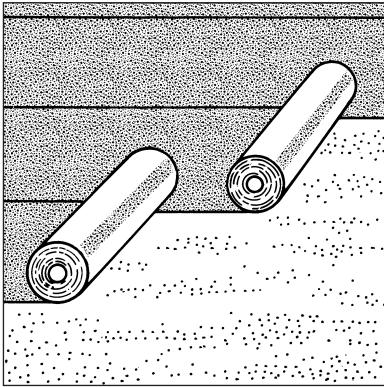


Product



• THIS DETAIL SHEET RELATES TO CHESTERMERIC ROOF WATERPROOFING MEMBRANES, POLYESTER REINFORCED POLYMER MODIFIED BITUMEN SHEETING.

• Chestermeric 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 product's position regarding the Building Regulations, general information relating to the products, and the Conditions of Certification, respectively.

Technical Specification

1 Description

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

Chestermeric 180 — an SBS modified bitumen felt, reinforced with a polyester reinforcement (180 gm^{-2}) and a sand finish on both sides, for use as a first layer.

Chestermeric 250 (sanded) — an SBS modified bitumen felt, reinforced 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.

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

Chestermeric 350 (sanded) — an SBS modified bitumen felt, reinforced with a polyester reinforcement (350 gm^{-2}) and a sand finish on both sides, for use as a top layer with additional protection.

Chestermeric 350 (mineral) — 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 | 180 | 250S | 250M | 350S | 350M |
|------------------------------|------|------|------|------|------|
| thickness (mm) | 1.8 | 2.4 | 2.8 | 3.3 | 3.8 |
| width (m) | 1.0 | 1.0 | 1.0* | 1.0 | 1.0* |
| length (m) | 20.0 | 16.0 | 8.0 | 8.0 | 8.0 |
| weight (kgm^{-2}) | 1.80 | 2.50 | 3.75 | 4.00 | 4.75 |
| roll weight (kg) | 36 | 40 | 30 | 32 | 38 |

*includes 75 mm selvedge.

1.3 Ancillary items for use with Chesterflex membranes are:

Oxidised bitumen grades 95/25 and 115/15 — for bonding to substrate.

Chesterplus 3G venting — a BS 747 Type 3G venting layer for use as a first layer in 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.

Chestertech — 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 Chestermeric membranes are delivered to site wrapped in paper. The wrappers bear the product name, manufacturer's name, dimensions (excluding thickness), 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 phenolic insulation, one layer of Chestermeric 180 and one layer of Chestermeric 350 mineral, fully bonded in bitumen, achieved EXT.F.AA rating.

(b) A system comprising 18 mm thick plywood, 50 mm of phenolic insulation, one layer of Chestermeric 180, and one layer of Chestermeric 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 (as amended 1994) (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 (as amended 1994) (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 accredited laboratory, BRE or an independent consultant with appropriate experience.

Installation

4 Procedure

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.

Technical Investigations

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

5 Tests

Samples of the membranes were obtained from the manufacturer for testing. A summary of tests showing typical values from the materials is detailed in Tables 2 to 4.

Table 2 Physical properties — polyester scrim

| Test (units) | Method* | Mean results | | | |
|---|--------------|----------------------|-----|-----|------|
| | | 180 | 250 | 350 | |
| Mass per unit area (gm ⁻²) | MOAT 31 : 6B | 179 | 273 | 400 | |
| Tensile strength (N 50 mm ⁻¹) | MOAT 31 : 6C | long ⁽¹⁾ | 443 | 752 | 1113 |
| | | trans ⁽²⁾ | 485 | 667 | 647 |
| Elongation (%) | MOAT 31 : 6C | long ⁽¹⁾ | 24 | 42 | 25 |
| | | trans ⁽²⁾ | 30 | 43 | 66 |

(1) Longitudinal direction.

(2) Transverse direction.

