

**CERTIFIED COPY**

**AGREEMENT CERTIFICATE  
NO 98/262**

**INDEX TESUDO 20  
WATERPROOFING**

**AGREEMENT  
SOUTH AFRICA**

**BUILDING PRODUCTS  
APPROVALS**

**AGREEMENT SOUTH AFRICA****AGREEMENT CERTIFICATE 98/262****Title****INDEX TESTUDO 20 WATERPROOFING****Certificate holder**

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Valid until further notice (see third paragraph of preamble on page )

**SUBJECT**

Index Testudo 20 prefabricated waterproofing membrane is manufactured from polymer bitumen modified with elastomers and plastomers. The reinforcement is a non-woven, spunbound polyester. The upper face is treated with talc to prevent sticking problems when unrolling the material. The lower face is coated with a sacrificial polyethylene film that, when heat activated, melts and is an indication of the correct temperature for bonding the membrane with the roof substrate. Testudo 20 is available in 4,0 mm and 5,0 mm thicknesses.

Testudo 20 is applied by an approved applicator.

**USE**

The intended use of Testudo 20 is for the waterproofing of trafficable roofs in all regions of Southern Africa.

If the requirements of this certificate are adhered to (see Part 1, Section 6), it provides an assurance of fitness-for-purpose of Index Testudo 20 waterproofing and Agrément South Africa is of the opinion that the product is satisfactory as set out in Part 1, Section 5.

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**COMPLIANCE WITH THE NATIONAL BUILDING REGULATIONS**

The following regulations are satisfied :

A13(1) (a) Administration

L1 (b) Roofs

The following deemed-to-satisfy rules as regards fire protection apply :

TT 5.2 (c) an assessment by the SABS or CSIR and that such element or component is suitable for the intended purpose

TT 12.2 and TT 12.3 unless covered with a non-combustible material

TT 12.4 when laid on a non-combustible substrate or a combustible substrate and covered with a non-combustible material

TT 49.4 (a) when laid on a non-combustible substrate or covered with a non-combustible material

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**SUMMARY OF PART 1, SECTION 5 : ASSESSMENT**

ASPECTS OF PERFORMANCE	OPINION OF AGREEMENT SOUTH AFRICA	FOR FURTHER INFORMATION (SEE PART 1, SECTION
Physical properties	acceptable	5.2.1
Behaviour in relation to fire	combustible unless applied on non-combustible substrate or covered with a non-combustible material, such as crushed stone suitable for external use only	5.2.2
Chemical resistance	not affected by most chemicals, however, surface damage will occur when substances such as petrol, oil and certain organic solvents come into contact with unprotected Testudo 20	5.4
Impact resistance	good, however, susceptible to puncturing by sharp objects	5.5
Maintenance	damaged sheeting can be effectively repaired	5.6
Ease of jointing	easily jointed by heating the underside of the sheet	5.7
Durability	10 years if suitably protected and maintained which can be extended with good maintenance	5.8
Adhesion	resists the effects of wind suction, elevated temperatures and thermal shock if the correct method of laying is used and is paved	5.10
Resistance to traffic	acceptable for passenger vehicular traffic when protected with paving blocks or premix	5.11
Weathertightness	acceptable in normal conditions of exposure	5.12
Resistance to passage of moisture	will adequately resist the passage of moisture	5.13
Dimensional stability	satisfactory	5.14
Certificate holders quality system	based on recommendations contained in ISO-9001 - satisfactory	5.15

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**PREAMBLE**

This certificate is issued by the Board of Agrément South Africa in terms of the powers granted to it by the Minister of Public Works.

This certificate covers only Index Testudo 20 waterproofing as imported from Italy by ABE Construction Chemicals (Pty) Ltd, manufactured and installed in accordance with the certificate holder's specification (see Part II) and used within the framework of the limitations and conditions given in this certificate. It does not apply to any other products marketed by ABE Construction Chemicals (Pty) Ltd. Users of Index Testudo 20 waterproofing should satisfy themselves that the limitations and conditions in this certificate are complied with.

