

**AGREMENT
SOUTH AFRICA**

CONSTRUCTION
PRODUCTS
APPROVALS



REAPPRAISAL 1997

**AGREMENT
CERTIFICATE 92/219**

Title:

Derbigum SP Waterproofing

Certificate holder:

Derbigum Manufacturing (Pty) Ltd

P O Box 237
ALBERTON
1450

Telephone : (011) 868 1028

Fax : (011) 900 1507

Valid until further notice (see third paragraph of the preamble on page 1)

COMPLIANCE WITH THE NATIONAL BUILDING REGULATIONS¹

The following regulations are satisfied:

A13(1) (a) *Administration*
L1 (b) *Roofs*

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

TT5.2 (c)
TT12.2 and TT12.3 unless covered with a non-combustible material
TT12.4 when laid on a non-combustible substrate or a combustible substrate and covered with a non-combustible material
TT49.4 (a) when laid on a non-combustible substrate or covered with a non-combustible material

SUMMARY OF PART I, SECTION 5: ASSESSMENTS

See overleaf

SUBJECT

Derbigum SP is a waterproofing membrane comprising a matrix of bitumen modified with atactic polypropylene, reinforced with a non-woven polyester cloth and glass fibre tissue. The underface is a heat-activated adhesive layer. The product is manufactured in two thicknesses: 4 mm and 5 mm.

USE

This certificate covers Derbigum SP for use as:

- single layer roof covering material with two coats of bituminous aluminium or other paint compatible with the material;
- as above, but further protected by a 50 mm thick layer of 25 mm clean, crushed stone;
- waterproofing underlayer to trafficable roof surfaces suitable for pedestrian traffic and light vehicular traffic including car parking;

on normal sand/cement and other smooth substrates.

It is also used as:

- tanking to basement walls and floors;
- a waterproofing layer behind retaining walls.

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

¹ 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).

Agrément South Africa

P O Box 395, Pretoria, 0001 • Telephone (012) 841-3708 • Fax (012) 841-2539 • e-mail jvwamele@csir.co.za

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	5.3 (a) and 5.3 (d)
Constituents of Derbigum	similar to material assessed by CSIR in 1985	5.3 (b)
Behaviour in relation to fire	combustible unless applied on non-combustible substrate or covered with a non-combustible material	5.3 (c)
Chemical resistance	not affected by most chemicals	5.5
Impact resistance	good, however susceptible to puncturing by sharp objects	5.6
Maintenance	damaged sheeting can be effectively repaired	5.7
Ease of jointing	easily jointed by heating the underside of the sheet	5.8
Durability	20 years if suitably protected and maintained	5.9
Adhesion	resists the effects of wind suction, elevated temperatures and thermal shock if the correct method of laying is used	5.11
Resistance to traffic	acceptable for light foot traffic and light concentrated loads	5.2
Weathertightness	acceptable in normal conditions of exposure	5.13
Resistance to passage of moisture	will adequately resist the passage of moisture when used as tanking and waterproofing of retaining walls	5.4
Dimensional stability	satisfactory	5.15
Certificate holder's quality system	based on recommendations contained in SABS ISO-9003 ² - satisfactory	5.16

² All SABS documents are listed with their titles in the Appendix.

CONTENTS

	Page No
PART 1: CERTIFICATION	
1. Certificate holder	1
2. Subject	1
3. Use	1
4. Basis of assessment	1
5. Assessment	2
5.1 General	2
5.2 British and Belgian Agrément certificates	2
5.3 Tests conducted	2
5.4 Compliance with National Building Regulations	3
5.5 Chemical resistance	3
5.6 Impact resistance	3
5.7 Maintenance	3
5.8 Ease of jointing	3
5.9 Durability	3
5.10 Method of laying Derbigum	4
5.11 Adhesion	4
5.12 Resistance to traffic	4
5.13 Weathertightness	4
5.14 Resistance to passage of moisture	4
5.15 Dimensional stability	4
5.16 Certificate holder's quality system	4
6. Conditions of certification	4
6.1 Technical requirements that must be met	4
6.2 General conditions	4
PART II: CERTIFICATE HOLDER'S TECHNICAL SPECIFICATION	
1. Description	5
2. Manufacture	5
3. Marketing	5
4. Delivery to site	5
5. Storage	5
6. Installation	5
6.1 General	5
6.2 Substrates and grading to falls	5
6.3 Application	6
6.4 Finishes	6
Figure 1 Drawing of Derbigum	7
APPENDIX SABS documents referred to in this certificate	7

PREAMBLE

This certificate is issued by Agrément South Africa in terms of the powers granted to it by the Minister of Public Works. It replaces Certificate 92/219 (Renewal) which was granted on 24 March 1992.

