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Agrément Certificate  
**15/5188**  
Product Sheet 3

## MASTERMAX 3 BREATHABLE MEMBRANES

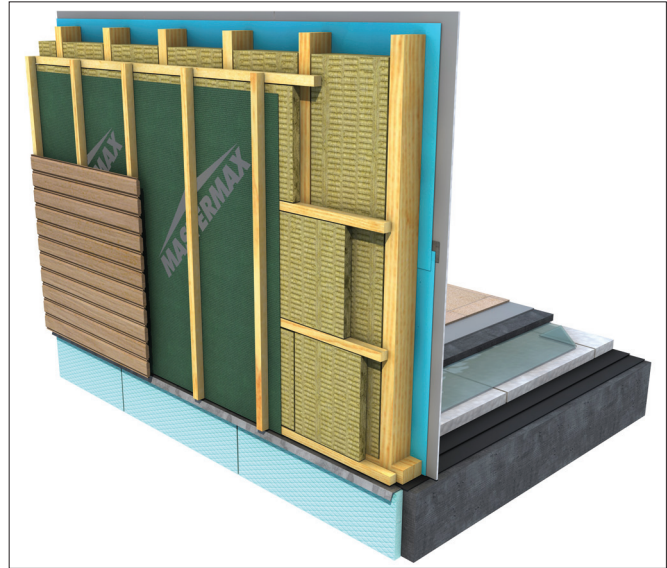
### FOR USE IN TIMBER FRAME CONSTRUCTIONS

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Mastermax 3 Breathable Membranes, flexible three-layer polypropylene sheet materials for use as breather membranes in timber-frame walls with a cavity and a masonry outer leaf, weatherboarding or tile/slate cladding.

(1) Hereinafter referred to as 'Certificate'.

#### CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



#### KEY FACTORS ASSESSED

**Weathertightness** — the products will contribute to protecting a wall against water penetration (see section 6).

**Risk of condensation** — the products are low water vapour resistance (Type LR) underlays and can contribute to reducing the risk of interstitial condensation (see section 7).

**Strength** — the products have adequate strength to resist damage during construction of the walls. (see section 8).

**Durability** — the products will have a life equal to that of the building in which it is installed (see section 11).

The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 27 January 2015

John Albon — Head of Approvals  
Construction Products

Claire Curtis-Thomas  
Chief Executive

*The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at [www.bbacerts.co.uk](http://www.bbacerts.co.uk)*

*Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.*

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# Regulations

In the opinion of the BBA, Mastermax 3 Breathable Membranes for use in Timber-framed Constructions, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



## The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	C2(b)	Resistance to moisture
Comment:		The products will contribute to a wall meeting this Requirement. See section 6.1 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The products will contribute to a wall meeting this Requirement. See section 7.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



## The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The products can contribute to a construction satisfying this Regulation. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	3.10	Precipitation
Comment:		The products will contribute to a wall satisfying clauses 3.10.1 <sup>(1)(2)</sup> and 3.10.5 <sup>(1)(2)</sup> of this Standard. See section 6.1 of this Certificate.
Standard:	3.15	Condensation
Comment:		The products can enable a wall to satisfy this Standard with respect to interstitial condensation. See section 7.1 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The products can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for these products under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



## The Building Regulations (Northern Ireland) 2012

Regulation:	23(a)(i)(iii)(b)(i)	Fitness of materials and workmanship
Comment:		The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The products will contribute to a wall satisfying this Regulation. See section 6.1 of this Certificate.
Regulation:	29	Condensation
Comment:		The products can enable a wall to satisfy this Regulation. See section 7.1 of this Certificate.

### Construction (Design and Management) Regulations 2007

### Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 1 *Description* of this Certificate.

## Additional Information

### NHBC Standards 2014

NHBC accepts the use of Mastermax 3 Breathable Membranes for use in Timber-framed Constructions, provided they are installed, used and maintained in accordance with this Certificate in relation to *NHBC Standards* Chapter 6.2 *External timber framed walls*.

