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Agrément Certificate
93/2867
Product Sheet 1

NORD BITUMI WATERPROOFING PRODUCTS

ITER ROOF WATERPROOFING SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Iter Roof Waterproofing System, for use partially- or fully-bonded on flat or pitched roofs with limited access, and in roof garden or green roof specifications.

(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 system will resist the passage of moisture to the interior of the building (see section 6).

Properties in relation to fire — in the opinion of the BBA, the system, when used in a suitable specification, will enable a roof to be unrestricted under the Building Regulations (see section 7).

Resistance to wind up-lift — when correctly specified, the system will resist the effect of any wind suction likely to occur in practice (see section 8).

Resistance to foot traffic — the system will accept without damage the limited foot traffic and loads associated with installation and maintenance (see section 9).

Resistance to penetration by roots — the system will effectively resist the penetration of roots (see section 10).

Durability — under normal service conditions the system will provide a durable waterproof covering with a service life in excess of 20 years (see section 12).

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

On behalf of the British Board of Agrément

Simon Wroe
Head of Approvals — Materials

Greg Cooper
Chief Executive

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



The Building Regulations 2010 (England and Wales)

Requirement: B4(2)	External fire spread
Comment:	On flat roofs and with one of the surface finishes prescribed in Approved Document B, Appendix A, Table A5, part iii, the system is deemed to be unrestricted. See sections 7.1 to 7.4 of this Certificate.
Requirement: C2(b)	Resistance to moisture
Comment:	The system will enable a roof to meet this Requirement. See sections 6.1 and 6.2 of this Certificate.
Requirement: Regulation 7	Materials and workmanship
Comment:	The system is acceptable. See sections 12.1 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 system satisfies the requirements of this Regulation. See sections 11, 12.1 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards – construction
Standard: 2.8	Spread from neighbouring buildings
Comment:	The designation of all specifications, other than protections covered by Commission Decision 2000/553/EC, roof gardens or green roofs, must be confirmed by test. See sections 7.2 to 7.4 of this Certificate.
Standard: 3.10	Precipitation
Comment:	The system 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 sections 6.1 and 6.2 of this Certificate.
Standard: 7.1(a)	Statement of sustainability
Comment:	The system can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation: 12	Building standards – conversions
Comment:	Comments made in relation to this system under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



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

Regulation: B2	Fitness of materials and workmanship
Comment:	The system is acceptable. See section 12.1 and the <i>Installation</i> part of this Certificate.
Regulation: B3(2)	Suitability of certain materials
Comment:	The system is acceptable. See section 11 of this Certificate.
Regulation: C4(b)	Resistance to ground moisture and weather
Comment:	The system will enable a roof to meet the requirements of this Regulation. See sections 6.1 and 6.2 of this Certificate.
Regulation: E5(b)	External fire spread
Comment:	A flat roof incorporating the system and one of the supporting structures prescribed in Technical Booklet E, Table 4.6, part iv, is deemed to be unrestricted. See sections 7.1 to 7.4 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: 3 *Delivery and site handling* (3.3 and 3.4) and the *Installation* part of this Certificate.

Additional Information

NHBC accepts the use of the Iter Roof Waterproofing System, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapters 7.1 *Flat roofs and balconies* and 7.2 *Pitched roofs*.

CE marking

The Certificate holder has taken the responsibility of CE marking the system in accordance with harmonised European Standard BS EN 13707 : 2004 + A2 : 2009. An asterisk (*) appearing in this Certificate indicates that the data shown is given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 The Iter Roof Waterproofing System is a multi-layer system for use partially- or fully-bonded on flat or pitched roofs with limited access, and in roof garden or green roof specifications.

1.2 The system comprises:

- Iter Antiradice 4 mm — a torch-applied, atactic polypropylene, modified bitumen sheet reinforced with a 120 g·m⁻² polyester base with added UV protection and root-resistant additives for use as a cap sheet in roof garden and green roof specifications
- Iter 17A 4 mm — a torch-applied, atactic polypropylene, modified bitumen sheet reinforced with a 170 g·m⁻² polyester base with a sand finish for use as a cap sheet with the appropriate surface protection applied
- Iter 17A Mineral 4500 — as Iter 17A 4 mm but with a green or grey slate chipping finish for use as an exposed cap sheet or in detail work
- Iter 15A 3 mm — a torch-applied, atactic polypropylene, modified bitumen sheet reinforced with a 150 g·m⁻² non-woven polyester base for use as a base sheet.

