3 General

- 3.1 The Thoroseal and Thoroseal Super when used in two coats in the proportions defined in section 15 of this Certificate provide an effective barrier against the transmission of liquid water and can be applied to brickwork, stonework, blockwork or concrete substrates. However, advice should be sought from the Certificate holder with regard to use with aerated and lightweight concrete blocks.
- 3.2 The products are satisfactory for use in the situations defined:
 - for interior and exterior waterproofing of concrete, brickwork, stone and blockwork structures
 - for waterproofing concrete floors, or
 - as a waterproofing system eg for reservoirs and pools.
- 3.3 New buildings must be designed to withstand the hydrostatic pressure expected in service and the products should not be applied until structural movements due to curing has occurred.

4 Practicability of installation

The products are applied by suitably competent and experienced contractors using conventional techniques. Workmanship should comply with BS 8000-4 : 1989.

5 Resistance to water penetration



The products adequately resist the penetration of water. Two-coat applications of Thoroseal and Thoroseal Super, when applied to a typical test substrate, have water vapour resistances of 1.45 MNsg^{-1} and 2.68 MNsg^{-1} , respectively.

6 Sulfate resistance

6.1 The products are based on Portland cement and may be used in class DS1 soils or groundwater as defined in BRE Special Digest 1 : 2005 *Concrete in aggressive ground, Part C Assessing the aggressive chemical environment* (see Table 1).

Design sulfate class for site	2:1 water/soil extract (SO ₄ g per litre)	Groundwater (SO ₄ g per litre)	Total potential (SO ₄ %)
DS1	< 1.2	< 0.4	< 0.24

6.2 Where the substrate has high sulfate content, or is efflorescing, the advice of the Certificate holder should be sought.

7 Condensation risk

7.1 If the products are applied to the inside of a basement wall, the wall structure will remain cold and wet, with subsequent risks of condensation and frost damage.

7.2 The condensation risk can be minimised by the application of a coat of proprietary lightweight cement-based plaster, and the provision of adequate heating and ventilation and/or the use of a dehumidifier.

8 Resistance to movement

The products are unable to accommodate movement due to settlement and can only be used where settlement is not anticipated, or in conjunction with waterproof movement joints. The Certificate holder's advice on suitable materials should be sought.

9 Fixings

9.1 Special measures are necessary to avoid breaching the waterproof rendering when attaching fixings. The measures include:

- the use of epoxy resin or polyurethane adhesives to bond lightweight fixings to the coated surface
- recesses made in the substrate to accept heavy duty fittings are filled with Waterplug to form waterproof pockets, and
- the use of floor standing supports.

9.2 If these techniques cannot be applied and it is necessary to breach the coating, recesses in the substrate must be filled with Waterplug.

10 Resistance to damage

10.1 The coating is vulnerable to damage during installation and in service, particularly in heavily trafficked areas where this is a risk of impact or abrasion.

10.2 Coatings of Thoroseal and Thoroseal Super on walls should be protected, for example, by a sand/cement render, or a proprietary cement-based plaster.

11 Maintenance



As the products are protected by an overcoating layer or screed and have suitable durability (see section 12), maintenance is not required.

12 Durability



Under normal condition of use, the products will provide an effective barrier to the transmission of groundwater for the life of the building to which they are applied.

Installation

13 General

13.1 Application of Thoroseal and Thoroseal Super should not be attempted during heavy rain, at temperatures of 5°C or below nor to a frozen substrate.

13.2 Existing water infiltration should be investigated and rectified prior to installation of the product. Advice should be sought from the Certificate holder.

14 Surface preparation

14.1 Prior to application, all mortar joints must be flush pointed, defects made good and irregular surfaces given a trowelled or floated finish with a sand/(lime)/cement mix.

14.2 All surfaces must be sound and free from existing coatings or contamination. Sand blasting or high-pressure water jetting may be used to remove previous coatings, loose particles and surface laitance, to expose a clean, open textured concrete surface.

14.3 A new concrete surface should be prepared by sand blasting or high-pressure water jetting (minimum pressure >5000 psi) to achieve the required surface finish.

14.4 If the surface shows frost damage, the affected area is removed and repaired using a suitable cementitious concrete repair material before the product is applied. The Certificate holder can advise on suitable material for a particular application.

