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Agrément Certificate

91/2671

Product Sheet 4

IKO ROOF WATERPROOFING SYSTEMS

ULTRA PREVENT T-O SLATE WATERPROOFING SYSTEMS

This Agrément Certificate Product Sheet⁽¹⁾ relates to Ultra Prevent T-O Slate Waterproofing Systems, for use on flat or pitched roofs with limited access as a partially or fully bonded roof waterproofing system comprising either two or three layers.

(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

Weather-tightness — the systems will resist the passage of moisture into the building (see section 6).

Properties in relation to fire — the systems will enable a roof to be unrestricted under 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 foot traffic — 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

Simon Wroe
Head of Approvals — Materials

Claire Curtis-Thomas
Chief Executive

Date of Second issue: 15 October 2013

Originally certificated on 17 May 2011

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, Ultra PrevENT T-O Slate Waterproofing Systems, 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) (as amended)

Requirement: B4(2)	External fire spread
Comment:	On suitable substructures, the use of the membranes will be unrestricted under this Requirement. See sections 7.1 to 7.3 of this Certificate.
Requirement: C2(b)	Resistance to moisture
Comment:	The membranes, including joints, will enable a roof to meet this Requirement. See section 6.1 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The membranes are acceptable. See section 11.1 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 membranes satisfies the requirements of this Regulation. See sections 10.1, 11.1 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards application to construction
Standard: 2.8	Spread from neighbouring buildings
Comment:	The membranes, when applied to a suitable substructure, are regarded as having low vulnerability under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard. See sections 7.1 and 7.3 of this Certificate.
Standard: 3.10	Precipitation
Comment:	The use of the membranes, including joints, will enable a roof to meet 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 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 application to conversions
Comment:	All comments given for the membranes under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation: 23(a)(i)(iii)(b)(i)	Fitness of materials and workmanship
Comment:	The membranes are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.
Regulation: 28(b)	Resistance to moisture and weather
Comment:	The membranes, including joints, will enable a roof to meet the requirements of this Regulation. See section 6.1 of this Certificate.
Regulation: 36(b)	External fire spread
Comment:	On a suitable substructure, the use of the membranes will be unrestricted under the requirements of this Regulation. See sections 7.1 to 7.3 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 sections 1 *Description* (1.2) and 3 *Delivery and site handling* (3.3) of this Certificate.

Additional Information

NHBC Standards 2013

NHBC accepts the use of Ultra PrevENT T-O Slate Waterproofing Systems, provided they are installed, used and maintained in accordance with this Certificate, 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 products in accordance with harmonised European Standard BS EN 13707 : 2004 + A2 : 2009. An asterisk (*) appearing in this Certificate indicates that data shown is given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Ultra PrevENt T-O Slate Waterproofing Systems comprise:

- Ultra PrevENt T-O Slate — an SBS modified bitumen membrane with a polyester reinforced carrier (270 g·m⁻²) with a slate granule finish on the upper surface and a sand finish on the lower. For use as a cap sheet
- IKO Systems Underlayer — bitumen-saturated polyester fibre base (170 g·m⁻²) coated both sides with an SBS elastomeric coating incorporating a mineral filler and a sand finish on upper side and either a sand finish (PR), a thermofusible film (T-O) or modified bitumen adhesive and release film (S-A) on lower side. For use as a first or intermediate layer.

1.2 The nominal characteristics are given in Tables 1 and 2.

Table 1 Nominal characteristics

Characteristic (unit)	Ultra PrevENt T-O Slate	IKO Systems Underlayer		
		PR	T-O	S-A
Roll width (m)	1 ⁽¹⁾	1	1	1
Roll length (m)	8	16	12	16
Mass per unit area (kg·m ⁻²)	5	2.17	3.18	2.06
Roll weight (kg)	40	31.0	38.2	36.1

(1) Including selvedge.

Table 2 Nominal group characteristics

Characteristic (unit)	Ultra PrevENt T-O Slate	IKO Systems Underlayer
Watertightness* (1 m)	pass	pass
Tensile strength* (N per 50 mm)		
longitudinal direction	≥ 800	≥ 300
transverse direction	≥ 700	≥ 300
Elongation (%)		
longitudinal direction	≥ 25	≥ 17
transverse direction	≥ 35	≥ 17
Resistance to tear* – nail (N)		
longitudinal direction	≥ 500	≥ 100
transverse direction	≥ 500	≥ 100
Static loading* (kg)	20	20
Low temperature flexibility* (°C)		
upper face	≤ -25	≤ -15
lower face	≤ -25	≤ -15

