



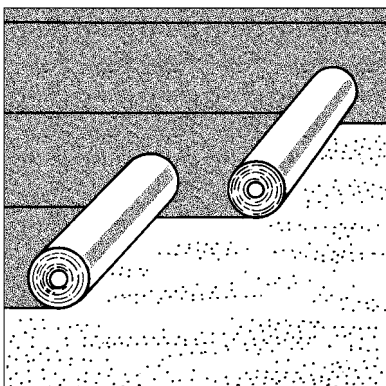
Designated by Government  
to issue  
European Technical  
Approvals

## Product

• THIS CERTIFICATE OF CONFIRMATION RELATES TO CASALI DERMABIT-EXTRA 4170 4 mm AND 43170 ARDESIATO (SLATED) ROOF WATERPROOFING MEMBRANES, A REINFORCED POLYMER MODIFIED BITUMEN SHEETING.

- The membranes are available with a silica sand, talc or slate surface finish.
- The membranes are suitable for use in a fully- or partially-bonded roof waterproofing system on flat or pitched roofs with limited access, or, with suitable protection, flat roofs with pedestrian access.
- The silica sand and talc-finished membranes are each suitable for use as a single-layer waterproofing in a loose-laid and ballasted system on flat roofs.
- The products are manufactured in Italy by Casali SpA Industria Chimica Bituminosa.
- The products are marketed by Roofco Merchants Ltd, Ross Street, Darnall, Sheffield S9 4PU. Tel: 0114 2436001, Fax: 0114 2436060.

Confirmation of an Italian Agrément issued by the Istituto Centrale per l'Industrializzazione e la Tecnologia Edilizia (ICITE) to Casali SpA Industria Chimica Bituminosa, Zona Industriale CIAF, 60020 Castelferretti Falconara (AN), Italy.



## Casali SpA Industria Chimica Bituminosa

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### CASALI DERMABIT-EXTRA 4170 4 mm AND 43170 ARDESIATO (SLATED) ROOF WATERPROOFING MEMBRANES


Membrane d'étanchéité  
Wasserdichtungsmittel

**Agrément  
Certificate  
No 95/3099**

Second issue\*


## Regulations

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

 The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of roof waterproofing membranes with the Building Regulations. In the opinion of the BBA, Casali Dermabit-Extra 4170 4 mm and 43170 Ardesiato (Slated) Roof Waterproofing Membranes, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement:	B4(2)	External fire spread
Comment:		On flat roofs and with one of the surface finishes prescribed in Part iii of Table A5 of the Approved Document the roof shall be deemed to be of designation AA. For other situations see sections 11.1 to 11.4 of this Certificate.
Requirement:	C4	Resistance to weather and ground moisture
Comment:		Data examined for water resistance of the membranes indicate that the materials meet this Requirement. See section 8.1 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The membranes comprise acceptable materials. See section 13.1 of this Certificate.

### 2 The Building Standards (Scotland) Regulations 1990 (as amended)

 In the opinion of the BBA, Casali Dermabit-Extra 4170 4 mm and 43170 Ardesiato (Slated) Roof Waterproofing Membranes, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Technical Standards as listed below.

Regulation:	10	Fitness of materials and workmanship
Standards:	B2.1 and B2.2	Selection and use of materials, fittings, and components, and workmanship
Comment:		The membranes comply with these Standards. See section 13.1 of this Certificate.
Regulation:	12	Structural fire precautions
Standard:	D9.1	Fire spread from adjoining buildings
Comment:		Test data to BS 476-3 : 1958 indicate that on suitable substructures the use of the membranes will be unrestricted by the requirements of this Standard. See sections 11.1, 11.2 and 11.4 of this Certificate.
Regulation:	17	Resistance to moisture
Standard:	G3.1	Resistance to precipitation
Comment:		Test data examined for water resistance on the membranes indicate that the use of the membranes can enable a roof to satisfy the requirements of this Standard. See section 8.1 of this Certificate.

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## 3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, Casali Dermabit-Extra 4170 4 mm and 43170 Ardesiato (Slated) Roof Waterproofing Membranes, if used in accordance with the provisions of this Certificate, will satisfy the various Building Regulations as listed below.