15 Application

15.1 A slurry is prepared by mixing (preferably by machine) 25 kg of the product with potable water, in clean containers, in the following ratios. Care must be taken to avoid the formation of lumps:

- Thoroseal — 4.8 to 6.1 litres of water
- Thoroseal with Acryl 60/water blend — 4.8 to 5.6 litres
- Thoroseal Super — 5 to 5.8 litres of water.

15.2 If Acryl 60 is used with Thoroseal, it is added to the mixing water in the ratio, one part Acryl 60 to three parts of water.

15.3 If it is not already wet, the substrate must be saturated before Thoroseal is applied but it must be free from surface water.

15.4 The products are applied to the substrate in two coats. The basecoat is applied using a brush with stiff nylon bristles, such as Thoro brush or Tampico brush, at an average coverage rate of 1.5 kgm⁻² on concrete or up to 2.5 kgm⁻² on other substrates for both products (typically 1 mm per coat).

15.5 The first coat of Thoroseal or Thoroseal Super is vigorously brushed into the surface. Application should be carried out so that a flowing edge is maintained. If this is not possible, when application is continued, the previously applied coat should be overlapped by at least 200 mm.

15.6 After the first coat has hardened (after a minimum of 24 hours), the second coat may then be applied by Thoro brush, Tampico brush or spray at an average rate of 1.5 kgm⁻² for both products (typically 1 mm per coat).

15.7 Each coat is examined for damage, pinholes and areas of incomplete coverage before the next coat is applied and remedial action taken as required.

15.8 Thoroseal or Thoroseal Super should be used within 60 minutes of completion of mixing.

15.9 Once the final coating has fully hardened, a coat of proprietary cement-based plaster or sand/cement mix may be applied to protect it from damage during service.

15.10 Floors waterproofed with the products are protected by a screed.

Technical Investigations

16 Tests

16.1 Tests were carried out by UBAtc on Thoroseal and Acryl 60 to determine:

- resistance to water pressure
- shrinkage and swelling
- curing characteristics
- compressive strength
- water vapour permeability
- coefficient of thermal expansion
- flexural strength
- resistance to frost
- adhesion to substrates
- modulus of elasticity.

16.2 Test were carried out by the BBA on Thoroseal Super to determine:

- water vapour
- product characteristics.

16.3 An examination was made of existing data for Thoroseal relating to:

- resistance to wind-driven rain
- water absorption
- impact resistance
- resistance to weathering
- resistance to fungal growth
- toxicity
- resistance to salt spray
- effective life
- effect of Acryl 60 additive
- resistance to freeze/thaw
- abrasion resistance.

16.4 An examination was made of existing data for Thoroseal Super relating to:

- resistance to water pressure
- compressive strength (comparative)
- shrinkage and swelling (comparative)
- flexural strength (comparative)
- density (comparative).

16.5 A report by the Amtliche Materialprüfanstalt für Steine und Erden on the performance of Thoro installations in Germany, dating from 1982, was examined.

16.6 The data in the Belgian Agrément No ATG 1494 were assessed in the context of UK waterproofing and Building Regulations.

17 Investigations

17.1 A re-examination was made of the data and investigation on which the previous Certificate was based. The original conclusions remain valid.

17.2 An assessment was made of the data in the replacement Belgian Agrément No ATG 1727.

17.3 An assessment was made of the suitability of use in soils and groundwater.

17.4 A survey of users was conducted to assess the performance of the products in use.

- 17.5 A visit was made to a site in progress to assess the practicability of installation.
- 17.6 Regular factory inspections have been carried out to ensure that quality is being maintained.
- 17.7 No failure of the product in use has been reported to the BBA.

Additional Information

The management systems of BASF Construction Chemicals (UK) Ltd have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2000 by the British Standards Institution Quality Assurance (Certificate No FM01779).

Bibliography

BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*
BS EN ISO 9001 : 2000 *Quality management systems — Requirements*

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 granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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 References in this Certificate to any Act of Parliament, Statutory Instrument, Directive or Regulation of the European Union, British, European or International Standard, Code of Practice, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

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

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- remain covered by a valid Belgian Agrément; and
- are reviewed by the BBA as and when it considers appropriate.

18.4 In granting this Certificate, the BBA is not responsible for:

- 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
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

18.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.