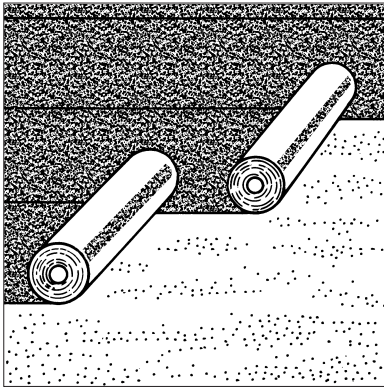


Product



• THIS DETAIL SHEET RELATES TO CHESTERFLEX ROOF WATERPROOFING MEMBRANES, POLYESTER REINFORCED OXIDISED BITUMEN SHEETING.

• Chesterflex membranes are suitable for use in a fully or partially bonded roof waterproofing system on flat or pitched roofs with limited access.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the products' position regarding the Building Regulations, general information relating to the products and the Conditions of Certification, respectively.

Technical Specification

1 Description

1.1 The Chesterflex Roof Waterproofing Membranes range consists of the following:

Chesterflex 125 — BS 747 type 5U felt, with a polyester reinforcement (125 gm^{-2}) and a sand finish on both sides, for use as a first layer.

Chesterflex 180 — oxidised bitumen felt with a polyester reinforcement (180 gm^{-2}) and a sand finish on both sides, for use as a first layer or top layer with additional protection.

Chesterflex 250 (sanded) — oxidised bitumen felt with a polyester reinforcement (250 gm^{-2}) and a sand finish on both sides, for use as a first layer or top layer with additional protection.

Chesterflex 250 (mineral) — as for 250 (sanded), but with a mineral finish on the upper surface, for use as a cap sheet.

Chesterflex 350 (sanded) — BS 747 type 5B felt with a polyester reinforcement (350 gm^{-2}) and a sand finish on both sides, for use as a top layer with additional protection.

Chesterflex 350 (mineral) — BS 747 type 5E felt, as for 350 (sanded), but with a mineral finish on the upper surface, for use as a cap sheet.

1.2 The products are manufactured to the nominal dimensions given in Table 1.

Table 1 Nominal dimensions

Dimensions	15	180	250S	250M	350S	350M
thickness (mm)	1.7	1.8	2.0	2.8	3.5	3.8
width (m)	1	1	1	1*	1	1*
length (m)	16	20	20	10	8	8
weight (kgm^{-2})	1.80	1.90	2.00	3.90	4.25	4.75
roll weight (kg)	29	38	40	39	34	38

*includes 75 mm selvedge

4.3 Ancillary items for use with Chesterflex membranes are as follows:

Oxidised bitumen grades 95/25 and 115/5 — for bonding to substrate.

Chesterplus 3G Venting — a BS 747 type 3G venting layer for use as a first layer on a three-layer system.

Chesterplus Perforated — for use in partially bonded built-up systems.

Chesterstop — a vapour control layer for use in built-up systems.

Chester-tech — a glass/polyester reinforcement nailing layer.

1.4 Quality control checks are carried out on the raw materials. Checks on the final product include:

weight per unit area
width
tensile strength/elongation
Mullen burst
resistance to tear.

2 Delivery and site handling

2.1 Chesterflex membranes are delivered to site wrapped in paper. The wrappers bear the product name, manufacturer's name, dimensions (excluding thickness), where appropriate BS 747 : 1994, and the BBA identification mark incorporating the number of this Certificate.

2.2 Rolls must be stored in an upright position on a clean, level surface and kept dry.

Design Data

3 Properties in relation to fire



3.1 When tested in accordance with BS 476 : Part 3 : 1958:

(a) A system comprising 18 mm thick plywood, 50 mm of insulation, one layer of Chesterflex 125 (type 5U) and one layer of Chesterflex 350 mineral (type 5E), fully bonded in bitumen, achieved EXT.F.AB rating.

(b) A system comprising 18 mm thick plywood, 50 mm of insulation, one layer of Chesterflex 180, and one layer of Chesterflex 250 mineral, fully bonded in bitumen, achieved EXT.F.AC rating.



