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**Agrément Certificate**

**20/5784**

Product Sheet 1

### GARLAND TORCH-ON ROOF WATERPROOFING MEMBRANES

### STRESSPLY FLEX AND STRESSPLY FLEX PLUS ROOF WATERPROOFING MEMBRANES

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to StressPly Flex and StressPly Flex Plus Roof Waterproofing Membranes, for use in flat and pitched roof waterproofing specifications with limited access, and blue roofs on flat, including zero fall roofs, in combination with a storm water attenuation system<sup>(2)</sup>.

(1) Hereinafter referred to as 'Certificate'.

(2) The storm water attenuation system is outside the scope of this 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 resist the passage of moisture to the interior of a building (see section 6).

**Properties in relation to fire** — the products, when used in a suitable specification, may enable a roof to be unrestricted under the national Building Regulations (see section 7).

**Resistance to wind uplift** — the products will resist the effects of any likely wind suction acting on the roof (see section 8).

**Resistance to mechanical damage** — the products will accept, without damage, the limited foot traffic and loads associated with installation and maintenance (see section 9).


**Durability** — under normal service conditions, the products will provide a durable waterproof covering with a service life in excess of 30 years (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: 16 July 2020



  
Hardy Giesler  
Chief Executive Officer

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 MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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## Regulations

In the opinion of the BBA, StressPly Flex and StressPly Flex Plus Roof Waterproofing Membranes, 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)

<b>Requirement:</b>	<b>B4(1)</b>	<b>External fire spread</b>
Comment:		The products, in some circumstances, are restricted by this Requirement. See section 7.5 of this Certificate.
<b>Requirement:</b>	<b>B4(2)</b>	<b>External fire spread</b>
Comment:		On a suitable substructure, the products can enable a roof to be unrestricted under this Requirement. See sections 7.1, 7.2, 7.3 (Wales only) and 7.4 of this Certificate.
<b>Requirement:</b>	<b>C2(b)</b>	<b>Resistance to moisture</b>
Comment:		The products, including joints, will enable a roof to satisfy this Requirement. See section 6 of this Certificate.
<b>Regulation:</b>	<b>7(1)</b>	<b>Materials and workmanship</b>
Comment:		The products are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.



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

<b>Regulation:</b>	<b>8(1)(2)</b>	<b>Durability, workmanship and fitness of materials</b>
Comment:		The use of the products satisfies the requirements of this Regulation. See sections 10.1 and 11.1 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>9</b>	<b>Building standards applicable to construction</b>
Standard:	<b>2.8</b>	Spread from neighbouring buildings
Comment:		The products, when applied to a suitable substructure, can be regarded as having low vulnerability under clause 2.8.1 <sup>(1)(2)</sup> of this Standard. See sections 7.1, 7.2 and 7.4 of this Certificate.
Standard:	<b>3.10</b>	Precipitation
Comment:		The use of the products, including joints, will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1 <sup>(1)</sup> and 3.10.7 <sup>(1)</sup> . See section 6 of this Certificate.
Standard:	<b>7.1(a)</b>	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.
<b>Regulation:</b>	<b>12</b>	<b>Building standards applicable to conversions</b>
Comment:		Comments in relation to the 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 (as amended)

<b>Regulation:</b>	<b>23(a)(i)</b>	<b>Fitness of materials and workmanship</b>
Comment:	<b>(iii)(b)(i)</b>	The products are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.

<b>Regulation:</b>	<b>28(b)</b>	<b>Resistance to moisture and weather</b>
<b>Comment:</b>		The products, including joints, will enable a roof to satisfy the requirements of this Regulation. See section 6 of this Certificate.
<b>Regulation:</b>	<b>36(b)</b>	<b>External fire spread</b>
<b>Comment:</b>		On a suitable substructure, the use of the products can enable a roof to be unrestricted under the requirements of this Regulation. See sections 7.1 to 7.4 of this Certificate.

## Construction (Design and Management) Regulations 2015 Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 1 *Description* (1.2) and 3 *Delivery and site handling* (3.3) of this Certificate.

### Additional Information

#### NHBC Standards 2020

In the opinion of the BBA, StressPly Flex and StressPly Flex Plus Roof Waterproofing Membranes, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 7.1, *Flat roofs and balconies*.