The validity of this certificate is subject to continued participation by the certificate holder in Agrément South Africa's post-certification quality assurance scheme. This scheme ensures quality assurance surveillances at regular intervals and, under certain circumstances, certificate re-appraisals. Quality assurance surveillances will be carried out on the certificate holder and his approved applicators at six monthly intervals. Reappraisals are to be requested by the certificate holder prior to making changes to the product and will also be required by Agrément South Africa in the event of changes in the National Building Regulations or to Agrément criteria.

Users of this certificate should satisfy themselves that it remains valid by referring to the latest edition of Agrément South Africa's *Directory of current certificates* or by contacting Agrément South Africa's offices.

Notices affecting the validity of this certificate will be published in the Government Gazette.

The certificate has been granted after a technical appraisal of the performance of Testudo 20 waterproofing based on :

- \* documentation provided by the applicant
- \* laboratory tests conducted on the product
- \* site investigations
- \* reference to the relevant sections of ACTMAP 1 : "Roof waterproofing".

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**PART I: CERTIFICATION****1. CERTIFICATE HOLDER**

The certificate holder is ABE Construction Chemicals (Pty) Ltd who import Index Testudo 20 from Index Spa in Italy. The product is marketed locally by ABE regional offices.

**2. SUBJECT**

This certificate relates to Index Testudo 20, a prefabricated waterproofing membrane manufactured from polymer bitumen modified with elastomers and plastomers. The reinforcement is a non-woven, spunbound polyester. The upper face is treated with talc to prevent sticking problems when unrolling the material. The lower face is coated with a sacrificial polyethylene film that, when heat activated, melts and is an indication of the correct temperature for bonding of the membrane with the roof substrate. Testudo 20 is available in 4 mm and 5 mm thicknesses. Testudo 20 is applied by an approved applicator. It is supplied in rolls that bear the manufacturer's name, batch number, date and Agrément South Africa's identification symbol together with the number of this certificate as illustrated below.

**3. USE**

The intended use of Testudo 20 is for the waterproofing of trafficable roofs in all regions of Southern Africa.

**4. BASIS OF ASSESSMENT**

This assessment of Index Testudo 20 is confined to the suitability of the material for uses as listed in Section 3 above, only when the material is laid or installed by an ABE Construction Chemicals' approved contractor. The suitability or otherwise of the substrate and the details at verges, outlets, upstands, construction joints, movement joints and paving are the responsibility of the approved contractor. These will be in accordance with :

- (a) Document titled "ABE waterproofing manager" (dated January 1997)



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(b) SABS 021-1973 where this is relevant<sup>1</sup>.

## 5. ASSESSMENT

### 5.1 General

In the opinion of the Board of Agrément South Africa, Index Testudo 20 as a material is suitable for the uses stated in Section 3 above.

This assessment is based on the assumption that the requirements given in this certificate are complied with and that the Testudo 20 is installed by an approved contractor as set out in Section 4 above.

### 5.2 Tests conducted

#### 5.2.1 Physical properties

Tests were conducted on new samples of Testudo 20 (4 mm) waterproofing, samples that had been exposed at  $80 \pm 3^\circ\text{C}$  for up to fifty-six days and samples exposed to ultra-violet (UV) radiation for 1000 hours. The tests that were conducted were as follows :

- (a) impact resistance
- (b) tensile strength
- (c) elongation at break
- (d) tear strength
- (e) heat ageing
- (f) resistance to UV radiation
- (g) bleeding

All properties of the material when subject to heat ageing and UV radiation, decreased slightly but this is regarded as normal and is acceptable. No blistering occurred during heat ageing.

Impact resistance, tensile strength of the material and of lapped joints, elongation at break and tear strength of Testudo 20 is good and should perform satisfactorily. The tensile strength of the joints, was greater than that of the single layer of sheet on either side.

Bleeding does not materially effect the physical properties of Testudo 20 and in addition the membrane is protected with paving blocks or premix.

The results of tests (a) to (d) are shown in Table 1 and are regarded as satisfactory.