This certificate covers only Derbigum SP waterproofing 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 Derbigum Manufacturing (Pty) Ltd. Users of Derbigum SP waterproofing should satisfy themselves that the limitations and conditions contained 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 entails quality assurance surveillances at regular intervals and, under certain circumstances, certificate reappraisals. Quality assurance surveillances will be carried out on the certificate holder and his licensees at six monthly intervals by the SABS or Agrément South Africa. Reappraisals are to be requested by the certificate holder prior to making changes to the system and will also be required by Agrément South Africa in the event of changes to 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 Derbigum SP waterproofing based on:

- a study of Certificate 92/219 (Renewal)
- laboratory tests on the product
- an inspection of the applicant's factory
- site inspections
- reference to the relevant sections of ACTMAP 1, *Roof waterproofing*.

PART 1 : CERTIFICATION

1. CERTIFICATE HOLDER

The certificate holder is Derbigum Manufacturing (Pty) Ltd. Derbigum S P Waterproofing membrane³ is manufactured by the certificate holder in his factory at Alrode South, Alberton under a licence agreement with Messrs Derbit Spa of Bologna, Italy. The product is marketed from the factory and from regional offices. The product is installed by Approved Derbigum Contractors.

2. SUBJECT

This certificate relates to Derbigum, a waterproofing membrane comprising a matrix of bitumen modified with atactic polypropylene, reinforced with a non-woven polyester cloth and glass fibre tissue. The underface is a heat-activated adhesive layer. The product is manufactured in two thicknesses, 4 mm and 5 mm.

It is supplied in rolls that bear the manufacturer's name and Agrément South Africa's identification symbol together with the number of this certificate as illustrated on the right.

3. USE

This certificate covers Derbigum for use as:

- (a) single layer roof covering material finished with two coats of bituminous aluminium or other paint compatible with the material;

(b) as above, but further protected by a 50 mm thick layer of 25 mm clean, crushed stone;

(c) waterproofing underlayer to trafficable roof surfaces suitable for pedestrian traffic and light vehicular traffic including car parking on normal sand/cement and other smooth substrates.

(d) It is also used as:

- tanking to basement walls and floors;
- as a waterproofing layer behind retaining walls.

4. BASIS OF ASSESSMENT

This assessment of Derbigum is confined to the suitability of the material for the uses listed in Section 3 above only when the material is laid or installed by a Derbigum ap-



Tested and approved fit-for-purpose as a waterproofing membrane when used as specified in
Certificate 92/219
AGREMENT
SOUTH AFRICA

³ Hereafter referred to as Derbigum.

proved contractor. The suitability or otherwise of the substrate, the type of insulation, the method of laying and the details at verges, outlets, upstands, construction joints, movement joints and the carrying out of tanking and waterproofing installations are the responsibility of the Approved Derbigum Contractor. These will be in accordance with the certificate holder's :

- (a) *Waterproofing Manual* (revised 1996)
- (b) *Derbigum Code of Good Practice*; (revised 1996) and
- (c) SABS 021-1973 where this is relevant.

No new assessment has been made of the details and information set out in documents (a) and (b).

5. ASSESSMENT

5.1 General

In the opinion of the Board of Agrément South Africa, Derbigum 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 Derbigum is installed by Approved Derbigum Contractors as set out in Section 4 above.

5.2 British and Belgian Agrément certificates

Derbigum is manufactured by Derbit Belgium SA and by Derbit SPA of Bologna Italy. Both products are covered by Belgian Agrément Certificate No ATG 1502 and by British Board of Agrément Certificate No 86/1593/C. The test results given in these certificates are considered

relevant to this evaluation and were studied by Agrément South Africa.