1.3 The membranes are manufactured with the nominal characteristics given in Table 1. The mineral finish colours are slate grey and green (other colours are available on request).

Table 1 Nominal characteristics

	Iter Antiradice 4mm	Iter 17A 4 mm	Iter 17A Mineral 4500	Iter 15A 3 mm
Thickness* (mm)	4	4	4	3
Roll length* (m)	10	10	10	10
Roll width* (m)	1	1	1 ⁽¹⁾	1
Mass per unit area (kg·m ⁻²)	4.4	4.4	4.5	3.3
Roll weight (kg)	44	44	45	33

(1) Includes 70 mm selvedge edge.

1.4 Ancillary items for use with the system include:

- Primer V70 — a solution of oxidised bitumen dispersed in solvents, supplied in 10 and 20 litre metal tins for use on concrete substrates
- ANTISOL — a bitumen-based paint, pigmented with aluminium and polyolefin resins in solvent, supplied in 10 and 20 litre metal tins for use as a solar reflective paint on exposed membranes, metal pipes etc.

1.5 For finishes suitable for green roofs, the advice of the Certificate holder should be sought.

2 Manufacture

2.1 The system membranes are manufactured by saturation/coating of a polyester reinforcement using conventional 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 Nord Bitumi SpA has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by Bureau Veritas (Certificate IT237038).

3 Delivery and site handling

3.1 Rolls are delivered to site with two printed bands bearing the product name and thickness. A CE label is also affixed to each roll.

3.2 The rolls should be stored on end on a smooth clean surface, out of direct sunlight and away from sources of excessive heat.

3.3 Primer V70 and ANTISOL aluminium paint are classified under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP4)/Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulations) 2009* and all containers bear the appropriate hazard warning label. Flashpoints and hazard classifications are given in Table 2.

Table 2 Flashpoint and hazard classification

Materials	Flashpoint (°C)	Classification
Primer V70	40	Harmful, Highly flammable
ANTISOL	40	Harmful, Highly flammable

3.4 Primer V70 and ANTISOL containers must be kept tightly sealed and stored under cool and dry conditions, away from sources of ignition.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Iter Roof Waterproofing System.

Design Considerations

4 Use

4.1 The Iter Roof Waterproofing System is satisfactory for use on flat or pitched roofs with limited access in the following applications:

- pedestrian access (with additional protection)
- loose-laid and ballasted
- partially or fully-adhered
- protected, eg covered by pavers or other suitable protection
- single or built-up specifications
- green roofs
- roof gardens on flat roofs
- as an exposed cap sheet or in detail work.

4.2 Limited access roofs are defined for the purposes of this Certificate as those roofs only subject to pedestrian traffic for maintenance of the roof waterproofing and cleaning of gutters, etc. Where traffic in excess of this is envisaged, special precautions such as additional protection to the membrane must be provided (see section 9).

4.3 Flat roofs are defined for the purposes of this Certificate as those roofs having a minimum finished fall of 1:80. Pitched roofs are defined for the purposes of this Certificate as those having falls greater than 1:6. When designing flat roofs, twice the minimum fall must be assumed, unless a detailed analysis of the roof is available including, for example, overall and local deflection and direction of falls.

4.4 Structural decks to which the system is to be applied must comply with the relevant requirements of BS 6229 : 2003, BS 8217 : 2005 and where appropriate *NHBC Standards 2011*, Chapters 7.1 *Flat roofs and balconies* and 7.2 *Pitched roofs*.

4.5 Imposed loads, dead loading and wind load specifications must be calculated in accordance with BS EN 1991-1-1 : 2002, BS EN 1991-1-3 : 2003, BS EN 1991-1-4 : 2005 + A1 : 2010 and their respective National Annexes.

4.6 The drainage system for green roofs or roof gardens must be correctly designed, and provision made for access for maintenance purposes. Dead loads for green roofs and roof gardens can increase if the drains become partially or completely blocked, causing waterlogging of the drainage layer.

4.7 Insulation materials to be used in conjunction with the membranes 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 be used in accordance with, and within the limitations of, that Certificate.

5 Practicability of installation

The system is designed to be installed by a competent roofing contractor experienced with this type of installation.

