



Designated by Government
to issue
European Technical
Approvals

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**Agrement
Certificate
No 00/3701**
Second issue*

GUARAFLEX R

Revêtement d'étanchéité, couche d'étanchéité
Dachabdichtungen, Feuchtigkeitssperre

Product

• THIS CERTIFICATE RELATES TO GUARAFLEX R, A POLYMER-MODIFIED MASTIC ASPHALT WATERPROOFING SYSTEM.

• This system is for use on flat roofs, inverted roof specifications, internal and external waterproofing and damp-proof applications.

• The system is laid using the techniques for mastic asphalt described in the relevant clauses of BS 8218 : 1998, and the manufacturer's current product literature.

• Advantages over traditional mastic asphalt include improved high temperature stability and low temperature flexibility.


• The product is manufactured and marketed by Guaranteed Asphalt Ltd, and may be delivered to site in either hot charge or block form.

These Front Sheets must be read in conjunction with the accompanying Detail Sheets, which provide information specific to the particular application.




Regulations — Detail Sheet 1

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 and basement waterproofing systems with the Building Regulations. In the opinion of the BBA, Guaraflex R, 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 supporting structures prescribed in part V of Table A5 of the Approved Document the roof shall be deemed to be of designation AA. See section 4 of the relevant Detail Sheet.
Requirement:	C4	Resistance to weather and ground moisture
Comment:		Tests for water resistance on the material indicate that the system can enable a structure to meet this Requirement. See section 2 of the relevant Detail Sheet.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The system comprises acceptable materials. See section 5 of the relevant Detail Sheet.

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

 In the opinion of the BBA, Guaraflex R, 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 system complies with these Standards. See section 5 of the relevant Detail Sheet.
Regulation:	12	Structural fire precautions
Standard:	D9.1	Fire spread from adjoining buildings
Comment:		The system is unrestricted by this Standard. See section 4 of the relevant Detail Sheet.
Regulation:	17	Resistance to moisture
Standard:	G2.6	Resistance to moisture from the ground
Standard:	G3.1	Resistance to precipitation
Comment:		Tests for water resistance indicate that the system can enable a structure to satisfy the requirements of these Standards. See section 2 of the relevant Detail Sheet.

3 The Building Regulations (Northern Ireland) 2000

 In the opinion of the BBA, Guaraflex R, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The system comprises acceptable materials. See section 5 of the relevant Detail Sheet.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		The system can enable a structure to meet this Regulation. See section 2 of the relevant Detail Sheet.

continued

Regulation: E5

External fire spread

Comment:

When used on flat roofs and protected by one of the supporting structures prescribed in Technical Booklet E, Table 4.6, Part III, the roof may be considered to be of designation AA. See section 4 of the relevant Detail Sheet.

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:

6 *Delivery and site handling* (6.1 and 6.2 of this Detail Sheet) and 6 *Procedure* (6.2 of Detail Sheet 2 and 6.9 of Detail Sheet 3).

Technical Specification

5 Description

5.1 Guaraflex R is manufactured by heating and blending bitumen, filler and polymer.

5.2 Materials used within the system include:

Guaraflex PR — polymer-modified mastic asphalt waterproofing.

Guaraflex U — 4 mm thick, polymer-modified bitumen torch-on membrane used as flashing at abutments.

Guaraflex T — 4 mm thick, polymer-modified bitumen torch-on membrane (mineral finished) used as flashing at abutments.

Guaralath — 1 mm to 2 mm thick, expanded metal sheet to enable Guaraflex R to be applied at abutments.

Guarafelt CP — 2 mm thick, polymer-modified bitumen membrane.

Guarafelt CP Super — 2 mm thick, aluminium-faced, polymer-modified bitumen membrane.

5.3 Quality control checks are performed on the incoming raw material and on the final product. Quality control checks on the final product include checks on hardness.

6 Delivery and site handling

6.1 The product is supplied in hot charge (molten) form, delivered to site in purpose-built transporters. The product information is supplied on the relevant delivery notes with each consignment.

6.2 Alternatively, the product may be supplied in block form (similar to traditional mastic asphalt) with labels bearing the product type and name. Each block weighs approximately 16 kg.

6.3 Guaraflex PR mastic asphalt blocks should be stored in the same manner as traditional mastic asphalt.

Design Data

7 Resistance to loading and foot traffic

7.1 The system can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance operations. Where access exceeding this is envisaged, it should be taken into account when determining the application thickness and surface protection.

7.2 Where the control of traffic is impossible, or in areas of public access, a surface protection of tiles or pavers must be used.