5.3 Tests conducted

- (a) **Physical properties.** In 1984/85, at the request of the certificate holder, the CSIR conducted a series of tests on 4 mm thick Derbigum to determine the properties and performance of the product as a roofing material.

The tests were carried out on:

- new Derbigum
- Derbigum that had been naturally exposed on roofs in Johannesburg for periods of 4 years and 4,5 years
- Derbigum exposed in a weatherometer for 1 000 hours
- Derbigum that had been exposed at a constant temperature of 80 ± 2 °C for periods ranging from 1 day to 168 days.

The tests that were conducted were as follows:

- (i) resistance to blistering
- (ii) tensile strength across joints
- (iii) impact resistance
- (iv) tensile strength
- (v) elongation at break
- (vi) tear strength.

When tested for resistance to blistering, it was noted that there is a possibility of slight bleeding when the material is used in hot climates.

All samples were completely resistant to blistering. The tensile strength of the joints was greater than that of the single layer of sheet on either side. The results of tests

Table 1: Physical properties of 4 mm thick Derbigum

Sample of Derbigum	Impact energy to puncture (J) (determined by using a Gardener Impact Tester)	Tensile strength (MPa)		Elongation at break (%)		Tear strength (N/mm)	
		longitudinal	transverse	longitudinal	transverse	longitudinal	transverse
New	5,8	2,6	2,5	39	27	19	17
Naturally exposed for 4 years	6,0	3,0	2,1	26	42	22	19
Naturally exposed for 4,5 years	5,7	2,7	2,5	37	20	20	19
Exposed in weatherometer	4,3	2,5	2,2	21	16	20	18
Exposed at a constant temperature of 80 ± 2 °C for:							
1 day	5,6	2,7	2,4	45	32	21	20
2 days	5,8	2,8	2,4	41	30	21	19
4 days	5,8	2,7	2,5	40	26	19	16
7 days	5,6	2,7	2,4	37	24	20	17
14 days	5,2	2,7	2,6	31	21	22	18
28 days	4,5	2,6	2,5	25	18	19	17
56 days	4,1	2,6	2,7	19	13	17	15
112 days	3,8	2,5	2,4	18	15	16	14
168 days	3,5	2,6	2,5	17	15	15	14

(iii) to (v) are shown on Table 1 and are regarded as satisfactory.

(b) **Constituents of Derbigum.** The composition of a sample of Derbigum taken at the time of the original evaluation of the product was compared with that of the material tested in 1984/85. The composition proved to be identical. In view of this, the test results produced by the work detailed in Section 5.3(a) and 5.3(b) are regarded as valid and relevant to the Agrément evaluation of Derbigum.

(c) **Behaviour in relation to fire.** Two sets of tests were conducted on Derbigum and on three layers of bituminous roofing felt bonded with lap cement.

(i) **Tunnel test.** Both materials were subjected to tests in a tunnel furnace which is used to determine the fire index of floor covering materials. The procedure followed is set out in SABS 0177-1981 Part IV.

In the tunnel test the Derbigum self-ignited after 3.5 minutes preheating, the bituminous roofing felt self-ignited after 1.5 minutes. The Derbigum took 7 minutes to burn to the end of the 2.5 m long specimen, the bituminous roofing felt took 4 minutes to do the same.

(ii) **Ad hoc tests.** 1 m x 1 m specimens of each material were laid on a concrete floor in the corner of a room. A timber crib with a mass of 800 g/m² (approximately) was placed in the centre of each sample. After the cribs were each soaked with 100ml of paraffin and set alight, the behaviour of each material was carefully observed.

The Derbigum self-extinguished 7 minutes after the crib had burnt itself out, leaving a fire-damaged area about 300 mm in diameter. The figures for the bituminous roofing felt were 9 minutes and 400 mm diameter.

(d) **Reappraisal tests.** Reappraisal laboratory tests were conducted as follows :

- tensile strength
- elongation at break
- tear strength
- impact resistance
- resistance to blistering

The properties reflected in Table 1 are still valid.