3.2 When used for flat roofs with one of the surface finishes defined in Part iii of Table A5 of Appendix A of Approved Document B of the Building Regulations 1991 (England and Wales) (and listed below), the roof is deemed to be of designation AA.

Surface finishes:

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

3.3 The designation of other specifications should be confirmed by test or assessment in accordance with Clause A1 of Approved Document B of the Building Regulations 1991 (England and Wales).



3.4 The designation of specifications, other than those in section 3.1, must be confirmed by testing to ensure conformity with Standards D2.5 and D3.6 for compliance with the Building Standards (Scotland) Regulations 1990 (as amended).



3.5 When used for flat roofs with one of the surface finishes given in Technical Booklet E, Table 4.6, Part IV of the Building Regulations (Northern Ireland) 1994, the roof should be considered to be of designation AA.

3.6 The designation for other specifications, for example when the system is used on combustible substrates, should be confirmed either by testing or by assessment by a NAMAS laboratory, BRE or an independent consultant with appropriate experience.

Installation

Fully bonded applications

4.1 A first layer of waterproofing should be bonded to the substrate with hot bitumen, using traditional pour and roll techniques. Lap joints should be a minimum of 50 mm for side and 75 mm for end.

4.2 Top layer and cap sheets are fully bonded onto the other layers by pour and roll. Lap joints should be a minimum of 75 mm for side and 100 mm for end. The laps should be offset in relation to the previous layer, as recommended in BS 8217 : 1994.

Partially bonded applications

4.3 A layer of either Chesterplus Perforated or type 3G felt to BS 747 : 1994 should be loose laid edge to edge over the substrate, with side laps of 50 mm. It should be fully bonded with hot bitumen for a minimum of 500 mm around the perimeter and all upstands.

4.4 The subsequent layers are bonded as described in sections 4.1 and 4.2 onto the perforated layer.

The following is a summary of the technical investigations carried out on the Chesterflex membranes.

Samples of the membranes were obtained from the manufacturer for testing. A summary of tests showing typical values from the materials are detailed in Tables 2 to 5.

Table 2 Physical properties — directional

Test (units)	Method*	Mean results ⁽¹⁾			
		125	180	250S	350S
Tensile strength (N 50 mm ⁻¹)	BS 2782 : 320A ⁽²⁾				
control					
long ⁽³⁾		578	669	845	996
trans ⁽⁴⁾		533	576	622	566
Heat aged ⁽⁵⁾					
long ⁽³⁾		480	521	—	1142
trans ⁽⁴⁾		441	445	—	854
Elongation at break (%)	BS 2782 : 320A				
control					
long ⁽³⁾		30	34	40	40
trans ⁽⁴⁾		40	35	42	70
Heat aged ⁽⁵⁾					
long ⁽³⁾		30	14	—	30
trans ⁽⁴⁾		40	14	—	40
Dimensional stability (free) (%)	MOAT 27 : 5.1.16				
long ⁽³⁾		0.13	—	—	-0.07
trans ⁽⁴⁾		-0.27	—	—	-0.43
Low temperature flexibility (°C)	MOAT 27 : 5.4.2				
long ⁽³⁾		—	-5	-5	—
trans ⁽⁴⁾		—	-5	-5	—
Resistance to tear (nail tear) (N)	MOAT 27 : 5.4.2				
long ⁽³⁾		—	312	374	—
trans ⁽⁴⁾		—	309	325	—

(1) all results are for sanded membranes only

(2) test speeds — for 130 and 250 membranes 100 mm min⁻¹, for 125 and 350 500 mm min⁻¹

(3) longitudinal direction

(4) transverse direction

(5) heat aged for 56 days at 80°C

— = not tested, assessed on results of testing on the other membranes.

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

Table 3 Physical properties — general

Test (units)	Method*	Mean results					
		125	180	250S ⁽¹⁾	250M ⁽²⁾	350S ⁽¹⁾	350M ⁽²⁾
Ash content (%)	BS 2782 : 454A	51	38	—	—	35	44
Water vapour permeability (gm ⁻² d ⁻¹)	BS 3177 : 1959 (25°C/75% RH)	0.46	0.43	—	—	—	0.69
Water vapour resistance (MNsg ⁻¹)	BS 3177 : 1959 (25°C/75%)	446	477	—	—	—	297
Moisture absorption (%)	BS 2782 : 430A	—	1.29	1.07	0.99	—	—

(1) sand finish

(2) mineral finish

— = not tested, assessed on results of testing on the other membranes.