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

Table 3 Physical properties — directional

| Test (units) | Method* | Mean results | | | |
|---|---|--------------------------|-------|-------|-------|
| | | 180 | 250S | 350S | |
| Low temperature flexibility (°C) | MOAT 31 : 6D | long ⁽¹⁾ | | | |
| | | unaged | ≤-21 | ≤-21 | ≤-21 |
| heat aged ⁽²⁾ | | -15 | - | -5 | |
| water soak ⁽³⁾ | | - | - | ≤-21 | |
| Trans ⁽⁴⁾ | | unaged | ≤-21 | ≤-21 | ≤-21 |
| | | heat aged ⁽²⁾ | ≤-21 | - | -5 |
| water soak ⁽³⁾ | | - | - | ≤-21 | |
| Dimensional stability % | MOAT 27 : 5.1.6.1 | Long ⁽¹⁾ | -0.48 | -0.12 | -0.11 |
| | | Trans ⁽⁴⁾ | 0.23 | 0.06 | 0.04 |
| Tensile strength (N 50 mm ⁻¹) | BS 2782 : Part 3 : 320A (100 mm min ⁻¹) | Long ⁽¹⁾ | | | |
| | | unaged | 703 | 994 | 1318 |
| heat aged ⁽⁵⁾ | | 689 | 949 | 1320 | |
| Trans ⁽⁴⁾ | | unaged | 684 | 987 | 667 |
| | | heat aged ⁽⁵⁾ | 739 | 935 | 687 |
| Elongation at break (%) | BS 2782 : Part 3 : 320A (100 mm min ⁻¹) | Long ⁽¹⁾ | | | |
| | | unaged | 39 | 48 | 27 |
| heat aged ⁽⁵⁾ | | 38 | 42 | 24 | |
| Trans ⁽⁴⁾ | | unaged | 44 | 48 | 70 |
| | | heat aged ⁽⁵⁾ | 42 | 43 | 41 |

(1) Longitudinal direction.

(2) Heat aged for 180 days at 70°C.

(3) Water soak for 7 days at 60°C.

(4) Transverse direction.

(5) Heat aged for 56 days at 70°C.

- not tested

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

Table 4 Service performance

| Test (units) | Method* | Mean results |
|---|-----------------------|----------------|
| Unrolling at low temperature | MOAT 27 : 5.4.3 | satisfactory |
| Resistance to water pressure (6 m head of water) | MOAT 27 : 5.1.4 | no leaks |
| Static indentation 180 | MOAT 27 : 5.1.9 | |
| Substrate rigid | | L ₄ |
| compressive | | L ₄ |
| 3.50S | | |
| Substrate rigid | | L ₄ |
| compressive | | L ₄ |
| Dynamic indentation 180 | MOAT 27 : 5.1.10 | |
| Substrate perlite cellulose | | L ₃ |
| EPS | | L ₂ |
| 250M | | |
| Substrate perlite cellulose | | L ₃ |
| EPS | | L ₃ |
| 350M | | |
| Substrate perlite cellulose | | L ₃ |
| EPS | | L ₃ |
| Water vapour permeability (gm ⁻² d ⁻¹) | BS 3177 (25°C/75% RH) | 0.49 |
| Water vapour resistance (MNsg ⁻¹) | BS 3177 (25°C/75% RH) | 419 |
| Resistance to cyclic movements unaged | MOAT 31 : 6K | satisfactory |
| heat aged ⁽¹⁾ | | satisfactory |
| Resistance to leakage at joints | MOAT 27 : 5.2.1. | no leaks |
| Tensile strength of joints (N) ⁽²⁾ unaged | MOAT 27 : 5.2.2/3/4 | 404 |
| heat aged ⁽¹⁾ | | 469 |
| water soak ⁽³⁾ | | 415 |
| Peel test (N) 180 | MOAT 31 : 6I | |
| primed concrete unaged | | 20 |
| heat aged ⁽¹⁾ | | 23 |
| primed chipboard unaged | | 23 |
| heat aged ⁽¹⁾ | | 27 |
| 250M primed concrete unaged | | 51 |
| heat aged ⁽¹⁾ | | 63 |

(1) Heat aged 28 days at 70°C.

(2) 180 membrane tested.

(3) Water soak 7 days at 60°C.

*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 Chestermeric membrane.

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*

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 (supersedes CP 144 : Part 3)*

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

MOAT No 31 : 1984 *Special Directives for the Assessment of Reinforced Homogeneous Waterproof Coverings of Styrene-Butadiene-Styrene (SBS) Elastomer Bitumen*



On behalf of the British Board of Agrément

P. Q. NEWTON

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Director

