

**Aliachem as**

Fatra oz
T. Bati
76361 Napajedla
Czech Republic
Tel: 00 420 67 750 2475 Fax: 00 420 67 750 3409
email: fatrafol@fatra.cz

**Agrément
Certificate
No 02/3921**
Second issue*

Designated by Government
to issue
European Technical
Approvals

FATRAFOL 810 ROOF COVERING SYSTEM

Revêtement d'étanchéité
Dachabdichtungen

Product

• THIS CERTIFICATE RELATES TO THE FATRAFOL 810 ROOF COVERING SYSTEM, A POLYESTER-MESH-REINFORCED PVC ROOF WATERPROOFING MEMBRANE.

• The membrane is for use as a mechanically-fixed waterproof covering on flat roofs with limited access.

• The system is installed only by trained and approved contractors.

• The membrane is manufactured in the Czech Republic by Aliachem as/Fatra oz and marketed in the UK and Ireland by Fatra UK Limited, Unit 12, The Timber Yard, East Moors Road, Ocean Park, Cardiff CF24 5EE
Tel: 029 2048 7954
Fax: 029 2048 9226
e-mail: sales@fatra.co.uk

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, the Fatrafol 810 Roof Covering System, if used in accordance with the provisions of the Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: B4(2)

Comment:

External fire spread

Data obtained from tests to BS 476-3: 1958 indicate that on suitable substructures the use of the system will enable a roof to be unrestricted under the requirements of these Regulations. See sections 11.1 and 11.2 of this Certificate.

Requirement: C4

Comment:

Resistance to weather and ground moisture

Tests for water resistance on the membrane, including joints, indicate that the system meets this Requirement. See section 8.1 of this Certificate.

Requirement: Regulation 7

Comment:

Materials and workmanship

The system is acceptable. See section 13 of this Certificate.

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



In the opinion of the BBA, the Fatrafal 810 Roof Covering System, 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 13 of this Certificate.
Regulation:	12	Structural fire precautions
Standard:	D9.1	Fire spread from an adjoining building
Comment:		Data obtained from tests to BS 476-3 : 1958 indicate that on suitable substructures use of the system will enable a roof to be unrestricted under this Standard. See sections 11.1 and 11.2 of this Certificate.
Regulation:	17	Resistance to moisture
Standard:	G3.1	Resistance to precipitation — Resistance to precipitation
Comment:		Tests for water resistance on the membrane, including joints, indicate that the use of the system can enable a roof to satisfy the requirements of this Standard. See section 8.1 of this Certificate.

3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, the Fatrafal 810 Roof Covering System, 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 is acceptable. See section 13 of this Certificate.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		Tests for water resistance of the membrane, including joints, indicate that the use of the system can enable a roof to satisfy the requirements of this Regulation. See section 8.1 of this Certificate.
Regulation:	E5	External fire spread
Comment:		Data obtained from tests to BS 476-3 : 1958 indicate that on suitable substructures the use of the system will enable a roof to be unrestricted under the requirements of this Regulation. See sections 11.1 and 11.2 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 (5.3) and 6 Delivery and site handling (6.3).

Technical Specification

5 Description

5.1 The Fatrafal 810 Roof Covering System consists of a polyester-mesh-reinforced PVC roofing sheet, with solvent or hot-air welded lap joints, mechanically fixed using Structra fixing discs.

5.2 The PVC membrane comprises upper, middle and lower layers manufactured by a calender-mould process. The layers are thermoplastically fused together, sandwiching the polyester mesh (of weight 80 gm⁻² to 110 gm⁻²) between them.

5.3 The membrane is manufactured in the nominal parameters of:

thickness (mm)	1.5
roll length (m)	20
roll width (m)	1.3
weight per unit area (kgm ⁻²)	1.9
roll weight (kg)	50
colours	grey, red, orange, green and blue.

5.4 Other materials used with the system include:

- Fatra 800 — a polyester fleece used as a separating layer

- Fatra membrane adhesive — used to weld the membrane to the fixing discs
- Fatra PVC liquid sealant — used to seal laps and seams
- Shaped PVC reinforcements — for internal and external corners
- PVC-coated, galvanized steel profiles — for parapets, edge details and upstands.

5.5 Quality control checks carried out during production and on the finished product include checks on:

- appearance
- thickness
- roll width
- breaking load
- tensile strength and elongations
- dimensional stability
- tear resistance.

6 Delivery and site handling

6.1 The membrane is delivered to site in rolls wrapped in paper bearing the Certificate holder's name, batch number, product name, surface colour, and the BBA identification mark incorporating the number of this Certificate.

6.2 Rolls should be stored horizontally on a clean, dry, level surface and kept under cover until required.

6.3 Materials that are classified under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3) are given in Table 1 along with flashpoints where relevant. These products bear the appropriate hazard warning.