### CE marking

The Certificate holder has taken the responsibility of CE marking the products, in accordance with harmonised European Standard BS EN 13859-2 : 2014. An asterisk (\*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

# Technical Specification

## 1 Description

Mastermax 3 Breathable Membranes for use in Timber-framed Constructions are three-layer polypropylene laminate composites with the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	Mastermax 3 Breathable Membranes			
	Eco	Classic	Top	Extra
Thickness (mm)	0.35	0.43	0.48	0.5
Mass per unit area* (g·m <sup>-2</sup> )	100	120	140	160
Roll length* (m) <sup>(1)</sup>	50	50	50	50
Roll width* (m) <sup>(1)</sup>	1.0, 1.5	1.0, 1.5	1.0, 1.5	1.0, 1.5
Colour				
upper	various	various	various	various
lower	various	various	various	various
Tensile strength* [N(50 mm) <sup>-1</sup> ]				
longitudinal	180	200	240	260
transverse	90	110	150	200
Elongation* (%)				
longitudinal	60	60	60	60
transverse	60	60	60	60
Tear resistance* (N)				
longitudinal	70	80	100	100
transverse	60	70	80	90
Resistance to air penetration* (m <sup>3</sup> /m <sup>2</sup> ·h·50 Pa)	0.093	–	–	0.072
Watertightness*				
unaged	W1	W1	W1	W1
aged <sup>(2)</sup>	W1	W1	W1	W1
Water vapour transmission* (S <sub>d</sub> )(m)	0.016	0.05	0.04	0.01

(1) Other lengths, widths and colours are available.

(2) Aged in accordance with BS EN 13859-1 : 2014 , Annex C.

## 2 Manufacture

2.1 The membranes are manufactured by a thermal-bonding process in which a polyethylene breathable film is bonded together with polypropylene non-woven membranes to form a flexible sheet.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by Moody International Certification Ltd TIA Intertek (Certificate 0107126-1).

## 3 Delivery and site handling

3.1 Rolls are delivered to site, individually wrapped in polythene foil bearing the BBA logo incorporating the number of this Certificate.

3.2 The rolls should be stored flat or on end on a clean, level surface and kept under cover.

# Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Mastermax 3 Breathable Membranes for use in Timber-framed Constructions.

### 4 Use

4.1 Mastermax 3 Breathable Membranes for use in Timber-framed Constructions are satisfactory for use as on-site or factory-applied breather membranes in timber-frame walls with a cavity and a masonry outer leaf, weatherboarding or tile/slate cladding.

4.2 In the absence of other guidance, suitable timber-frame walls are defined as those designed and built in accordance with *NHBC Standards*, Chapter 6.2 *External timber framed walls*.

4.3 The products meet the requirement for a Class W1\* material in accordance with BS EN 13859-2 : 2014 and meet the NHBC requirement given in *NHBC Standards*, Chapter 6.2, clause M5, as a high-performance breather membrane for use in very severe conditions<sup>(1)</sup>:

(1) Very severe conditions are defined in the *NHBC Standards 2014*, Appendix 6.1A, *Map showing categories of exposure to wind-driven rain*.

### 5 Practicability of installation

The products are designed to be installed by competent general builders or contractors experienced with these products.

### 6 Weathertightness



6.1 The products are Class W1\* in accordance with BS EN 13859-2 : 2014. The products will resist the passage of water, wind-blown rain and will protect the sheathing and frame from external moisture.

6.2 The products can be used as temporary weather protection during construction, prior to the completion of external brickwork or claddings. The period of such use should, however, be kept to a minimum.

### 7 Risk of condensation



7.1 For design purposes, the products' water vapour resistance may be taken as less than or equal to  $0.6 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}$ , and is classified as a breather membrane in accordance with BS 5250 : 2011. Walls incorporating the products will therefore adequately limit the risk of interstitial condensation when designed and constructed in accordance with BS 5250 : 2011, Annex G.

7.2 The risk of condensation occurring within the wall of a timber-frame building will depend upon the properties and vapour resistance of other materials used in the construction, the internal and external conditions, and the effectiveness of the internal vapour control layer.

### 8 Strength

The products will resist the normal loads associated with construction and installation of timber-frame constructions.