#### CE marking

The Certificate holder has taken the responsibility of CE marking the products, in accordance with harmonised European Standard EN 13707 : 2013.

### Technical Specification

#### 1 Description

1.1 StressPly Flex and StressPly Flex Plus Roof Waterproofing Membranes are torch-on capsheets comprising styrene-butadiene-styrene (SBS) copolymer modified bitumen sheets with a non-woven polyester reinforcement (250 g·m<sup>-2</sup>) and a mineral finish on the upper surface.

1.2 The membranes are manufactured to the nominal characteristics given in Table 1.

**Table 1 Nominal characteristics**

Characteristic (unit)	StressPly Flex	StressPly Flex Plus
Thickness (mm)	4.6	5.2
Roll width (m)	1.0	1.0
Roll length (m)	7.5	5.0
Roll weight (kg)	41±2	32.5±2
Mass per unit area (kg·m <sup>-2</sup> )	5.5	6.5
Watertightness - one metre head	pass	pass
Tensile strength (N per 50 mm)		
longitudinal direction	1000 ± 20%	1000 ± 20%
transverse direction	800 ± 20%	800 ± 20%
Elongation (%)		
longitudinal direction	40 ± 15	40 ± 15
transverse direction	40 ± 15	40 ± 15
Resistance to tear – nail (N)		
longitudinal direction	450 ± 10%	450 ± 10%
transverse direction	450 ± 10%	450 ± 10%
Low temperature flexibility (°C)	-25	-25
Flow resistance (°C)	100	100
Dimensional stability (%)	± 0.3	± 0.3
Resistance to impact (mm)	1000	1000
Static loading (kg)	20	20
Mineral finish colour	brown or charcoal grey	

1.3 Garland Garla-Prime is a bitumen primer for preparation of substrates prior to the application of the products.

1.4 Garland supply a range of ancillary products for use in conjunction with the products, which are outside the scope of this Certificate. The ancillary products include:

- Garland StressPly Flex SA – for use in detailing/flashing in high-risk fire areas, such as upstands to pitched roof eaves in conjunction with StressPly Flex/Flex Plus membranes The product is a self-adhesive non-flame version of the StressPly Flex/Flex Plus
- Garland Torch Flex Ultra-Vent – an elastomer modified bitumen, torch-on underlay with vapour dispersion technology
- Garland Torch Evolution Base Sheet – an elastomer modified bitumen, fully bonded torch-on underlay
- Garland SA Flex Base Sheet – an elastomer modified bitumen, self-adhesive underlay
- Garland Torch Flex Vapour Barrier – an elastomer modified bitumen, torch-on vapour control layer reinforced with 200 gsm woven glass and aluminium/polyester foil
- Garland SA Flex Vapour Barrier – an elastomer modified bitumen, self-adhesive vapour control layer reinforced with 200 gsm woven glass and aluminium/polyester foil
- Garland SA Contact Primer – an SBS primer for use in preparing substrates prior to the installation of self-adhesive membranes
- Garland Insul-Lock – a polyurethane adhesive for bonding insulation
- Garland Insul-Bond – a 2-part quick curing polyurethane adhesive for bonding insulation
- Garland Insul-Pro – a canister based polyurethane adhesive for bonding insulation.

## 2 Manufacture

2.1 The products are manufactured by traditional methods for producing bitumen membranes.

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.

### 3 Delivery and site handling

3.1 The products are delivered to site in rolls secured with adhesive tape bands bearing the product name, the Certificate holder's name and the BBA logo incorporating the number of this Certificate. The rolls are packed on pallets and shrink wrapped in polythene.

3.2 Rolls should be stored upright on a clean, level surface, away from excessive heat and under cover.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the products under the *CLP Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on StressPly Flex and StressPly Flex Plus Roof Waterproofing Membranes.

## Design Considerations

### 4 General

4.1 StressPly Flex and StressPly Flex Plus Roof Waterproofing Membranes are satisfactory for use as a top layer (capsheet) in a partially or fully bonded waterproofing system on flat or pitched roofs with limited access, and blue roofs on flat specifications, including zero fall roofs, in combination with a storm water attenuation system<sup>(1)</sup>.