Table 1 Flashpoint and hazard classification

Material	Flashpoint (°C)	Classification
Fatra membrane adhesive	-7	Highly flammable, Irritant
Fatra PVC liquid sealant	-24	Highly flammable

Design Data

7 General

7.1 The Fatrafol 810 Roof Covering System is satisfactory for use as a mechanically-fixed roof waterproofing layer on flat roofs with limited access.

7.2 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 must be taken, such as additional protection to the membrane.

7.3 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 greater than 1:6. For design purposes twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available, including overall and local deflection, direction of falls.

7.4 Decks to which this system 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.

7.5 Insulation systems or materials used in conjunction with the system must be either:

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

7.6 Contact with bituminous, coal tar and oil-based products must be avoided as the membrane is not compatible with lower grades of bitumen. If contact with such products is likely, a separating layer should be interposed before installing the waterproofing sheet. Where doubt arises, the advice of the Certificate holder should be sought.

8 Weathertightness

8.1 Data confirm that the membrane, and joints in 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:

England and Wales

Approved Document C, Requirement C4, Section 5.1

Scotland

Regulation 17, Standard G3.1

Northern Ireland

Regulation C4.

8.2 The system is impervious to water and when used as described will give a weathertight roof covering capable of accepting minor structural movement without damage.

9 Resistance to wind uplift

9.1 The resistance to wind uplift of the membrane is provided by mechanical fasteners secured to the deck, passing through the membrane. The number, design, and position of these fixings will depend on a number of factors, including:


- wind uplift forces to be resisted
- pull-out strength of fasteners
- elastic limit of the membrane
- appropriate safety factors.

9.2 The number of fixings used should be established by reference to the wind uplift forces calculated in accordance with BS 6399-2 : 1997 on the basis of the maximum permissible load per individual fixing of 0.45 kN.

10 Resistance to foot traffic

Data indicate that the system can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance operations. Reasonable care should be taken, however, to avoid puncture by sharp objects or concentrated loads. In any situation where regular traffic is envisaged, eg maintenance of lift equipment, a walkway must be provided using concrete slabs supported on suitable bearing pads, or a protective layer (some types of bearing pads, in addition, will require the use of a protective sheet laid between the roof covering and the pads).

11 Properties in relation to fire

 11.1 When tested in accordance with BS 476-3 : 1958, a system comprising one layer of loose-laid polyethylene vapour barrier on a 18 mm thick plywood deck, with a 70 mm mineral fibre board and a 15 mm thick fibre board, mechanically-fixed through the vapour barrier using Buildex HRG screws, incorporating PVC Structra fixing discs with the Fatrafol 810 membrane bonded to the PVC Structra fixing discs using Fatrafol membrane adhesive, achieved an EXT.F.AA rating.

11.2 The designation of other specifications, for example, when used on combustible substrates, should be confirmed by:

England and Wales

Test or assessment in accordance with Approved Document B, Appendix A, Clause A1

Scotland

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, repair should be carried out by applying a patch of the membrane extending at least 50 mm beyond the defect. The joint should be cleaned back to unweathered material and solvent or hot-air welded and finally sealed using Fatra PVC liquid sealant.

13 Durability

 The product has been used in the Czech Republic since 1985. Accelerated weathering tests and performance in service, confirm that satisfactory retention of physical properties is achieved. All available evidence indicates that the Fatrafol 810 waterproofing membrane should have a life in excess of 25 years.

Installation

14 General

14.1 Installation of Fatrafol 810 must be in strict accordance with the manufacturer's fixing instructions and should only be carried out by trained and approved contractors.

14.2 In all cases a vapour control layer should be used directly over the deck.

14.3 The membrane may be applied over foil-faced insulation materials and fixed to the substructure in such a way as not to impair the performance of the waterproofing membrane. Polystyrene-based insulation products may also be used with a suitable isolation layer to separate the insulation from the roof covering, to reduce the risk of plasticiser migration.

14.4 The membrane must not be mechanically fixed over foam-glass insulation. Restrictions do not apply when mechanically fixing over mineral fibre board insulation.

14.5 Deck surfaces should be clean, dry, and free from sharp projections such as nail heads, concrete nibs. Where necessary (see section 7.6), a separation layer must be interposed between the substrate and the membrane.

14.6 The membrane may be laid in conditions normal to roofing work. To prevent the entrapment of moisture under the membrane it must not be laid in wet or damp weather conditions, or at temperatures below 5°C.

15 Procedure

15.1 A polyethylene vapour control layer should be installed over the deck and turned up over insulation at perimeters and ensuring 100 mm end and side laps.

15.2 Insulation boards should be laid with staggered end joints and fixed in accordance with the Certificate holder's instructions.

15.3 The Structra fixing discs should be applied to an average of five per square metre.

15.4 The Fatrafol 810 membrane is then laid over the installed discs which are covered with Fatra membrane adhesive.

16 Jointing

16.1 To ensure a watertight bond, lap joints in the membrane should be a minimum of 50 mm wide at sheet ends and details. Edge overlaps with adjacent sheets should be a minimum of 50 mm, welded over the last 50 mm as described in sections 16.2 and 16.3.

