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Agrément Certificate  
**91/2728**  
Product Sheet 1

### *hertalan* ROOF WATERPROOFING SYSTEMS

### *hertalan* EASY COVER AND EASY WELD EPDM ROOF WATERPROOFING SYSTEMS

#### PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to *hertalan* easy cover and easy weld EPDM Roof Waterproofing Systems, for use on limited access roofs.

#### AGRÉMENT 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 product and joints in the product, when completely sealed and consolidated, will resist the passage of moisture to the interior of the building (see section 5).

**Properties in relation to fire** — results of tests indicate that the systems will enable a roof to be unrestricted under the Building Regulations (see section 6).

**Resistance to wind uplift** — when correctly specified, the systems will resist the effects of any wind suction likely to occur in practice (see section 7).

**Resistance to foot traffic** — the systems will accept the limited foot traffic and loads associated with the installation and maintenance of the systems without damage (see section 8).

**Durability** — under normal service conditions, the systems will provide a durable waterproof covering with a service life of at least 20 years (see section 10).

The BBA has awarded this Agrément Certificate to the company named above for the systems described herein. The systems 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

Simon Wroe  
Head of Approvals — Materials

Greg Cooper  
Chief Executive

Date of First issue: 29 April 2010

Originally certified on 26 November 1991

*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, *hertalan* easy cover and easy weld EPDM Roof Waterproofing Systems if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



## The Building Regulations 2000 (as amended) (England and Wales)

Requirement:	B4(2)	External fire spread
Comment:		Test data to BS 476-3 : 1958 indicate that on suitable substructures the use of the systems will enable a roof to be unrestricted under this Requirement. See sections 6.1 to 6.3 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		Data examined for water resistance on the membrane, including joints, indicate that the material meets this Requirement. See section 5.1 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The systems are acceptable. See section 10 and the <i>Installation</i> part of this Certificate.



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

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The systems can contribute to a construction meeting this Regulation. See sections 9, 10 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	2.8	Spread from neighbouring buildings
Comment:		Test data to BS 476-3 : 1958 indicate that the systems when applied to a non-combustible substrate, can be regarded as having low vulnerability under clause 2.8.1 <sup>(1)(2)</sup> of this Standard. See sections 6.1 to 6.3 of this Certificate.
Standard:	3.10	Precipitation
Comment:		Tests for water resistance of the systems indicate that the use of the systems will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1 <sup>(1)(2)</sup> and 3.10.7 <sup>(1)(2)</sup> . See section 5.1 of this Certificate.
Regulation:	12	Building standards – conversions
Comment:		All comments given for the systems under Regulation 9 also apply to this Regulation, with reference to clause 0.12 <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) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The systems are acceptable. See section 10 and the <i>Installation</i> part of this Certificate.
Regulation:	B3(2)	Suitability of certain materials
Comment:		The systems are acceptable. See section 9 of this Certificate.
Regulation:	C4(b)	Resistance to ground moisture and weather
Comment:		Tests for water resistance of the systems, including joints, indicate that the use of the systems will enable a roof to satisfy the requirements of this Regulation. See section 5.1 of this Certificate.
Regulation:	E5(b)	External fire spread
Comment:		Test data to BS 476-3 : 1958 indicate that on suitable substructures, the use of the systems will enable a roof to be unrestricted under the requirements of this Regulation. See sections 6.1 to 6.3 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* (1.2) and the *Installation* part of this Certificate.

# Non-regulatory Information

## NHBC Standards 2008

NHBC accepts the use of the use of *hertalan* easy cover and easy weld EPDM Roof Waterproofing Systems, when installed and used in accordance with this Certificate, as meeting Technical Requirement R3 in relation to NHBC Standards Chapter 7.1 *Flat roofs and balconies*.

This Certificate is a Confirmation of Dutch Agrément K4276/03 issued by KIWA BV, Sir Winston Churchilllaan 273, Postbus 70, 2280 AB Rijswijk in the Netherlands, to Hertel BV Industrieweg 16, 8263 AD Kampen, The Netherlands.