<sup>1</sup> All SABS documents are listed with their titles in the Appendix

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The results of tests (e) to (d) are shown in Table 1 below and are regarded as satisfactory.

Table 1 : Physical properties of Index Testudo 20 (4mm)

Sample	Impact energy to puncture (Joules)	Tensile strength (MPa)		Elongation at break (%)		Tear strength (N/4 mm)	
		Longitudinal	Transverse	Longitudinal	Transverse	Longitudinal	Transverse
Index testudo 20 <sup>o</sup> 4mm New material	9,5	3,7	3,3	45	49	70	84
Material exposed at 80±3° C for	1 day	3,7	3,1	45	46	74	85
	7 days	3,7	3,0	42	45	69	81
	28 days	3,5	3,0	39	42	67	76
	56 days	3,3	2,8	39	41	66	79
Material exposed to UV for 1000 hours	9,1	3,9	3,0	37	41	68	81
Lapped joint new material	-	3,5*	-	-	-	-	-
Lapped joint material exposed to 80° C for 56 days	-	3,4*	-	-	-	-	-

\* = Failure did not occur in the lapped areas

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### 5.2.2 Behaviour in relation to fire

Two sets of tests were conducted on samples of Testudo 20 (4 mm) to determine :

- (i) Ignitability and flame spread. The nut from a 20 mm diameter bolt, heated to red heat was placed on the surface of a Testudo 20 sample. The bolt was shielded to eliminate any external effects (e.g. wind). Although the material was immediately ignited by the "hot-nut" the material did not propagate flame spread beyond the area directly under the influence of the "hot-nut". The material self-extinguished after 5 minutes 40 seconds.
- (ii) Emission of gasses. Samples of Testudo 20 were tested in accordance with the requirements of SABS 0177 Part 4. The samples only ignited after the introduction of a pilot flame, indicating that a substantial amount of pre heating is required for the material to spread fire.

From the results of the above tests, Testudo 20 is a suitable waterproofing material on roofs and other external applications. Testudo 20 is not suitable for use in enclosed spaces due to the emission of smoke.

### 5.3 Compliance with National Building Regulations<sup>2</sup>

In the opinion of Agrément South Africa, Testudo 20, when used as a roof covering material in the context of this certificate, relates to the National Building Regulations as set out below. Note that any regulation not specifically referred to, is considered outside the scope of this certificate and must be applied by the local authority in the normal manner.

#### (a) Part A : Administration

Testudo 20 is deemed to satisfy Regulation A13 (1)(a).

The performance of the material when laid in accordance with the requirements of this certificate is adequate for use in any situation where damp-proofing or waterproofing is required in buildings in terms of the National Building Regulations.

#### (b) Part L : Roofs

Testudo 20 is deemed to satisfy Regulation L1(b), when used as a roof covering on a suitable roof construction.

<sup>2</sup> As published in Government Gazette Notices R2378 and R432 *National Building Regulations and Building Standards Act 1977* Government Gazettes No 12780 dated 12 October 1990 and No 13054 dated 8 March 1991).

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**(c) Part T : Fire Protection**

- (i) Deemed-to-satisfy rule TT5.2 (c) of Section 3 of SABS 0400 has been met.
- (ii) When Testudo 20 is used as a roof covering on combustible substrates, deemed-to-satisfy rules TT12.2 and TT 12.3 of Section 3 of SABS 0400 are considered to be applicable when Testudo 20 is protected with paving blocks or premix.
- (iii) In terms of Regulation TT12.4 Testudo 20 laid on a concrete slab or other non-combustible substrate, is considered non-combustible. If laid on a combustible substrate, it is also deemed to satisfy this regulation provided it is covered with paving blocks or premix (see Section 4(c)(ii) above). Used in any other way Testudo 20 is classified as a combustible roof covering in terms of SABS 0177-1981, Section 5.
- (iv) Rule TT49.4(a) is deemed to be satisfied with regard to roofing materials when the Testudo 20 is laid on a concrete slab or other non-combustible substrate and is covered with paving blocks or premix.