16.2 When hot-air welding a lap joint, a minimum of 50 mm of the lap width must be welded. During the process, a continuous bead of

molten material must exude as a visible indication of a satisfactory weld.

1.6.3 Fatrafol PVC liquid sealant should be applied to finished laps.

1.6.4 After completion of the jointing process the lap should be tested for complete weathertightness.

17 Details

The manufacturers supply a range of prefabricated external or internal PVC corners for the treatment of details, flashing.

Technical Investigations

The following is a summary of the technical investigations carried out on the Fatrafol 810 Roof Covering System.

18 Tests

A sample of Fatrafol 810 was obtained from the manufacturer for the purpose of testing. Tests performed by the BBA, which give typical results for the material are summarised in Tables 2 to 4.

19 Investigations

19.1 Existing data on the fire performance of the membrane were examined.

19.2 The manufacturing process was examined, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Table 2 Physical properties — general

Test (units)	Method ⁽¹⁾	Mean result
Ash content (%)	BS EN ISO 3451-5	4.67
Water absorption (%)	Draft UEAtc ⁽²⁾	0.35
Water vapour permeability (g m ⁻² day ⁻¹)	BS 3177 25°C/75% RH	1.20
Water vapour resistance (MNsg ⁻¹)	BS 3177 25°C/75% RH	171

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

(2) Draft UEAtc Technical Guide for the assessment of roof waterproofing systems made of unreinforced, reinforced and/or backed PVC sheets incompatible with bitumen, dated 24 October 2000 (final draft), Test 4.3.1.2.

Table 3 Physical properties — directional

Test (units)	Method ⁽¹⁾	Mean results	
		Long	Trans
Dimensional stability (%)	MOAT 27 : 5.1.6.1	-0.1	-0.1
Tensile strength (N per 50 mm)	BS EN 12311-2 Method A		
unaged		1168	1117
heat aged ⁽²⁾		1245	1157
water soak ⁽³⁾		1158	1123
Elongation (%)	BS EN 12311-2 Method A		
unaged		19.0	18.8
heat aged ⁽²⁾		18.7	19.7
water soak ⁽³⁾		18.5	19.2
Nail tear strength (N)	MOAT 55 : 1991		
-10°C		258	277
23°C		352	431
40°C		463	434
Cold blend (°C)	BS EN 495-5		
unaged		-30	-30
heat aged ⁽²⁾		-30	-30
UV aged ⁽⁴⁾		-30	-30

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

(2) Heat aged 24 weeks at 80°C.

(3) Water soak 24 weeks at 23°C, tested dry.

(4) UV aged UVB 4.5 GJm⁻² condensation 50°C/UV light 50°C.

Table 4 Service performance

Test (units)	Method ⁽¹⁾	Mean result
Static indentation	MOAT 27 : 5.1.9	
rigid		L ₁
compressive		L ₂
Dynamic indentation	MOAT 27 : 5.1.10	
perlite		L ₃
EPS		L ₂
Wind uplift load per fixing (N) ⁽²⁾	MOAT 55 : 4.2.2	1200
Corrected load per fixing (N) ⁽²⁾	MOAT 55 : 5 : 1	465

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

(2) Using a polyethylene vapour control layer on top of 0.7 mm thick galvanized steel decking with aluminium-faced polyurethane boards, mechanically fastened to the deck. The membrane is bonded by adhesive to the PVC discs fixed in the insulation.

Bibliography

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

BS 3177 : 1959 *Method for determining the permeability to water vapour of flexible sheet materials used for packaging*

BS 6229 : 1982 *Code of practice for flat roofs with continuously supported coverings*

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

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

BS EN 495-5 : 2001 *Flexible sheets for waterproofing — Determination of foldability at low temperature — Plastic and rubbers sheets for roof waterproofing*

BS EN 12311-2 : 2000 *Flexible sheets for waterproofing — Determination of tensile properties — Plastic and rubber sheets for roof waterproofing*

BS EN ISO 3451-5 : 1997 *Plastics — Determination of ash — Poly(vinyl chloride)*

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

MOAT No 55 : 1991 *UEAtc Supplementary guide for the assessment of mechanically fastened roof waterproofing*

Conditions of Certification

20 Conditions

20.1 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.

20.2 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.

20.3 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.

20.4 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.

20.5 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, the Fatrafol 810 Roof Covering System is fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

Certificate No 02/3921 is accordingly awarded to Aliachem as.

On behalf of the British Board of Agrément

Date of Second issue: 4th June 2003

A handwritten signature in black ink, appearing to read 'P. C. Hewitt'.

Chief Executive

**Original Certificate issued on 28th May 2002. This revised version includes amended fire test data.*