Regulation:	<b>B2</b>	Fitness of materials and workmanship
Comment:		The membranes are acceptable materials. See section 13.1 of this Certificate.
Regulation:	<b>C4</b>	Resistance to ground moisture and weather
Comment:		Data examined for water resistance of the membranes indicate that the use of membranes can enable a roof to satisfy the requirements of this Regulation. See section 8.1 of this Certificate.
Regulation:	<b>E5</b>	External fire spread
Comment:		Data obtained from tests to BS 476-3 : 1958 indicate that on suitable substructures the use of membranes will enable a roof to be unrestricted under the requirements of this Regulation. See sections 11.1 to 11.4 of this Certificate.

## 4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections: *5 Description (5.2) and 6 Delivery and site handling (6.2).*

### 5 Description

5.1 The Casali Dermabit-Extra 4170 4 mm and 43170 Ardesiato (Slated) Roof Waterproofing Membranes are torch-applied, polyester reinforced, APAO resin (Amorphe PolyAlpha Olefine) or synthetic co/terpolymeralphaolefine modified bitumen roof waterproofing membranes, with either a silica sand (4170 4 mm) or slated (43170) finished upper surface and a thermofusible thermoplastic film on the lower surface.

5.2 The products are manufactured to the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Dimensions	4170 4 mm	43170 Ardesiato (Slated)
thickness (mm)	4	4 <sup>(1)</sup>
width (m)	1	1
length (m)	10	8/10
weight (kgm <sup>-2</sup> )	4	5.2
roll weight (kg)	40	42/52

(1) Excluding slate finish.

5.3 Ancillary materials for use with the membranes include:

Dermaprimer — a solution of bitumen in solvents for priming substrates

Protection sheet — a non-woven polyester sheet for protecting the waterproofing sheet from damage in ballasted system

Vaporex AL Vapour barrier — for use in systems where a vapour barrier is required

Reflex AR — a protective reflecting aluminium paint for reducing the effect of solar radiation

Acrytop — a protective coating for reducing the effect of solar radiation.

5.4 Quality control checks are carried out on the raw materials and coating mass. Checks on the final product include:

- thickness
- mass per unit area
- low-temperature flexibility
- dimensional stability
- ash content
- tensile strength.

### 6 Delivery and site handling

6.1 The membranes are delivered to site in rolls sealed with tape. The roll sealing tape bears the product name and the BBA identification mark incorporating the number of this Certificate.

6.2 Individual rolls must be stored in an upright position on a clean, level surface and kept dry and protected from direct sun rays and from heat sources.

6.3 The Dermaprimer is supplied in 25 kg cans. It is classified as 'harmful' and 'highly flammable' under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3)

and must be stored under cover and away from sources of heat and ignition.

## Design Data

### 7 General

7.1 Casali Dermabit-Extra 4170 4 mm (with surface finish of Reflex AR, Acrytop or BS 8217 : 1994 type) and Casali Dermabit-Extra 43170 Ardesiato (Slated), are satisfactory for use as fully- or partially-bonded waterproofing for flat or pitched roofs with limited access, as part of a built-up specification and, where necessary, in conjunction with appropriate roofing felts to BS 747 : 2000.

7.2 The Casali Dermabit-Extra 4170 4 mm, is suitable for use as a single-ply, loose-laid waterproofing layer, ballasted with aggregate on flat roofs with limited access, or under heavy protection (eg concrete slabs) on flat roofs with regular pedestrian traffic.

7.3 The slate finished membrane is suitable for use, where appropriate, as an exposed cap sheet or in detail work.

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


7.5 When designing flat roofs, 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. Flat roofs are defined for the purpose of this Certificate as those roofs having a minimum finished fall of 1:80. Pitched roofs are defined as those having falls in excess of 1:6.

7.6 Decks to which the product is to be applied must comply with the relevant requirements of BS 6229 : 1982, BS 8217 : 1994 and, where appropriate, NHBC Standards, Chapter 7.1 or the Zurich Building Guarantees Technical Standards, Section 5, clause 5.9.3.19.

7.7 Insulation materials used in conjunction with the product must be:

- (a) as described in the relevant clauses of BS 8217 : 1994, or
- (b) the subject of a current BBA Certificate and be used in accordance with and within the limitations of that Certificate.

### 8 Weathertightness

 8.1 Data examined confirm that the membrane, when completely sealed and consolidated, will adequately resist the passage of moisture to the inside of the building and so meet the requirements of the national Building Regulations:

## *England and Wales*

Approved Document C, Requirement C4, Section 5.1

## *Scotland*

Standard G3.1, Regulation 17

## *Northern Ireland*

Regulation C4.

8.2 The product is impervious to water and, when used in the systems described, will give a weathertight roofing capable of accepting minor structural movements without damage.