6 Weathertightness

6.1 The system, including joints, when completely sealed and consolidated, will adequately resist the passage of moisture into the building and enable a roof to comply with the requirements of the national Building Regulations:



England and Wales — Approved Document C, Requirement C2(b), Section 6

Scotland — Mandatory Standard 3.10, clauses 3.10.1 and 3.10.7

Northern Ireland — Regulation C4(b).

6.2 The membranes are impervious to water and will achieve a weathertight roof capable of accepting minor structural movement.

7 Properties in relation to fire



7.1 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 (England and Wales), or Technical Booklet E, Table 4.6, Part IV of The Building Regulations (Northern Ireland) (and listed below), the roof is deemed to be unrestricted.

- 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.



7.2 The membranes, when used in protected or inverted roof specifications, including an inorganic covering listed in the Annex of Commission Decision 2000/553/EC, can be considered to be unrestricted under the national Requirements.

7.3 The designation of other specifications should be confirmed by:

England and Wales — test or assessment in accordance with Approved Document B, Appendix A, Clause 1

Scotland — test to conform to Mandatory Standard 2.8, Clause 2.8.1

Northern Ireland — test or assessment by a UKAS accredited laboratory, or an independent consultant with appropriate experience.

7.4 In the opinion of the BBA, when used in irrigated roof gardens or green roofs, the use of the system will be unrestricted under the national Requirements:

England and Wales — Requirement B4(2)

Scotland — Mandatory Standard 2.8, Clause 2.8.1

Northern Ireland — Regulation E5(b).

7.5 If allowed to dry, the plants used may allow flame spread across the roof. This should be taken into consideration when selecting suitable plants for the roof. Appropriate planting, irrigation and/or protection should be applied to ensure the overall fire-rating of the roof is not compromised.

8 Resistance to wind up-lift

8.1 The system will resist the effects of wind suction likely to occur in service.

8.2 The soil used in roof gardens must not be of a type that will be removed, or become delocalised due to wind scour experienced on the roof.

8.3 It should be recognised that the type of plants used in roof gardens could significantly affect the expected wind loads experienced in service.

9 Resistance to foot traffic

The system can accept the limited foot traffic and light concentrated loads associated with the installation and maintenance. Care must be taken to avoid puncture by sharp objects or concentrated loads. On limited access roofs where excess traffic is envisaged, such as maintenance of lift equipment, a walkway must be provided, using for example concrete slabs supported on bearing pads or in accordance with the Certificate holder's instructions.

10 Resistance to penetration of roots



Results of tests indicate that the system will adequately resist penetration by plant roots.

11 Maintenance



11.1 The system must be the subject of annual inspections and maintenance to ensure continued performance. Maintenance should include checks and operations to ensure the following where applicable:

- adequate ballast is in place and evenly distributed over the membrane
- protection layers are in good condition
- any exposed membrane is free from the build-up of silt, and other debris and unwanted vegetation are cleared.

11.2 Where damage has occurred, it should be repaired in accordance with section 1.5 and the Certificate holder's instructions.

Green roofs and roof gardens

11.3 Green roofs and roof gardens must be the subject of regular inspections, particularly in autumn after leaf fall and in the spring to ensure unwanted vegetation and other debris are cleared from the roof and drainage outlets (see section 4.6). Guidance is available within the latest edition of *The GRO Green Roof Code – Green Roof Code of Best Practice for the UK 2011*.

12 Durability



12.1 Accelerated weathering tests and evidence from existing installations confirm that satisfactory retention of physical properties is achieved. Under normal conditions, the system will have a service life in excess of 20 years.

12.2 When using the Iter 17A Mineral 4500 membrane, it is possible that some localised loss of mineral surfacing may occur after some years in areas where complex detailing of the roof design is incorporated.

Installation

13 General

13.1 Installation of the Iter Roof Waterproofing System must be carried out by installers trained and approved by the Certificate holder in accordance with the relevant Clauses of BS 8000-4 : 1989 and BS 8217 : 2005, the Certificate holder's instructions and this Certificate.

13.2 Substrates to which the roof covering is to be applied must be firm, dry and clean, and free from sharp projections such as nail heads and concrete nibs etc. Metal, concrete and woodwool substrates must first be primed with Primer V70.

13.3 Installation should not be carried out during inclement weather (eg rain, fog, snow). When the temperature is below 5°C suitable precautions against surface condensation must be taken.

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

13.5 Soil or other bulk material should not be stored on one area of the roof prior to installation, to ensure localised overloading does not occur.