5.4 Compliance with National Building Regulations

In the opinion of the Board of Agrément of South Africa, Derbigum, 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.** Derbigum 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.** Derbigum is deemed to satisfy Regulation L1(b), when used as a roof covering on a suitable roof construction.

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

(i) Deemed-to-satisfy rule TT5.2(c) of Section 3 of SABS 0400 has been met.

(ii) When Derbigum is used as a roof covering on combustible substrates, deemed-to-satisfy rules TT12.2 and TT12.3 of Section 3 of SABS 0400 are considered to be applicable unless the Derbigum is covered with one of the following:

- 50 mm thick layer of 25 mm (nominal) crushed stone; or
- precast concrete paving slabs; or
- clay tiles.

(iii) In terms of Regulation TT12.4, Derbigum 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 crushed stone, paving or tiles (see Section 4(c)(ii) above). Used in any other way Derbigum is classified as a combustible roof covering in terms of SABS 0177-1981, Section V.

(iv) Rule TT49.4(a) is deemed to be satisfied with regard to roofing materials when the Derbigum is laid on a concrete slab or other non-combustible substrate and is covered with a 50 mm thick layer of 25 mm (nominal) crushed stone, precast paving slabs, or clay tiles.

5.5 Chemical resistance

Derbigum 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 unprotected Derbigum.

5.6 Impact resistance

Derbigum has good resistance to impact. While the impact energy required to puncture the material is relatively high compared to that required to puncture other waterproofing materials (1 to 3 joules), Derbigum remains susceptible to puncturing by sharp objects.

Derbigum performs adequately under moderate to severe hail conditions.

5.7 Maintenance

In the event of damage the sheet can be effectively repaired, after cleaning, by torch-welding pieces of Derbigum to the damaged area.

5.8 Ease of jointing

Derbigum 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 Derbigum on either side.

5.9 Durability

(a) Derbigum was developed in 1967 and since then has been used throughout Europe. It has performed satisfactorily and required little maintenance. Observations of and tests on the material in South African conditions confirm that the material retains its physical properties to a satisfactory degree.

(b) All available evidence suggests that if Derbigum roofing is suitably protected and properly maintained, its useful life will be at least 20 years.

(c) The long term durability of Derbigum roofing is dependent on:

- (i) the integrity of the paint on all exposed surfaces being maintained by overcoating with bituminous aluminium paint complying with SABS 802-1972 or other paint compatible with the material as recommended by the manufacturer at suitable intervals. Bleeding of the material can be expected if a non-recommended paint is used;
 - (ii) it being covered with a 50 mm thick layer of 25 mm (nominal) crushed stone immediately after completion of the roof covering; or
 - (iii) it being similarly protected with paving slabs (refer Section 6.4, of Part II items (c) and (d)); all in accordance with the certificate holder's waterproofing manual.
- (d) Derbigum that is used as tanking to basements and/or behind retaining walls will, under normal circumstances, perform satisfactorily for the life of the building or wall.

5.10 Method of laying Derbigum

The method chosen for laying Derbigum roofing (loose laid, partially bonded, fully bonded) must be appropriate to the substructure, grading material, slope, geographical area and wind uplift likely to be experienced. The choice is normally the responsibility of the Approved Derbigum Contractors who will execute the work.

5.11 Adhesion

Assuming that the appropriate method of laying is used, the adhesion of Derbigum roofing to itself, normal sound substrates and traditional bituminous roofing felts⁴ is sufficient to resist the effects of wind suction, elevated temperatures and thermal shock likely to occur in practice.

5.12 Resistance to traffic

Derbigum can accept without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance. Where more severe traffic is envisaged, the protective measures outlined in Part II, Section 6.4 of this certificate must be employed.

5.13 Weathertightness

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

5.14 Resistance to passage of moisture

Data obtained from tests and observations on site and in completed buildings confirm that Derbigum and the joints formed in Derbigum when completely sealed and consolidated, will adequately resist the passage of moisture when it is used as tanking to basements or as waterproofing behind retaining walls.

5.15 Dimensional stability

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

5.16 Certificate holder's quality system

The quality system adopted by the certificate holder and applied in his factory has been monitored and found acceptable. It ensures that production standards are consistently maintained. The quality system is based on recommendations contained in SABS ISO 9003 Series, *Quality Systems*.