8 Maintenance and repair

A structure waterproofed with the system will not normally require maintenance. However, should accidental damage occur repairs should be conducted by a specialist asphalt contractor generally in accordance with the recommendations of BS 8218 : 1998, Section 11 *Maintenance and Repair*.

Technical Investigations

The following is a summary of the technical investigations carried out on Guaraflex R.

9 Tests

9.1 The BBA obtained samples of the asphaltic cement and results of the BBA's tests for the system's general characteristics are summarised in Table 1.

Table 1 General characteristics — asphaltic cement

Test (units)	Method ⁽¹⁾	Mean result
Ash content (%)	BS 2000-223	0.71
Ring and ball softening point (°C)	BS 2000-58	59
Needle penetration at 25°C (dmm)	BS 2000-49	38

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

9.2 Results of the BBA's tests on the product's general physical properties are summarised in Table 2.

Table 2 General physical properties — Guaraflex PR

Test (units)	Method ⁽¹⁾	Mean result
Density (kgm ⁻³): 10 mm Guaraflex PR	direct measurement	2137
Weight per unit area (kgm ⁻²): 10 mm Guaraflex PR	direct measurement	22
Tensile strength (Nmm ⁻²) 10 mm thick Guaraflex PR unaged 56 days heat aged at 70°C 180 days heat aged at 70°C	BS 2782-3 : Method 320E	0.62 0.97 1.33
Elongation (%) 10 mm Guaraflex PR unaged 56 days heat aged at 70°C 180 days heat aged at 70°C	BS 2782-3 : Method 320E	3.8 1.9 0.9
Water vapour permeability (gm ⁻² day) 10 mm Guaraflex PR	BS 3177 : (75% RH/25°C)	0.067

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

9.3 Results of the BBA's service performance tests on the product are summarised in Table 3.

Table 3 Service performance

Test (units)	Method ⁽¹⁾	Mean result
Resistance to water pressure (6 m head on 10 mm Guaraflex PR)	MOAT 27 : Method 5.1.4	no penetration
Resistance to static indentation at 23°C Guaraflex PR on concrete substrate	MOAT 27 : Method 5.1.9	L ₄
Hardness at 23°C (dmm): Guaraflex PR unaged heat aged at 70°C for: 56 days 180 days 5 cycles ⁽²⁾ 6 hours at 250°C 6 hours at 290°C	BS 5284	18 17 20 13 18 29
Hard body impact at -10°C drop height (mm) -1000 -1100	BBA method ⁽³⁾	small indentation failure of sample
at +20°C drop height (mm) -1000 -1100		small indentation failure of sample

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

(2) 1 cycle = 6 hours heating at 240°C and 18 hours cooling at ambient temperature.

(3) 1 kg steel ball on Guaraflex PR on concrete substrate.

10 Investigations

10.1 The manufacturing process was examined, including the methods adopted for quality control.

10.2 A user survey was carried out to assess the product's performance in service.

Additional Information

The management systems of Guaranteed Asphalt Ltd have been assessed and registered as meeting the requirements of BS EN ISO 9002 : 1994 by the British Standards Institution Quality Assurance, Certificate Nos KM 07942 and KM 07350.

Bibliography

- BS 2000-49 : 1993 *Methods of test for petroleum and its products — Determination of needle penetration of bituminous material*
 BS 2000-58 : 1993 *Methods of test for petroleum and its products — Determination of softening point of bitumen — Ring and ball method*
 BS 2000-223 : 1993 *Methods of test for petroleum and its products — Determination of ash of petroleum products containing mineral matter*
 BS 2782-3 : Methods 320A to 320F : 1976 *Methods of testing plastics — Mechanical properties — Tensile strength, elongation and elastic modulus*
 BS 3177 : 1959 *Method for determining the permeability to water vapour of flexible sheet materials used for packaging*
 BS 5284 : 1976 *Methods. Sampling and testing mastic asphalt and pitchmastic used in building*
 BS 8218 : 1998 *Code of practice for mastic asphalt roofing*
 BS EN ISO 9002 : 1994 *Quality systems. Model for quality assurance in production, installation and servicing*
 MOAT No 27 : 1983 *General Directive for the Assessment of Roof Waterproofing Systems*

Conditions of Certification

11 Conditions

11.1 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.

11.2 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.

11.3 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) continue to be checked by the BBA or its agents; and

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

11.4 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.

11.5 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, Guaraflex R is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 00/3701 is accordingly awarded to Guaranteed Asphalt Ltd.

On behalf of the British Board of Agrément

Date of Second issue: 11th December 2002

Chief Executive

**Original Certificate issued 30th March 2000. This amended version includes reference to revised Building Regulations, the addition of reference to the CDM Regulations (Northern Ireland) and minor changes to ancillary product thicknesses.*