1.3 Products that may be used with the systems are:

- traditional membranes — to BS 8747 : 2007, where required
- IKO bonding bitumen compounds — for use when pour and roll bonding is required
- Challenger 180 — a nailed preparation layer
- IKOpro Quick Dry Bitumen Primer — for use in preparation of substrates
- IKOpro SA Bitumen Primer — a cold-applied bituminous primer consisting of a blend of bitumens, solvents and additives for preparing substrates prior to application
- IKO Systems Venting Layer — for use in partial bonded applications
- IKOpro PU Adhesive for Insulation — a single-part, moisture curing, polyurethane adhesive used for bonding insulation boards
- IKOpro PU Adhesive for Roofing Membranes — a single-part, moisture curing, polyurethane adhesive used for bonding and lap-sealing vapour control layers
- IKO Systems PR, IKO Systems T-O and IKO Systems S-A Vapour Control Layers — alternative vapour control layers for use with the systems
- IKO Thermal Insulation materials — a range of rigid insulation boards for use as part of a built-up warm roof or inverted roof construction.

2 Manufacture

2.1 The membranes are manufactured by saturating the bases with bitumen and a fire-enhanced SBS elastomeric coating containing the mineral filler. The surface is finished by an application of slate granules and/or sand.

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 IKO PLC has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by BSI (Certificate Q 05233).

3 Delivery and site handling

3.1 The membranes are delivered to site in rolls taped together, with the securing tape bearing the Certificate holder's name and the BBA identification mark incorporating the number of this Certificate.

3.2 Rolls should be stored on end on a clean, level surface and not exposed to excessive heat.

3.3 The polyurethane adhesives and bitumen primer are classified under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP4)/Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009*. Their flashpoints and hazard classifications are given in Table 3. These products bear the appropriate hazard warning.

Table 3 Flashpoint and hazard classification

Material	Flashpoint (°C)	Classification
IKOpro Quick Dry Bitumen Primer	0	harmful, highly flammable ⁽¹⁾
IKOpro SA Bitumen Primer	41	harmful, flammable
IKOpro PU Adhesive (Insulation)	<3	harmful, highly flammable ⁽¹⁾
IKOpro PU Adhesive (Membranes)	<0	harmful, highly flammable ⁽¹⁾ dangerous for the environment

(1) These products should be stored in accordance with the *The Dangerous Substances and Explosive Atmospheres Regulations 2002*

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Ultra PrevENT T-O Slate Waterproofing Systems.

Design Considerations

4 General

4.1 Ultra PrevENT T-O Slate Waterproofing Systems are suitable for use as fully or partially bonded waterproofing system, as part of a single or built-up specification and, where necessary, in conjunction with appropriate roofing membranes to BS 8747 : 2007 for flat or pitched roofs with limited access.

4.2 Limited access roofs are defined for the purpose of this Certificate as those roofs that are subjected only to pedestrian traffic for maintenance of the roof covering and cleaning of gutters, etc. Where traffic in excess of this is envisaged, special precautions, such as additional protection to the membrane, must be taken.

4.3 Flat roofs are defined for the purpose of this Certificate as those roofs having a minimum finished fall of 1:80. For design purposes, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available, including overall and local deflection, direction of falls, etc.

4.4 Decks to which the membranes are to be applied must comply with the relevant requirements of either BS 6229 : 2003 or BS 8217 : 2005 and, where appropriate, *NHBC Standards 2013, Chapter 7.1 Flat roofs and balconies*.

4.5 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 used in accordance with the scope of that Certificate.

5 Practicability of installation

The systems should only be installed by installers who have been trained and approved by the Certificate holder.

6 Weathertightness



6.1 The membranes, 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 28(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 Test results indicate that, a system comprising 18 mm thick exterior plywood, one layer of IKO Systems T-O Vapour Control Layer, a layer of Supertherm Universal insulation board, one layer of Ultra PrevENt T-O Underlay, and one layer of Ultra PrevENt T-O cap sheet is classified under BS EN 13501-5 : 2005 as B_{roof}(t4).



7.2 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 5.6, Part IV of The Building Regulations (Northern Ireland) (and listed below), the roof is deemed to be of designation B_{roof}(t4).

Surface finishes

- 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, or
- macadam.



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 Systems comprising Ultra PrevENt T-O products and insulations have been Certificated by the Loss Prevention Certification Board (Certificate No 626a, Issue 4).

8 Resistance to wind uplift

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.

9 Resistance to foot traffic

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, additional protection to the membrane in accordance with the Certificate holder's instructions must be provided.

10 Maintenance



10.1 Systems must be the subject of annual inspections and maintenance to ensure continued performance.

10.2 Where damage has occurred it must be repaired in accordance with section 15 and the Certificate holder's instructions.

11 Durability



11.1 Accelerated weathering tests and evidence from existing installations confirm that satisfactory retention of physical properties is achieved. Under normal conditions, the systems will have a service life in excess of 30 years.