6. CONDITIONS OF CERTIFICATION

6.1 Technical requirements that must be met

The quality of all incoming materials must be adequately controlled and relevant records must be kept and maintained to demonstrate achievement of the required quality and effective operation of the certificate holder's quality system.

6.2 General conditions

Derbigum 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 Agrément South Africa. 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.

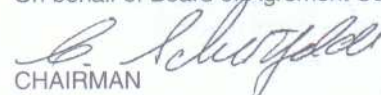
The quality of the materials and workmanship employed in the manufacture of the material must be of an approved standard. While Agrément South Africa considers that the quality and performance of Derbigum will be satisfactory provided that the requirements stipulated in this certificate are adhered to, 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, within 30 days of the event, of any change of address of any existing factory and furnish the address of any new factory brought into operation by him to manufacture Derbigum.

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 Board of Agrément South Africa


CHAIRMAN
26 June 1997

⁴ When Derbigum is used as a capping sheet in a multi-layer applications or as a repair medium over deteriorated roof coverings.

PART II : CERTIFICATE HOLDER'S TECHNICAL DESCRIPTION

1. GENERAL

- (a) Derbigum SP Waterproofing is an elastomeric waterproofing membrane in sheet form. It is supplied in two thicknesses.

The standard sheet is 4 mm thick and is the accepted European and American norm. The heavy duty SP 5 mm thick membrane is identical to the 4 mm sheet but contains a much heavier polyester cloth reinforcement.

Derbigum 4 mm sheeting comprises a polymer-modified bitumen compound containing selected bitumens, atactic polypropylene resin and small amounts of inert fillers together with dual reinforcements, one being a non-woven polyester membrane (120 g/m²) and the other a glass fibre tissue (50 g/m²). The heavier and stronger reinforcement in the SP 5 mm is 250 g/m². The underface of the sheeting is a heavier coating of the same compound providing a built-in heat activated (torch-on) adhesive. The glass fibre tissue which is an inert mineral material, is placed on the top surface to serve as an ultra violet diffusion barrier, prevent thermal deformation and to provide firmness to the sheet for ease of handling during application.

- (b) Derbigum SP is supplied in rolls with the following dimensions and weights:

Thickness (nominal)	4 mm - 5 mm
Length	10 m - 8,00 m
Width	1,00 m
Weight (nominal)	4,2 kg/m - 5,1 kg/m
Weight per roll (nominal)	43 kg - 41 kg

A thin sheet of polythene film interliner is rolled up with the Derbigum sheeting to prevent the material sticking together and is discarded at the time of installation.

For control purposes the rolls manufactured each day are marked with the date. The date is entered on the delivery note when orders are delivered to clients.

2. MANUFACTURE

Derbigum is manufactured by impregnating, coating and surfacing the non-woven polyester cloth and the glass fibre with the polymerized bitumen matrix in liquid form.

The two reinforcing layers are situated in the upper half of the membrane, the glassfibre mat being separated from the polyester with its weave visible on the upper surface (refer to Figure 1).

Quality control tests (including checks on the characteristics of the polyester, glassfibre mat, coating compound and finished product) are carried out.

The internal control system incorporates laboratory tests on samples taken from each batch of Derbigum manufactured and the maintenance of a complete record system relating to these tests.

Derbigum is manufactured at the Derbigum Manufacturing (Pty) Ltd plant at Alrode South, Alberton under a licence agreement with Messrs Derbit Spa, Bologna, Italy.

3. MARKETING

Derbigum Manufacturing (Pty) Ltd undertakes 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 waterproofing contractors who have been approved by the company.

4. DELIVERY TO SITE

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

5. STORAGE

Rolls must be handled with care and never dropped or thrown, especially in cold weather, as cracking may occur. Rolls must always be stored and transported upright. The floor of the storage area must be level and even.

6. INSTALLATION

6.1 General

Derbigum must be installed in accordance with the certificate holder's *Waterproofing Manual* and *Code of Good Practice*.