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

Table 4 Service performance

Test (units)	Method*	Mean results					
		125	180	250S ⁽¹⁾	250M ⁽²⁾	350S ⁽¹⁾	350M ⁽²⁾
Water pressure	MOAT 27 : 5.1.4	satisfactory					
Static indentation substrate	MOAT 27 : 5.1.9						
hard		—	—	—	L ₄	L ₄ ⁽³⁾	L ₄ ⁽³⁾
soft		—	—	—	L ₄	L ₄ ⁽³⁾	L ₄ ⁽³⁾
Dynamic indentation substrate	MOAT 27 : 5.1.10						
perlite		—	I ₂	—	I ₃	I ₃ ⁽³⁾	I ₃ ⁽³⁾
EPS		—	I ₃	—	I ₃	I ₃ ⁽³⁾	I ₃ ⁽³⁾
Fatigue cycling control	MOAT 27 : 5.1.5	satisfactory					
heat aged ⁽⁴⁾		satisfactory					
Wind uplift	MOAT 27 : 5.1.2	satisfactory					
Thermal shock	MOAT 27 : 5.1.5	satisfactory					
Unrolling at low temperatures	MOAT 27 : 5.4.3	satisfactory					
Resistance to peel (N)							
control							
concrete		74	27	—	—	—	—
chipboard		59	27	—	—	—	—
felt		—	—	—	58	—	—
Heat aged ⁽⁴⁾							
concrete		33	—	—	—	—	—
chipboard		—	—	—	—	—	—
Heat aged ⁽⁵⁾							
concrete		—	50	—	—	—	—
chipboard		—	41	—	—	—	—
felt		—	—	—	87	—	—

(1) sand finish

(2) mineral finish

(3) tested with Chesterflex 125 as underlay

(4) heat aged for 28 days at 80°C

(5) heat aged for 56 days at 80°C

— = not tested, assessed on results of testing on the other membranes.

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

Table 5 Joint testing

Test (units)	Method*	Mean results			
		125	180	350S ⁽¹⁾	350M ⁽²⁾
Air pressure	MOAT 27 : 5.2.1	satisfactory			
Tensile strength (N)	MOAT 27 : 5.2.2				
control					
long ⁽³⁾		479	558	839	624
trans ⁽⁴⁾		450	—	719	491
Heat aged ⁽⁵⁾					
long ⁽³⁾		427	578	504	366
trans ⁽⁴⁾		377	—	357	252
Water soak ⁽⁶⁾					
long ⁽³⁾		417	576	876	698
trans ⁽⁴⁾		380	—	654	417

(1) sand finish

(2) mineral finish

(3) longitudinal direction

(4) transverse direction

(5) heat aged for 28 days at 80°C

(6) water soak for 7 days at 60°C

— = not tested, assessed on results of testing on the other membranes.

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

6 Other investigations

6.1 A survey of users was carried out to assess the performance in use of the products.

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

6.3 A reassessment was made of data from a previous assessment which led to the issue of Certificate No 82/1005.

Bibliography

BS 476 *Fire tests on building materials and structures*

Part 3 : 1958 *External fire exposure roof test*

BS 747 : 1994 *Specification for roofing felts*

BS 2782 *Methods of testing plastics*

Part 3 *Mechanical properties*

Methods 320A to 320F : 1976(1986) *Tensile strength, elongation and elastic modulus*

Part 4 *Chemical properties*

Methods 430A to 430D : 1983 *Determination of water absorption at 23°C. Determination of water absorption at 23°C with allowance for water-soluble matter. Determination of boiling water absorption with allowance for water-soluble matter*

Methods 454A and 454B : 1978 *Determination of ash. Determination of sulphated ash*

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

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

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

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



On behalf of the British Board of Agrément

Date of issue: 9th November 1994

A handwritten signature in black ink, appearing to read 'P. C. Newson', is written over a light grey background.

Director

Recreated in QX 23.4.02 (SM)

British Board of Agrément

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