## Technical Specification

### 1 Description

1.1 *hertalan* easy cover and easy weld EPDM Roof Waterproofing Systems comprise a range of *hertalan* EPDM membranes, adhesives, sealant and flashing. The membranes are manufactured by blending ethylene-propylene-diene monomer (EPDM), processing oils, fillers and other additives. The sheets are produced by feeding the mix through a roller-head extruder before vulcanisation.

1.2 The membranes available for use in the systems are:

- *hertalan* easy cover — unreinforced, vulcanised, EPDM membrane available in rolls. The membrane is also available prefabricated in sections
- *hertalan* easy cover FR — a fire-resistant, unreinforced, vulcanised EPDM membrane available in rolls. The membrane is also available prefabricated in sections
- *hertalan* easy weld basic — a fire-resistant, unreinforced, vulcanised EPDM membrane provided with an alternating top and bottom TPE welding band along the edges of the membrane
- *hertalan* easy weld MF — a fire-resistant, unreinforced, vulcanised EPDM membrane provided with an alternating top and bottom TPE welding band along the edges of the membrane. The TPE welding strip is positioned especially for mechanically fixed applications.

1.3 The membranes are manufactured with the nominal characteristics shown in Table 1.

Table 1 Nominal characteristics

Characteristic (units)	Membrane type			
	easy cover	easy cover FR	easy weld basic	easy weld MF
Thickness (mm)	1.2, 1.3, 1.5, 2.0	1.2, 1.5	1.3, 1.5	1.3, 1.5
Width (m)	1.4	1.4	1.4	1.4, 0.7
Length <sup>(1)</sup> (m)	20	20	20	20
Roll weight (kg)	38, 41, 48, 65	44, 55	44, 51	44, 51, 22, 26

(1) Other prefabricated membranes up to 300 m<sup>2</sup> are available to order.

1.4 Other materials used with *hertalan* easy cover and easy weld membranes include:

- *hertalan* ks137 — adhesive for lap jointing *hertalan* EPDM membranes and/or flashing
- *hertalan* ks143 — adhesive for adhering *hertalan* EPDM membranes to other substrates, eg concrete, wood, polyurethane insulation, polystyrene insulation (with suitable solvent-resistant facing) and bitumen sheeting
- *hertalan* sealant (cement) ks87 — an EPDM-based paste lap sealant, applied by caulking gun, used for sealing seams, overlaps made at T-crossings, finishing difficult overlaps in corners and for finishing splices
- *hertalan* S — a 200 mm wide EPDM strip for application over mechanical fixings
- *hertalan* easy weld CS strips — weldable strip for covering mechanical fixings and butted joints
- *hertalan* ks205 — sprayable contact adhesive for adhering *hertalan* EPDM membranes to wood, insulation boards and bitumen felts
- *hertalan* ks96 — adhesive for adhering *hertalan* EPDM membranes to wood, concrete (non-porous), fibre cement and insulation boards
- *hertalan* flashing — a non-vulcanised EPDM strip material that can be moulded in place with hot air and bonded with ks137 for non-standard applications. The flashing cures slowly under atmospheric conditions.

1.5 Quality control checks are carried out during production and on the finished product.

### 2 Delivery and site handling

2.1 The membranes are delivered to site either in rolls shrink-wrapped in polythene on a pallet, or as prefabricated sheets packed in polyester matting, stacked on a pallet, and then shrink wrapped in polythene. Rolls and sheets carry labels bearing the product's name, dimensions, manufacturer's name and the BBA identification mark incorporating the number of this Certificate.

2.2 EPDM membranes do not require any particular storage conditions, but *hertalan* flashing should be stored in a clean, dry area and at temperatures between 5°C and 10°C. It cures gradually and therefore should not be stored for more than three months. With curing, the flexibility reduces and, though the waterproofing characteristics are retained, forming details becomes progressively more difficult.

2.3 Materials classified under *The Chemicals (Hazard Information for Packaging and Supply) Regulations 2009* (CHIP4) are detailed in Table 2.

2.4 Sealants and adhesives should be stored in a dry, ventilated area in temperatures between 5°C and 25°C and isolated from potential ignition sources. Site storage of these products should not exceed six months.