6.2 Substrates and grading of falls

All structures must be designed and erected according to sound engineering and building practice.

Roof decks shall be dry, even, smooth and clean. After screeding in the normal manner, the surface shall be lightly steel trowelled to give a smooth surface, free of voids and all loose and raised particles.

Lightweight grading of foamed cement shall be of sufficient density, or have an upper finishing layer of sufficient density, to provide a firm, non-collapsible final working surface. The same applies to a vermiculite screed.

Large prefabricated boards or tongue-and-groove boarding must be rigid, firm, smooth, dry and securely fixed, provide for expansion and contraction and be strong enough to support crews and materials. Rough-faced boarding such as Heraklith or Prolith require a thin sand/cement screedover.

Premanufactured thermal insulation boards (such as Heraperm perlite boards, impact resistant foam glass, cork, etc) must be firmly fixed to the roof deck by mechanical fixing or by hot or cold adhesive methods. The material must be firm and stable, free from wide breaks or gaps and joints, and suitable for torch-applied waterproofing systems or hot bitumen applied base layers. Derbigum Manufacturing (Pty) Ltd reserves the right to decide whether a particular insulation or its upper surface is suitable for a Derbigum treatment to be laid over it.

Concrete or masonry surfaces shall be surface dry, firm, smooth, even, free of loose aggregate, sharp agents and other contaminants. Honey-combing and other uneven places must be made good and wood-floated to a smooth finish. Brickwork must be even, straight and have flush joints.

The corners of all types of substrates shall be coved or angled, edges rounded and all finished smooth.

Existing waterproofing treatment of sound, firm, even and dry bituminous felts or mastic asphalt which have deteriorated but can still be prepared by suitable remedial work, can form a suitable base for Derbigum.

For adequate and positive drainage, the slope of a roof shall not be less than 1 in 60. However, if ponding in slight hollows or behind overlaps is acceptable, Derbigum can, when the need arises, be laid with falls of as little as 1 in 100.

Roofs for parking decks for light vehicles shall either be a sloping solid concrete deck or a concrete deck graded to falls with a screed of river sand/cement only. Any other grading material over concrete which may collapse, develop cracks or is unstable is not acceptable.

- (ii) precast concrete or similar tiles are placed on special Derbigum spacer pieces that are placed directly on top of the Derbigum roofing surface;
 - (iii) concrete paving slabs are bedded in mortar or sand. The paving is laid with suitable expansion joints.
- (d) Where light vehicular traffic will be experienced, the 5 mm thick Derbigum SP roofing is used and this may be finished in one of the following ways:
- (i) brick or block paving bedded on a layer of sifted river sand 30 mm thick;
 - (ii) asphalt wearing surface laid to a 30 mm thick consolidated thickness;
 - (iii) concrete paving slabs bedded in mortar with suitable joints.

6.3 Application

- (a) Derbigum roofing may be loose laid, or partially bonded, or fully bonded.