11.2 When using the mineral finished 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.

12 Reuse and recyclability

The products comprise bitumen and polyester which can be recycled.

13 General

13.1 Installation of Ultra PrevENt T-O Slate Waterproofing Systems 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 membranes are applied must be sound, dry, clean and free from sharp projections such as nail heads and concrete nibs. Substrates should be primed with IKOpro Quick Dry Bitumen Primer or IKOpro SA Bitumen Primer prior to installation, where required.

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 At falls in excess of 5° (1:11), the normal precautions against slippage and the provision for mechanical fixings as required by BS 8217 : 2005 should be observed.

13.5 If the roof is likely to be subjected 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 this Code must be used.

13.6 When used for remedial work, existing waterproofing layers must be made sound and existing surface finishes (eg surface dressing) must be removed and then primed.

13.7 Where applicable, details are to be worked in accordance with traditional methods.

13.8 The finished membrane requires no further surface protection.

13.9 Suitable roofing specifications are given in Table 4.

Table 4 Roofing specifications

Substrate	Vapour control layer ⁽¹⁾	Insulation ⁽¹⁾	Venting layer	Underlay ⁽¹⁾	Top layer ⁽¹⁾
Concrete ⁽²⁾ Screeds ⁽²⁾ Plywood ⁽³⁾ OSB/3 ⁽³⁾ Metal ⁽²⁾ Woodwool Timber boards ⁽⁴⁾	Systems PR VCL Systems T-O VCL Systems S-A VCL	Enertherm BGF Supertherm Universal Supertherm Rock Supertherm Torch	N/A	Systems PR Underlayer Systems T-O Underlayer	Ultra PrevENt T-O Slate
Concrete ⁽²⁾ Screeds ⁽²⁾ Plywood ⁽³⁾ OSB/3 ⁽³⁾ Metal ⁽²⁾ Woodwool Timber boards ⁽⁴⁾	Systems PR VCL Systems T-O VCL Systems S-A VCL	Enertherm MG Enertherm ALU	N/A	Systems S-A Underlayer	Ultra PrevENt T-O Slate
Concrete ⁽²⁾ Screeds ⁽³⁾ Plywood ⁽³⁾ OSB/3 ⁽³⁾ Metal ⁽⁴⁾ Woodwool Timber boards ⁽⁴⁾	Systems PR VCL Systems T-O VCL Systems S-A VCL	Enertherm MG	BS 8747, Type 3 ⁽⁵⁾	Systems PR Underlayer	Ultra PrevENt T-O Slate

(1) All materials are suitable for all listed substrates.

(2) Concrete, screeds and metal decks to be primed with IKOpro Quick Dry Bitumen Primer.

(3) Board joints to be taped with suitable materials.

(4) Challenger 180 preparation layer is nailed to timber boards prior to the installation of the vapour control layer.

(5) BS 8747, Type 3 is suitable for all listed substrates.

14 Procedure

Partially bonded

14.1 A layer of either IKO Systems Venting Layer or Type 3G felt to BS 8747 : 2007, Annex C, is loose-laid over the substrate in accordance with BS 8217 : 2005, Sections 8.15.2 and 8.15.3.

14.2 IKO Systems Underlayer PR is then fully bonded to the Type 3G felt or IKO Systems Venting Layer in accordance to the Certificate holder's instructions.

14.3 Ultra PrevENt T-O Slate is then fully bonded to the underlay by torch bonding by pressing the membrane down. Care must be taken not to overheat the coating. When torching the membranes, a bead of coating must exude from all lap joints. Side laps should be a minimum of 75 mm and end laps a minimum of 100 mm.

14.4 The perimeter areas must be fully bonded in bitumen.

Fully bonded

14.5 An IKO Systems Underlayer is fully bonded to the substrate in accordance to the Certificate holder's instructions.

14.6 Ultra PrevENT T-O Slate is then fully bonded to the underlay by torch bonding by pressing the membrane down. Care must be taken not to overheat the coating. When torching the membranes, a bead of coating must exude from all lap joints. Side laps should be a minimum of 75 mm and end laps a minimum of 100 mm.

15 Repair

In the event of damage, the membranes can be effectively repaired after cleaning, with a patch of membrane bonded over the damaged area.

Technical Investigations

16 Tests

An assessment was made on test data in relation to:

- suitability of coating mass
- suitability of polyester reinforcement
- watertightness
- water vapour transmission
- tensile strength
- elongation at break
- static indentation
- dynamic impact
- low temperature flexibility
- dimensional stability
- fatigue cycling
- peel strength from substrate
- wind uplift
- heat ageing.

17 Investigations

17.1 Existing data on fire performance was assessed.

17.2 Visits to existing sites over 20 years old were carried out to assess product durability in service.

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 13501-5 : 2005 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roof tests*

BS EN 13707 : 2004 + A2 : 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.