Table 2 Flashpoint and hazard classification

Materials	Flashpoint (°C)	Classification
<i>hertalan ks137</i>	-18	Highly Flammable, Irritant, Dangerous for the environment
<i>hertalan ks143</i>	-18	Harmful, Highly Flammable, Dangerous for the environment
<i>hertalan sealant (cement) ks87</i>	>100	Harmful
<i>hertalan ks205</i>	-19	Highly Flammable, Irritant, Dangerous for the environment

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on *hertalan* easy cover and easy weld EPDM Roof Waterproofing Systems.

### Design Considerations

#### 3 Use

3.1 *hertalan* easy cover and easy Weld EPDM Roof Waterproofing Systems are satisfactory for use as:

- a loose-laid and ballasted waterproofing layer, fully adhered at edges and upstands, on flat roofs
- a partially adhered or fully adhered waterproofing layer, fully adhered at edges and upstands, on flat and pitched roofs with limited access
- a loose-laid system to the inverted roof concept, fully adhered at edges and upstands, on flat roofs with limited access
- mechanically fixed waterproof layer, fully adhered at edges and upstands, on flat roofs with limited access.

3.2 For ballasted installations, where the slope of the roof is over 3° precautions should be taken to minimise the loss of ballast. The advice of the Certificate holder should be sought.

3.3 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, etc. Where traffic in excess of this is envisaged, special precautions, such as additional protection to the membrane, must be taken.

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

3.5 Decks to which the membrane is to be applied must comply with the relevant requirements of BS 6229 : 2003, BS 8217 : 2005 and, where appropriate, *NHBC Standards 2008*, Chapter 7.1.

3.6 Insulation systems or materials used in conjunction with the membrane must be approved by the Certificate holder and either:

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

3.7 Contact between certain insulation materials and *hertalan ks143* or *ks205* must be avoided and the Certificate holder consulted for advice.

3.8 Contact with low-grade bitumen, coal tar and oil-based products should be avoided. If contact with such products is likely, a separating layer should be interposed before installing the waterproof sheet. If the compatibility with other products is in doubt, the advice of the Certificate holder should be sought.

#### 4 Practicability of installation

Installation of the systems must only be carried out by contractors trained and approved by the Certificate holder.

#### 5 Weathertightness

5.1 Results of test data confirm that the membrane, and joints in the product, when completely sealed and consolidated, will adequately resist the passage of moisture to the inside of the building and so meet the requirements of the following national Building Regulations (see *Technical Investigations* section, Table for *Physical properties — general*):

**England and Wales** — Approved Document C, Requirement C2(b), Section 6

**Scotland** — Mandatory Standard 3.10, clauses 3.10.1 and 3.10.7

**Northern Ireland** — Regulation C4(b).

5.2 The systems are impervious to water and, when used as described in this Certificate, will give a weathertight roof capable of accepting minor structural movement without damage, see *Technical Investigations* section, Table for *Physical properties — general*.

## 6 Properties in relation to fire



6.1 An analysis of test data results indicate that *hertalan easy cover* EPDM membrane, fully adhered to a plywood substrate, would achieve a rating of EXT.F.AC when tested in accordance with BS 476-3 : 1958.

6.2 When used in a loose-laid and ballasted specification including a minimum surface finish of 50 mm of aggregate, the membrane shall be deemed to satisfy BS 476-3 : 1958 designation EXT.F.AA.

6.3 The designation of other specifications (eg on combustible substrates) should be confirmed by:

**England and Wales** — Test or assessment in accordance with Approved Document B, Appendix A, clause A1

**Scotland** — Tests to conform to Mandatory Standard 2.8, clause 2.8.1

**Northern Ireland** — Test or assessment by a UKAS accredited laboratory or an independent consultant with appropriate experience.

## 7 Resistance to wind uplift

7.1 When fully or partially bonded, the adhesion of the membrane is sufficient to resist the effect of wind suction and minor structural movement likely to occur in practice. However, in areas of high-wind exposure, consideration should be given regarding the use of additional protection.

7.2 When the membrane is bonded to insulation boards, the resistance to wind uplift will be dependent on the cohesive strength of the insulation and the method by which it is secured to the roof deck. This should be taken into account when the insulation material is selected.