**5.4 Chemical resistance**

Testudo 20 is not affected by most chemicals. However, surface damage will occur when substances such as petrol, oil and certain organic solvents come into contact with Testudo 20. Protective layer of paving blocks or premix must prevent the penetration of the above substances.

**5.5 Impact resistance**

Testudo 20 has good resistance to impact using the Gardner test method. While the impact energy required to puncture the material is relatively high (see Table 1) compared to that required to puncture other waterproofing materials, unprotected Testudo 20 remains susceptible to puncturing by sharp objects.

**5.6 Maintenance**

In the event of damage the sheet can be effectively repaired, after cleaning, by torch welding pieces of Testudo 20 to the damaged area and reapplying the paving blocks or premix. The paving or premix must be regularly inspected and repaired when necessary.

**5.7 Ease of jointing**

Testudo 20 is easily jointed by heating the underside of the sheet that is to lap the cover sheet. When properly executed the tensile strength at the joint is greater than that of the single layer of Testudo 20 on either side.

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## 5.8 Durability

- (a) Investigations into waterproofing applications and tests performed on the material under South African conditions, confirm that the material retains its physical properties to a satisfactory degree.
- (b) Testudo 20 is supplied by ABE Construction Chemicals and applied as roof waterproofing by an approved applicator has a guaranteed life of 10 years. All evidence suggests that if Testudo 20 is suitably protected and maintained, the useful life should be in excess of 10 years.

Users must familiarise themselves with the terms and conditions (suitability) of the guarantee and satisfy themselves that these conditions meet user requirements.

- (c) The long term durability of Testudo 20 waterproofing is dependent on the paving block or premix being installed as recommended by ABE Construction Chemicals and the integrity of the blocks or premix being regularly maintained.

## 5.9 Method of laying Testudo 20

Testudo 20 is always applied fully bonded to traffic able surfaces.

## 5.10 Adhesion

Assuming that Testudo 20 is correctly applied and protected, the adhesion of Testudo 20 waterproofing to

- \* itself
- \* normal sound substrates
- \* traditional bituminous roofing felts<sup>3</sup>

is sufficient to resist the effects of wind suction, elevated temperatures and thermal shock likely to occur in practice.

## 5.11 Resistance to traffic

Testudo 20 can accept without damage, passenger vehicular traffic when protected with paving blocks or premix.

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<sup>3</sup> When Testudo 20 is used as a capping sheet in a multi-layer or as a repair medium over deteriorated roof coverings.

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### 5.12 Weathertightness

Testudo 20 will maintain its integrity as a weathertight roof covering in all normal conditions of exposure and can accept minor structural movements without damage.

### 5.13 Resistance to passage of moisture

Data obtained from tests indicate that Testudo 20 and the joints formed when completely sealed and consolidated, will adequately resist the passage of moisture.

### 5.14 Dimensional stability

The dimensional stability of Testudo 20 is satisfactory for the uses given in this certificate.

### 5.15 Certificate holder's quality system

The quality system adopted by Index Spa, the manufacturer of Testudo 20, and applied in his factory in Italy has been monitored and meets the requirements of ISO 9001. It ensures that production standards are constantly maintained by ABE Construction Chemicals, the distributor in South Africa, is SABS ISO 9002 listed and the product is applied by approved applicators.

## 6. CONDITIONS OF CERTIFICATION

### 6.1 Technical requirements that must be met

Applications by approved applicators must be adequately monitored and relevant records must be kept and maintained to demonstrate achievement of the required quality and effective operation of the ABE waterproofing manual.

### 6.2 General conditions

Testudo 20 must be manufactured in accordance with the specification lodged with Agrément South Africa and with the manufacturer's quality system. The essential technical requirements set out in Section 6.1 above must be complied with. If any of the materials or manufacturing processes differ from those required above or specified in part II of this certificate, they are not regarded as complying with the certificate unless such variations have been approved by the Board. This certificate is only valid if users of the product adhere to the installation instructions given in this certificate and in the certificate holder's waterproofing manual. Building authorities or users who are in any doubt about any details of the product may contact Agrément South Africa.