(1) The storm water attenuation system is outside the scope of this Certificate.

4.2 Decks to which the products are to be applied must comply with the relevant requirements of BS 6229 : 2018, BS 8217 : 2005 and, where appropriate, *NHBC Standards 2020*, Chapter 7.1.

4.3 Blue roofs are defined for the purpose of this Certificate as flat, including zero fall roofs, designed to allow controlled attenuation of rain fall during heavy and storm events, as part of sustainable urban drainage systems (SUDS). Guidance on the design of blue roofs is available in *NFRC Technical Guidance Note for the construction and design of Blue Roofs – Roofs and podiums with controlled temporary water attenuation*.

4.4 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for maintenance of the roof covering, cleaning of gutters, etc. Where traffic in excess of this is envisaged, such as pedestrian access roofs, additional protection must be provided (see section 10 of this Certificate and the relevant clauses of the Certificate holder's installation instructions).

4.5 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. 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, etc.

4.6 Pitched roofs are defined for the purpose of this Certificate as those having a fall in excess of 1:6.

4.7 Zero fall roofs are defined for the purpose of this Certificate as those having a finished fall which can vary between 0 and 1:80. Reference should also be made to appropriate clauses in *Liquid Roofing and Waterproofing Association (LRWA) Note 7 – Specifier Guidance for Flat Roof Falls*.

4.8 On zero fall roofs it is particularly important to identify the correct drainage points to ensure that the drainage provided is effective.

4.9 Insulation materials to be used in conjunction with the products must be in accordance with the Certificate holder's instructions and be either:

- as described in the relevant clauses of BS 8217 : 2005, or
- the subject of a current BBA Certificate and be used in accordance with, and within the limitations of, that Certificate.

## 5 Practicability of installation

Installation of StressPly Flex and StressPly Flex Plus Roof Waterproofing Membranes must only be carried out by roofing contractors trained and approved by the Certificate holder.

## 6 Weathertightness



The products, including joints, when completely sealed and consolidated, will adequately resist the passage of moisture to the interior of a building and so satisfy the requirements of the national Building Regulations.

## 7 Properties in relation to fire



7.1 When tested to DD CEN/TS 1187 : 2012 and classified in accordance with BS EN 13501-5 : 2016, the following systems achieved a B<sub>ROOF(t4)</sub> classification:

- an 18 mm thick OSB3 substrate, a 3 mm thick self-adhesive, modified bitumen, glass reinforced AVCL with aluminium core, a 130 mm polyisocyanurate insulation with bitumen coated glass fleece facing, bonded with a polyurethane adhesive, a 3 mm glass/polyester, modified bitumen venting layer and a layer of StressPly Flex<sup>(1)</sup>
- an 18 mm thick OSB3 substrate, a 3 mm thick self-adhesive, modified bitumen, glass reinforced AVCL with aluminium core, a 130 mm polyisocyanurate insulation with bitumen coated glass fleece facing bonded with a polyurethane adhesive, a 3 mm glass/polyester, modified bitumen venting layer and a layer of StressPly Flex Plus<sup>(2)</sup>.

- (1) Fire Test and Classification reports, reference 19886G and 19886H respectively, conducted by Warringtonfire, Gent. Reports available from the Certificate holder.
- (2) Fire Test and Classification reports, reference 19886K and 19886L respectively, conducted by Warringtonfire, Gent. Reports available from the Certificate holder.

7.2 When protected by an inorganic covering (eg gravel or paving slabs) listed in the Annex of Commission Decision 2000/553/EC, the systems are considered to achieve a B<sub>ROOF(t4)</sub> classification and so are unrestricted by the national Building Regulations.



7.3 In Wales and Northern Ireland, when used on flat roofs with the surface finishes listed below, the roof is also deemed to be unrestricted:

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



7.4 The designation of other specifications should be confirmed by reference to the requirements of the documents supporting the national Building Regulations.



7.5 The products, when used in pitches of greater than 70°, excluding upstands, should not be used on buildings in England and Wales that have a storey at least 18 m above ground level and contain: one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools.