## **9 Resistance to wind uplift**

9.1 Data examined indicate that the adhesion of the bonded systems to the decking, or to bituminous felt, is sufficient to resist the effects of wind suction, elevated temperature and thermal shock conditions likely to occur in practice.

9.2 The precise ballast requirement for loose-laid systems should be calculated in accordance with the relevant parts of BS 6399-2 : 1997 but should not be below a minimum thickness of 50 mm. The use of concrete slabs, on suitable protective supports should be considered in areas of high design wind loads.

## **10 Resistance to foot traffic**

The system can accept, without damage, the limited foot traffic and light, concentrated loads associated with installation and maintenance operations. Where traffic in excess of this is envisaged, additional protection to the membrane in accordance with the manufacturer's instructions must be provided. However, reasonable care should be taken to avoid puncture by sharp objects or concentrated loads.

## **11 Properties in relation to fire**



11.1 Casali Dermabit-Extra 4170 4 mm, when used in a loose-laid and ballasted specification including a minimum surface finish of 50 mm of aggregate, shall be deemed to satisfy BS 476-3 : 1958, designation EXT.F.AA.

11.2 When tested in accordance with BS 476-3 : 1958, a system comprising:

- 0.7 mm thick profiled galvanized steel deck; one layer of BS 747 : 2000, Type 1F felt, bonded to the deck with 95/25 oxidised bitumen; one layer of 50 mm thick polyurethane foam insulation board; one layer of 2 mm thick glass-fibre reinforced underlay; and a top layer of Casali Dermabit-Extra 43170 Ardesiato (Slated) achieved an EXT.F.AA rating.
- 0.7 mm thick profiled galvanized steel deck; one layer of BS 747 : 2000, Type 1F felt, bonded to the deck with 95/25 oxidised bitumen; one layer of 50 mm thick polyurethane

foam insulation board; one layer of BS 747 : 2000, Type 3G perforated felt, loose-laid; one layer of BS 747 : 2000, Type 3B felt, bonded with 95/25 oxidised bitumen; one layer of Casali Dermabit-Extra 4170 4 mm, torch applied and coated with Reflex AR achieved an EXT.F.AC rating.



11.3 When used for flat roofs with one of the surface finishes defined in the Building Regulations (and listed) the roof is deemed to be of designation AA:

## *England and Wales*

Approved Document B, Appendix A, Table A5, Part iii

## *Northern Ireland*

Technical Booklet E, Table 4.6 of Part IV.

## **Surface finishes:**

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



11.4 The designation of other specifications (eg on combustible substrates) should be confirmed by:

## *England and Wales*

test and assessment in accordance with Approved Document B, Appendix A, Clause A1

## *Scotland*

test to conform to Standard D9.1

## *Northern Ireland*

test or assessment by a UKAS accredited laboratory or an independent consultant with appropriate experience.

## **12 Maintenance**

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

## **13 Durability**



13.1 Casali Dermabit-Extra 4170 4 mm and Casali Dermabit-Extra 43170 Ardesiato (Slated) Roof Waterproofing Membranes, when subjected to normal conditions of exposure and use, will retain their integrity for a period in excess of 20 years.

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

### 14 General

14.1 Installation of Casali Dermabit-Extra 4170 4 mm and 43170 Ardesiato (Slated) Roof Waterproofing Membranes is carried out using traditional methods for laying bituminous felts, in accordance with the manufacturer's instructions, the relevant clauses of BS 6229 : 1982, BS 8000-4 : 1989, BS 8217 : 1994 and, where appropriate, NHBC Standards, Chapter 7.1 or the Zurich Building Guarantees Technical Standards, Section 5, clause 4.9.3.19.

14.2 Deck surfaces must be dry, clean and free from sharp projections such as nail heads, concrete nibs, etc.

14.3 The product should not be laid in rain, snow or heavy fog, nor if the temperature falls below 5°C.

### 15 Procedure

#### Fully-bonded applications

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

15.2 Side laps should be a minimum of 100 mm and end laps a minimum of 200 mm. Where used partially bonded, the membrane must be fully bonded to the substrate for at least 1 m immediately before and after the end lap. A bead of molten material must exude from all laps to indicate a satisfactory seal and which should be levelled out using a heated, rounded-tip trowel.

15.3 At falls in excess of 1:6 the normal precautions against slippage and the provision for mechanical fixings as required by BS 8217 : 1994 should be observed.

15.4 If the roof is likely to be subjected to uncontrolled pedestrian access, the substructure and surface finish must meet the requirements of the relevant clauses of BS 8217 : 1994.