In granting this certificate, Agrément South Africa makes no representation as to the presence or absence of patent rights subsisting in the subject thereof and/or to the legal right of the certificate holder to market the subject.

This certificate does not relieve the user of the subject from any obligation there may be to obtain the prior approval of the building authority concerned for the use of the subject.

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The quality of the materials and workmanship employed in the manufacture of the material must be of an approved standard. While Agrément South Africa considers that the quality and performance of Testudo 20 will be satisfactory provided that the requirements stipulated in this certificate are adhered to, Agrément South Africa does not, on behalf of itself or the Government or any of its employees or agents, guarantee such quality or performance. No action for damages, or any other claim whatsoever lies against Agrément South Africa, its members, the State or any of its employees should the said product fail to comply with the standard set out in the certificate by Agrément South Africa. Control of quality must be exercised by the procedures normally employed for the purpose in building work.

For the purpose of post-certification inspections, the certificate holder must notify Agrément South Africa of the addresses of sites where Testudo 20 is being applied.

In offering the subject of this certificate for sale or in a tender, or submitting it for approval to a building control authority, the certificate holder must declare all variations from the certificate and state whether Agrément South Africa has approved them.

This certificate may be withdrawn if the certificate holder fails to comply with these requirements.

On behalf of the Board of Agrément South Africa

January 1998

CHAIRMAN

Certified true copy of typescript as approved by Agrément South Africa comprising pages i to vi and 1 to 12.



T P Knoetze  
Manager : Agrément South Africa

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## PART II : TECHNICAL DESCRIPTION

### 1. DESCRIPTION AND MANUFACTURE

- 1.1 Testudo waterproofing is manufactured by Index Spa in Italy and is an elastoplastomeric waterproofing membrane in sheet form. It is available in two thicknesses 4 mm and 5 mm.

Testudo 20 prefabricated waterproofing membrane is manufactured from a compound of polymer bitumen modified with elastomers and plastomers. Testudo 20 is reinforced with a non-woven fabric of continuously extruded spunbound polyester (nominal weight 200 g/m<sup>2</sup>) which provides resistance to elongation, heat ageing, piercing and puncturing. The membrane is manufactured by saturating and coating the reinforcement with the polymer-bitumen mixture, then calendered to the required thickness. The upper face of the membrane is evenly treated with serigraph talc which prevents sticking problems when unrolling the product. The lower face is coated with a non-stick sacrificial polyethylene film. The surface is embossed with small squares which assist in the rapid burn off of the polyethylene film when heated with a propane gas torch and indicates the correct melting temperature.

Testudo 20 is applied by an approved applicator.

Quality control checks are carried out on the incoming materials, during manufacture and on the final product.

- 1.2 Testudo 20 is supplied in rolls with the following dimensions and weights :

• thickness (nominal)	4mm	5 mm
• length	10 m	10 m
• width	1.0 m	1.0 m
• weight (nominal)	4.5 kg/m	5.0 kg/m
• weight per roll (nominal)	45 kg	50 kg
• roll quantities per pallet	24	20

For control purposes the manufactured rolls are date and batch numbered. This information is entered on the delivery note when orders are delivered to clients.

### 2. MARKETING

Index Testudo 20 is imported into South Africa by ABE Construction Chemicals (Pty) Ltd who undertake the marketing of the product throughout Southern Africa. They provide a technical service to owners, designers and contractors, be this at the design stage or at execution. The installation work is undertaken by contractors who have been approved by ABE Construction Chemicals.



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### 3. DELIVERY AND SITE HANDLING

The material is delivered to site in wrapped rolls which bear the manufacturer's name and Agrément South Africa's identification symbol incorporating the certificate number.

Rolls must be handled with care and never dropped or thrown. Rolls must be transported and stored on end on a clean level surface and kept under cover.

### 4. INSTALLATION

#### 4.1 General

Testudo 20 waterproofing must be installed in accordance with ABE Construction Chemicals waterproofing manual.