## 8 Resistance to wind uplift

The adhesion of the bonded membranes is sufficient to resist the effects of wind suction, elevated temperature and thermal shock conditions likely to occur in practice.

## 9 Resistance to mechanical damage

9.1 The products can accept, without damage, the foot traffic and light concentrated loads associated with installation and maintenance. Where traffic in excess of this is envisaged, such as for maintenance of lift equipment, a walkway must be provided (for example, using concrete slabs supported on bearing pads). Reasonable care should be taken to avoid puncture by sharp objects or concentrated loads.

9.2 The products are capable of accepting minor structural movement while remaining weathertight.

## 10 Maintenance



10.1 The products must be the subject of six-monthly inspections and maintenance in accordance with BS 6229 : 2018, Chapter 7 to ensure continued satisfactory performance.

10.2 Where damage has occurred, it should be repaired in accordance with section 15 of this Certificate and the Certificate holder's instructions.

## 11 Durability



11.1 Under normal service conditions, the products will provide a durable waterproof covering with a service life in excess of 30 years.

11.2 Localised loss of the mineral surfacing may occur after some years in areas where complex detailing of the roof design is incorporated.

## 12 Reuse and recyclability

The products comprise bitumen and polyester which can be recycled.

## Installation

### 13 General

13.1 Installation of StressPly Flex and StressPly Flex Plus Roof Waterproofing Membranes is carried out in accordance with the Certificate holder's instructions, the relevant clauses of BS 8000-0 : 2014, BS 8000-4 : 1989 and BS 8217 : 2005, and this Certificate.

13.2 Deck surfaces must be dry, clean and free from sharp projections such as nail heads and concrete nibs. The substrate should be prepared using Garland Garla-Prime at the recommended coverage rate of 0.2 to 0.3  $\ell \cdot m^{-2}$  prior to installation of the waterproofing system.

13.3 The membranes may be laid in conditions normal to roofing work and must not be laid in rain, snow or heavy fog, nor if the temperature falls below 5°C, unless precautions against condensation have been taken.

13.4 Underlays should be installed in accordance with the appropriate clauses of BS 8217 : 2005.

13.5 The roofing layers must always be installed with staggered overlaps and in such a manner that no counter-seams in the direction of the outlets are made.

13.6 At falls in excess of 5° (1:11), precautions against slippage, and requirements for mechanical fixing as required by BS 8217 : 2005, should be observed.

## 14 Procedure

14.1 Bonding is achieved by melting the lower surface by torching and pressing the membrane down. Care must be taken not to overheat the membranes.

14.2 The membranes are installed with side laps of 100 mm and end laps of 150 mm, ensuring that a continuous bead of bitumen exudes from the lap, with laps between the membrane and any base sheets offset by a minimum of 300 mm.

14.3 When partially bonding, a suitable venting layer is loose-laid across the substrate with the appropriate overlaps and the waterproofing system fully bonded over the venting layer.

14.4 Detailing is carried out in accordance with the Certificate holder's instructions.

## 15 Repair

In the event of damage, the membranes can be effectively repaired with a patch of the membrane torch-bonded over the damaged area in accordance with the Certificate holder's instructions.

## Technical Investigations

## 16 Tests

An assessment was made on test data in relation to:

- thickness
- width
- mass per unit area
- length
- watertightness, six metre head
- tensile strength
- elongation at break
- nail tear
- static indentation, hard and soft substrates
- dynamic impact, hard and soft substrates
- low temperature flexibility
- heat resistance
- peel strength of joints
- shear strength of joints
- dimensional stability
- wind uplift
- the effect of long term water exposure on membrane joints
- the effect of heat ageing on low temperature flexibility and heat resistance for a 30 year equivalent.

## 17 Investigations

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

17.2 Fire test and classification data for the membranes were evaluated.



## Bibliography

BS 6229 : 2018 *Flat roofs with continuously supported flexible waterproof coverings — Code of practice*

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*

BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*

BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*

BS EN 13501-5 : 2016 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roof tests*

DD CEN/TS 1187 : 2012 *Test methods for external fire exposure to roofs*

EN 13707 : 2013 *Flexible sheets for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics*

### 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.