15.5 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.

15.6 On completion of the roof, the Casali Dermabit-Extra 4170 4 mm sheet may have a surface finish applied in accordance with BS 8217 : 1994, clauses 9.11 and 10.17. Surface finishes in the Code of practice include:

- stone aggregate in dressing compound
- pre-cast concrete paving flags
- proprietary bonding compound.

15.7 The Casali Dermabit-Extra 43170 Ardesiato (Slated) finished cap sheet requires no further surface protection.

#### Partially-bonded applications

15.8 A layer of Type 3G felt to BS 747 : 2000 should be loose-laid edge to edge, over the substrate.

15.9 The Casali Dermabit-Extra membrane is fully torch welded onto the perforated layer, ensuring that the bitumen seeps regularly into the perforations.

#### Loose-laid applications

15.10 Side laps should be a minimum of 100 mm and end laps a minimum of 200 mm. The laps should be welded by torching the lower surface and pressing the membrane down.

15.11 To combat the effects of wind uplift the membranes should be ballasted by either:

##### gravel

0.2 mm thick polythene protective sheet covered by at least 50 mm of well-rounded gravel (gravel size 15/30 mm), or

##### paving slabs

if paving on plastic pads is used, a separation layer of either 0.2 mm thick polythene or a non-woven (polypropylene/polyester) sheet (minimum mass 200 gm<sup>-2</sup>) should be placed between the membrane and the pads.

## Technical Investigations

The following is a summary of the technical investigations carried out on Casali Dermabit-Extra 4170 4 mm and 43170 Ardesiato (Slated) Roof Waterproofing Membranes.

### 16 Tests

The technical data carried out by ICITE, which led to the issue of Agrément 516/98, are summarised in Tables 2 to 7. All data were evaluated in context of roofing practice and Building Regulations.

Table 2 Characteristics of polyester reinforcement

Test (units)	Method <sup>(1)</sup>	Mean result
Mass (gm <sup>-2</sup> )	MOAT 30 : 6B	214
Tensile strength (N per 50 mm)	MOAT 27	
longitudinal		463
transverse		509
Elongation at break (%)	MOAT 27	
longitudinal		26
transverse		32

(1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.

Table 3 Physical properties of coating mass

Test (units)	Method <sup>(1)</sup>	Mean result
Softening point (ring and ball) (°C)	MOAT 30 : 6G	151
Cold temperature flexibility (°C)	MOAT 30 : 6D	-20
Fines content (%)	MOAT 30 : 6F	10.3
Penetration (dmm)	DIN 52010	
at 25°C		33
at 60°C		130

(1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.

**Table 4** Physical properties — general

Test (units)	Method <sup>(1)</sup>	Mean results	
		4170	43170
Tensile strength (N per 50 mm)	MOAT 30 : 6C	855	676
		690	707
Elongation at break (%)	MOAT 30 : 6C	36	34
		49	38
Tear strength (nail) (N)	MOAT 27 : 8.4.1	196	195
		250	225
Dimensional stability (free)	UNI 8202/17	-0.19	-0.05
		-0.09	-0.05
Low temperature flexibility (°C)	MOAT 30 : 6D	-20	-20
Heat resistance (°C)	MOAT 30 : 6E	150	150

(1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the various documents.

**Table 5** Heat aged properties (180 days at 70°C) — coating mass

Test (units)	Method <sup>(1)</sup>	Mean results	
		4170	43170
Softening point (ring and ball) (°C)	MOAT 30 : 6G	151	152
Cold temperature flexibility (°C)	MOAT 30 : 6D	-5	-5
Penetration (dmm) at 60°C	DIN 52010	74	73

(1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to the sections/parts of the various documents.