#### 4.2 Surface preparation

For the waterproofing membrane to adhere properly to a substrate the surface must be correctly prepared. Such preparation must produce a surface that is clean and sound and dry prior to the material being applied.

Clean implies that the surface is free of all foreign matter e.g. oil, grease, wax, old paint, dust, debris, shutter release, curing membrane and any other contaminants from outside the surface.

Sound implies that the surface is free of all unsound matter from the surface itself e.g. millscale, rust, laitance, loose particles, white rust, oxide layers etc. Any honey-combing or uneven areas must be repaired.

Dry implies that the surface is free of ponding, surface moisture, moisture due to capillary action, at equilibrium with the atmosphere (applicable to porous surfaces such as concrete, plaster, wood etc) and at a surface temperature of at least three degrees above dew point.

#### (a) Flat concrete roofs

Surfaces must be prepared as above and in addition the surfaces must have fine wood floated finish, a minimum fall of 1:60 and internal corners must be coved (75 mm minimum) and external corners radiused (25 mm minimum). Brick parapets etc must have flush joints and expansion joints in appropriate positions.

#### (b) Boarded roofs.

Due to the movement inherent in timber roof structures, there must be a slip-sheet between the deck and waterproofing membrane to accommodate this movement. Boards and decks must be laid to a minimum fall of 1:60 and must be firm, smooth, dry, sound and securely fixed and be strong enough to support works crews and materials. Suitable expansion gaps must be provided between boards (usually 2 mm and 3 mm) as

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recommended by the board manufacturer.

(c) **Renovation**

Existing waterproofing must be stripped and all surfaces primed with ABE Bituprime, including all verges, around outlets and protrusions and the solvent allowed to evaporate. Some existing waterproofing materials can be overlaid with Testudo 20, but only on consultation with the ABE technical representative.

- (d) Other surfaces such as foamed concrete, Heraclith, Prolith, thermal insulation boards etc must be assessed for the suitability of applying Testudo 20 by the ABE technical representative.

**4.3 Application**

Testudo 20 waterproofing membrane must be fully bonded when used in trafficable applications as recommended by the ABE technical representative or approved applicator.

All surfaces are primed with ABE Bituprime, including all verges, outlets and protrusions. Porous surfaces should be re-primed if necessary.

The waterproofing membrane is applied by torch bonding using a suitable propane gas torch. The membrane is applied with the surface protected by the polyethylene film facing towards the surface on which it is to be laid. The film will melt with the application of heat indicating the correct application temperature. The material is simultaneously rolled out and torched with pressure being applied from the top.

All membranes must be laid to allow side laps of 100 mm and end laps of 150 mm. All laps must be smoothed and the bitumen evenly distributed using a heated, round headed trowel allowing a thin bitumen bead to form at the overlaps.

In all applications where Testudo 20 is used, care must be exercised to ensure that the material is not punctured during application or subsequent building operations.

**4.4 Finishes**

- (a) Testudo 20 can be overlaid with interlocking paving blocks (or similar) bedded on a layer of uncontaminated river sand. The minimum sand thickness is 25 mm and a geotextile slip layer is first laid over the waterproofing. Joints are filled with sand.

The paving blocks can also be bedded in mortar with allowance being made for expansion joints.

- (b) Testudo 20 can also be overlaid with a compacted layer of fine premix. The minimum thickness is 30 mm and is applied directly onto the Testudo membrane.

In all cases the ABE technical representative must be consulted.

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**APPENDIX****SABS DOCUMENTS REFERRED TO IN THIS CERTIFICATE****Standard Specification**

SABS 802-1972 Bituminous aluminium paint

**Codes of Practice**

SABS 021-1973 The waterproofing of buildings

SABS 0177-1981 Fire testing of materials, components and elements used in building

SABS 0400-1990 The application of the National Building Regulations

SABS ISO 9002 Model for quality assurance in production installation and servicing

NOTE : Except for SABS 0400-1990 and 0177-1981 the latest editions must be used