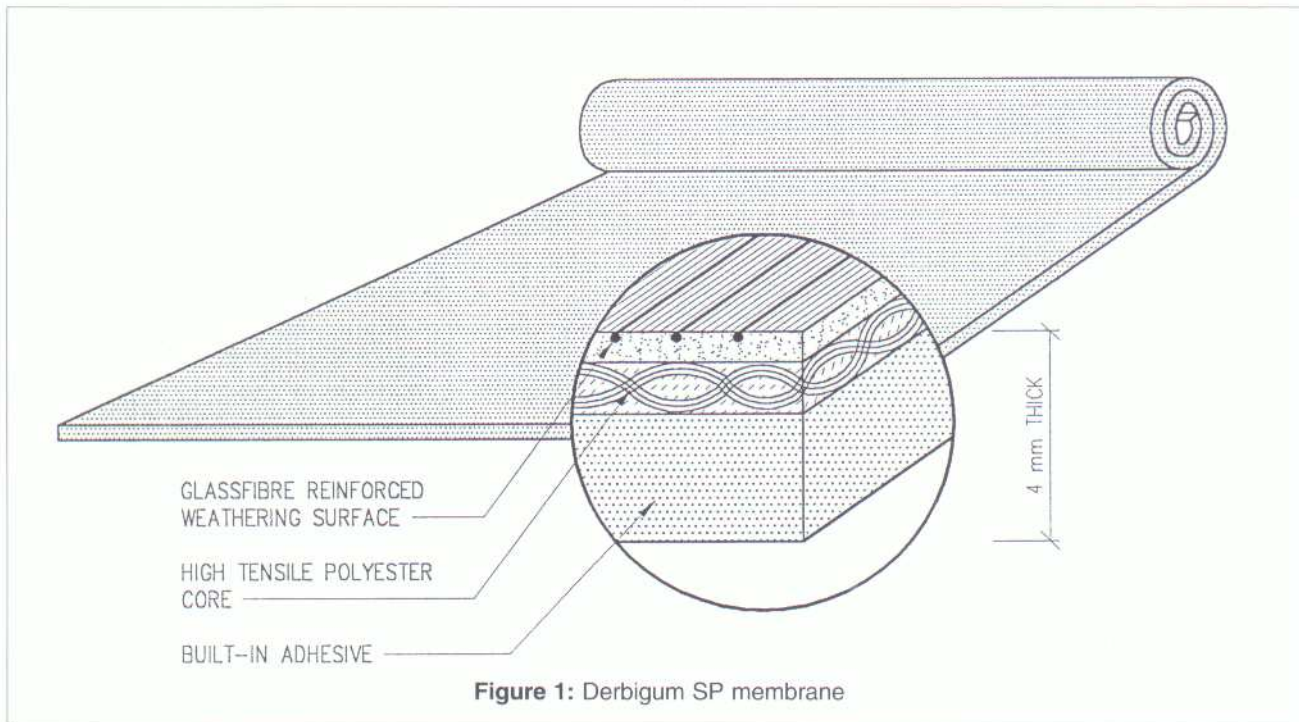
The choice of laying method is normally determined by the Approved Derbigum Contractor who will execute the contract.

- (b) Bonding is achieved by melting the lower surface of the sheet by torching and pressing it down onto either a suitably primed substrate or onto the area of Derbigum that is to be lapped.
- (c) Edge laps in 4 mm thick Derbigum are normally 75 mm wide; end laps are normally 100 mm wide.
- (d) Derbigum can be installed in all conditions suitable for traditional bitumen felt roof coverings.
- (e) When laid on pitches of greater than 10°, precautions must be taken against slippage.
- (f) Whether used as a roof covering, or tanking to basements, or as a damp-proof membrane behind retaining walls, care must be taken to ensure that the membrane is not punctured during building operations subsequent to the installation of the membrane.
- (g) Where Derbigum roofing is to be used under paving to parking decks, fully bonded Derbigum SP 5 mm is used with 100 mm wide side laps and 150 mm wide end laps.

6.4 Finishes

- (a) Derbigum roofs that will not be subjected to traffic other than that necessary for maintenance of the roof and because of the possibility of slight bleeding of the material in hot climates, are normally finished with two coats of bituminous aluminium paint complying with SABS 802-1972 or other compatible paint as recommended by the manufacturer. Bleeding can be expected if a non-recommended paint finish is applied.
- (b) Further protection may be given to roofs with slopes of less than 10° by applying a 50 mm thick layer of 25 mm (nominal) crushed stone. As well as protecting the surface from ultra violet and radiant heat, the stone acts as an anchor and reduces the need to fully bond the membrane in circumstances where this would normally be required.
- (c) Where Derbigum roofing will be subjected to pedestrian traffic, a trafficable surface may be provided in one of the following ways:
- (i) for limited foot traffic only: one layer of Glasdek 3 mm⁵ (or similar) is sealed over the Derbigum and painted as described in (a) above;

⁵ Glasdek and Glasfelt consist of glass fibre (50 g/m²) impregnated with Derbigum matrix.



APPENDIX

SABS DOCUMENTS REFERRED TO IN THIS CERTIFICATE

Standard Specification

802 *Bituminous aluminium paint*

Codes of Practice

021 *The waterproofing of buildings*

ISO 9003 *Quality management systems*

0177 *Fire testing of materials, components and elements used in building*

0400 *The application of the National Building Regulations*