**Table 6** Service performance

Test (units)	Method <sup>(1)</sup>	Mean results	
		4170	43170
Water pressure (60 kPa)	MOAT 27 : 5.1.4	no penetration	
Static indentation	MOAT 27 : 5.1.9	L <sub>4</sub>	L <sub>4</sub>
		L <sub>4</sub>	L <sub>4</sub>
Dynamic indentation	UNI 8202/12A	PD <sub>4</sub>	PD <sub>4</sub>
		PD <sub>4</sub>	PD <sub>4</sub>
Slip resistance	MOAT 27 : 5.1.7	no slippage	
Unrolling at low temperature	MOAT 27 : 5.4.3	satisfactory	
Peel resistance (N per 50 mm) primed fibre cement	MOAT 27 : 5.1.3	70	—
		50	—
bitumen felt		67	—
		57	—
Low temperature flexibility after ageing (°C)	MOAT 30 : 6D	—	—
		-5	-5
		-10	-10
UV aged <sup>(4)</sup>		-10	-10
Heat resistance after ageing <sup>(3)</sup> (°C)	MOAT 30 : 6E	120	120
Wind uplift (kPa) <sup>(5)</sup>	MOAT 27 : 5.1.2	—	9.5
		—	9.5
Thermal shock	MOAT 27 : 5.1.5	satisfactory	
Fatigue cycling	MOAT 27 : 5.1.8	—	—
		—	—
control		satisfactory	
heat aged <sup>(6)</sup>		satisfactory	

(1) The test documents are detailed in the *Bibliography*. Numbers in the table refer to the sections/parts of the various documents.

(2) Heat aged 28 days at 70°C.

(3) Heat aged 180 days at 70°C.

(4) UV aged 2000 light hours Xenotest.

(5) Fully adhered samples on asbestos cement and glasswool insulation substrates also tested.

(6) Heat aged 28 days at 80°C.

— = not tested

**Table 7** Tests on joints

Test (units)	Method <sup>(1)</sup>	Mean result
heat aged <sup>(2)</sup>		no penetration
water soak <sup>(3)</sup>		no penetration
Tensile strength of joints <sup>(4)</sup> (N per 50 mm)	MOAT 27 : 5.2.2/3/4	970
		1010
end laps control		970
heat aged <sup>(2)</sup>		1010
water soak <sup>(3)</sup>		990
side laps control		720
heat aged <sup>(2)</sup>		790
water soak		720
peel resistance of joints (N per 50 mm)	MOAT 27 : 5.2.3	44.0
		34.4
control		44.0
heat aged <sup>(2)</sup>		34.4

(1) The test document is detailed in the *Bibliography*. Numbers in the table refer to the sections/parts of the document.

(2) Heat aged 28 days at 80°C.

(3) Water soaked 7 days at 60°C.

(4) Results are for 4170 membrane, 43170 also satisfactorily tested.

## 17 Other investigations

17.1 A factory visit was made to examine the manufacturing practice and quality control procedures employed in the manufacture of Dermabit membranes.

17.2 An examination was made of reports of fire tests carried out to BS 476-3 : 1958.

## Bibliography

BS 476-3 : 1958 *Fire tests on building materials and structures — External fire exposure roof test*

BS 747 : 2000 *Reinforced bitumen sheets for roofing — Specification*

BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*

BS 8217 : 1994 *Code of practice for built-up felt roofing*

DIN 52010 : 1983 *Testing of bitumen — Determination of needle penetration*

MOAT No 27 : 1983 *General Directive for the Assessment of Roof Waterproofing Systems*

MOAT No 30 : 1984 *Special Directives for the Assessment of Reinforced Waterproof Coatings in Atactic Polypropylene (APP) Polymer Bitumen*

UNI 8202/12a : 1984 *Determination of dynamic punching resistance*

UNI 8202/17 : 1988 *Determination of dimensional stability in heat*



## Conditions of Certification

### 18 Conditions

18.1 This Certificate:

- (a) relates only to the product that is described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (d) is copyright of the BBA.

18.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, shall be construed as 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 and the manufacture and/or fabricating process(es) thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) remain covered by a valid Italian Agrément; and

(c) are reviewed by the BBA as and when it considers appropriate.

18.4 In granting this Certificate, the BBA makes no representation as to:

- (a) the presence or absence of any patent or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the nature of individual installations of the product, including methods and workmanship.

18.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do 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 or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future 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 installation and use of this product.



In the opinion of the British Board of Agrément, Casali Dermabit-Extra 4170 4 mm and 43170 Ardesiato (Slated) Roof Waterproofing Membranes are fit for their intended use provided they are installed, used and maintained as set out in this Certificate. Certificate No 95/3099 is accordingly awarded to Casali SpA Industria Chimica Bituminosa.

On behalf of the British Board of Agrément

Date of Second issue: 6th November 2002

Chief Executive

*\*Original Certificate issued on 14th February 1995. This amended version includes new telephone and facsimile numbers of the Certificate holder, revised national Building Regulations, change of product names, inclusion of CDM Regulations, inclusion of latest ICITE test results and new Conditions of Certification.*

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For information about Agrément Certificate validity and scope, tel: Hotline 01923 665400, or check the BBA website.