### 9 Properties in relation to fire

9.1 The products are Class E\* in accordance with BS EN 13501-1 : 2007.

9.2 The products will have similar properties in relation to fire to those of traditional polyethylene membranes, tending to burn and shrink away from the heat source. The products are unclassifiable in terms of the Building Regulations and this must be considered when assessing the overall fire risk

### 10 Maintenance

As the products are confined within the wall space and have suitable durability (see section 11) maintenance is not required. However, any damage occurring before enclosure must be repaired (see section 15).

### 11 Durability



The products will be unaffected by the normal conditions found in timber-frame walls and will have a life equal to that of the building in which they are installed.

### 12 Reuse and recyclability

The products contain polypropylene, which can be recycled.

## Installation

### 13 General

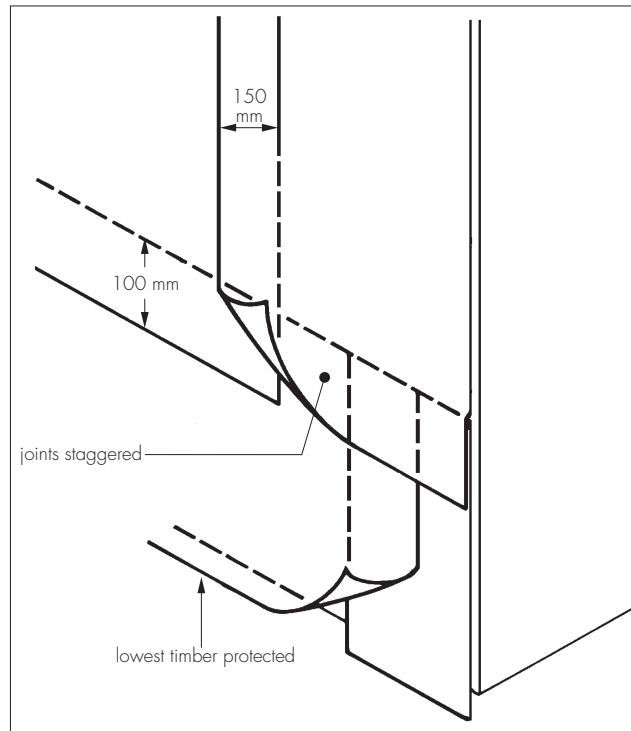
Mastermax 3 Breathable Membranes must be installed in accordance with the Certificate holder's instructions and the recommendations given in *NHBC Standards 2014*, Chapter 6.2 *External timber-framed walls* where appropriate.

## 14 Procedure

14.1 The products must be secured at regular intervals not exceeding 500 mm, with stainless steel staples or nails, to prevent damage by wind action.

14.2 Upper layers should overlap lower layers to shed water away from the sheathing. Vertical laps should be staggered wherever possible (see Figure 1).

Figure 1 Membrane installation



14.3 Horizontal laps should not be more than 100 mm, and vertical not more than 150 mm.

14.4 It is essential that the positions of the studs are marked on the face of the breather membrane, usually by tape, to enable fixing of wall ties and battens.

14.5 It is essential that the lowest timbers in the wall are protected by the breather membrane.

## 15 Repair

The products can be damaged by careless handling, high winds or vandalism. Damage to the membrane must be repaired prior to the installation of external walls or cladding by laying another sheet over the damaged area, by patching and sealing correctly, ensuring water is shed away from the sheathing.

## Technical Investigations

### 16 Tests

An assessment was made on data to BS EN 13859-2 : 2014 in relation to:

- dimensions\*
- mass per unit area\*
- tensile strength and elongation\*
- resistance to tear\*
- dimensional stability\*
- resistance to penetration of air\*
- resistance to water penetration\*
- resistance to artificial ageing\*
- water vapour transmission\*
- reaction to fire\*.

### 17 Investigations

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

# Bibliography

BS 5250 : 2011 *Code of practice for control of condensation in buildings*

BS EN 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

BS EN 13859-1 : 2014 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Underlays for discontinuous roofing*

BS EN 13859-2 : 2014 *Flexible sheets for waterproofing — Definitions and characteristics of underlays — Underlays for walls*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

## Conditions of Certification

### 18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

18.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

18.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

18.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

18.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

18.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.