13.6 If the roof is likely to be subject to uncontrolled pedestrian access, the substructure must meet 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 of Practice must be used.

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

13.8 The surface of the Iter 17A 4 mm membrane must be protected by a solar protective coating of ANTISOL when used as an exposed top layer.

13.9 The system may also 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.

13.10 The Iter 17A 4 mm membrane does not require further surface protection when used on roofs with limited access.

13.11 The membranes may be installed in the following system build ups:

- a single layer of Iter 17A 4 mm
- a single layer of Iter 17A Mineral 4500
- a single layer of Iter Antiradice 4 mm
- a double layer comprising Iter 15A 3 mm and any one of the single layer membranes previously mentioned.

14 Procedure

14.1 Irrespective of the chosen technique, the installation of double layer waterproofing specifications requires the second layer to always be fully bonded to the first layer and all joints between the two layers to be offset by 500 mm.

Fully bonded

14.2 The Iter membranes are applied by melting the lower surface by torching and pressing the membrane down. Care must be taken not to overheat the coating. When used as a cap sheet the Iter 17A 4 mm, Iter 17A Mineral 4500 or Iter 17 Antiradice 4 mm is fully bonded to the Iter 15A 3 mm or to base layers complying with BS 8747 : 2007.

Partially bonded

14.3 To achieve a partially bonded system, a base layer of BS 8747 type 3B felt is bitumen bonded to a loose-laid layer of BS 8747 type 3G felt. The chosen Iter cap sheet is then fully bonded to this base.

Loose-laid

14.4 The membranes should be laid out flat onto the substrate without folds or ripples with 100 mm side overlaps and 150 mm end overlaps.

14.5 The membrane is then fully bonded at the perimeter and the overlaps fully bonded together. Finally, the detailing work is carried out.

14.6 The membrane should be covered with a 50 mm protective sheet prior to the application of a 50 mm minimum thick layer of washed, well-rounded gravel. In areas of high-wind exposure, a heavier gravel may be used and/or the gravel may be bonded at the edges for a distance of one metre. Alternatively, concrete slabs on suitable supports can be used.

Jointing

14.7 End overlaps must be 150 mm wide and side overlaps 100 mm wide. A continuous bead of melted compound between 5 and 15 mm wide must be extruded on all overlaps to ensure a sealed and consolidated bond.

15 Repair

In the event of accidental damage, repairs can be carried out by cleaning the area around the damage and applying a patch as described in the Certificate holder's instructions.

Technical Investigations

16 Tests

Tests were conducted on samples of the membrane and the results assessed to determine:

a) physical properties of the coating mass

- fines content
- softening point
- penetration
- low temperature flexibility

b) physical properties of the polyester reinforcement

- mass per unit area
- tensile strength
- elongation

c) physical properties — general

- roll width
- roll thickness
- mass per unit area
- water vapour permeability
- water vapour resistance

d) physical properties — directional

- tensile strength
- elongation
- tear strength
- dimensional stability

e) service performance

- resistance to water pressure
- resistance to static indentation
- resistance to dynamic indentation
- fatigue resistance
- wind uplift
- thermal cycling
- low temperature flexibility
- unrolling at low temperature
- thermal behaviour
- resistance to slipping
- peel strength
- heat ageing (test carried out at 70°C for 168 days)
- UV ageing (test carried out for 2000 hours QUV, 4 hours UV at 45°C with 4 hours condensation at 40°C).

17 Investigations

17.1 A user survey was performed to assess the membranes' performance in use.

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

Bibliography

- BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*
- BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*
- 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 1991-1-1 : 2002 *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*
- UK National Annex to BS EN 1991-1-1 : 2002 *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*
- BS EN 1991-1-3 : 2003 *Eurocode 1 — Actions on structures — General actions — Snow loads*
- UK National Annex to BS EN 1991-1-3 : 2003 *Eurocode 1 — Actions on structures — General actions — Snow loads*
- BS EN 1991-1-4 : 2005 + Amendment 1 : 2010 *Eurocode 1 — Actions on structures — General actions — Wind actions*
- UK National Annex to BS EN 1991-1-4 : 2005 + Amendment 1 : 2010 *Eurocode 1 — Actions on structures — General actions — Wind actions*
- BS EN 13707 : 2004 + Amendment 2 : 2009 *Flexible sheets for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics*
- BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

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.