7.3 In mechanically fixed specifications, the resistance to wind uplift of the membrane is provided by mechanical fasteners secured to the deck, passing through the membrane and secured into the deck. 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.

7.4 The number of fixings used should be established by reference to the wind uplift forces calculated in accordance with BS EN 1991-1-4 : 2005 and the National Annex on the basis of the maximum permissible loads for mechanically fixed specifications as:

<i>hertalan easy cover</i> membrane (fixed through the membrane)	648
<i>hertalan easy cover</i> membrane (fixed through prefabricated flap)	504
<i>hertalan easy weld</i> membrane (fixed in the seam)	388

7.5 When installing the membranes in loose-laid and ballasted specifications, the precise ballast requirements should be calculated in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and the National Annex, but should not be below the minimum thickness of 50 mm. In areas of high-wind exposure the use of concrete slabs placed on suitable paving slabs should be considered. Advice on additional protection is available from the Certificate holder.

## 8 Resistance to foot traffic

Results of test data indicate that the membranes can withstand, without damage, the limited foot traffic and light concentrated loads associated with the installation and maintenance operations. Reasonable care should be taken, however, to avoid sharp objects or concentrated loads. Where regular traffic is envisaged, ie maintenance of lift equipment, etc, a walkway should be provided using concrete slabs supported on bearing pads in accordance with the Certificate holder's instructions.

## 9 Maintenance



Roofs covered with the systems should be the subject of an annual inspection, as is good practice with waterproofing systems, to ensure continued security and performance, especially those roofs without ballast.

## 10 Durability



Accelerated weathering test results confirm that satisfactory retention of physical properties is achieved. Available evidence indicates that the systems should have a service life of at least 20 years, see *Technical Investigations* section, Tables for *Physical properties — directional* and *Jointing system*.

## 11 General

11.1 The installation of *hertalan easy cover* and easy weld EPDM Roof Waterproofing Systems must be carried out in accordance with the manufacturer's fixing instructions and this Certificate.

11.2 Conditions for installation on site should be those for normal roof waterproofing work. Deck surfaces must be dry, clean, and free from sharp projections such as nail heads and concrete nibs.

11.3 Installation should not be carried out during wet or damp weather conditions or at temperatures below 5°C. The fully adhered system must not be installed at temperatures below 5°C because of the risk of condensation contaminating the bonding adhesive.

11.4 Where contact with coal tar or oil-based products is likely, an isolating layer must be interposed between the product and the substrate. Where contact with bituminous products is likely, consideration should be given to the use of an isolating layer, and the advice of the manufacturer should be sought.

11.5 Where appropriate, sheets may be prefabricated prior to application to reduce the amount of on-site lap jointing.

11.6 In mechanically fixed applications only fasteners approved by the Certificate holder must be used.

11.7 All detailing and flashing must be carried out in accordance with the manufacturer's instructions.

11.8 The membrane is applied at edges and at upstands and must be fully bonded using *hertalan ks137* or *hertalan ks205* adhesive.

## 12 Procedure

### Loose-laid and ballasted application

12.1 The membrane is unrolled onto the substrate and fully adhered at perimeters. Flashing and lap jointing must be carried out in the manner described in section 13.

12.2 Loose-laid applications should be covered by at least 50 mm of well-rounded gravel (15/30 grade minimum). When rounded gravel is used, all edges and corners should be ballasted with concrete tiles, minimum thickness 60 mm, on bearing pads, to a distance of two metres from the perimeter to avoid damage to the membrane due to wind uplift.

12.3 Alternatively, concrete paving, minimum thickness of 40 mm, on bearing pads can be used as a ballast.

12.4 When using a loose-laid application, normal account should be taken in the design of the deck of the extra dead loading due to the weight of the aggregate and/or paving.

### Partially bonded application

12.5 The application of *hertalan ks143* or *hertalan ks205* must not be used directly onto insulation materials that will be adversely affected by the solvent in the adhesive. Where doubt arises about compatibility, the advice of the manufacturer or marketing company should be sought.

12.6 For partially bonding, *hertalan ks143* is applied as parallel beads approximately 8 mm diameter placed every 80 mm in a striped pattern resulting in an application rate between 200 g·m<sup>-2</sup> and 225 g·m<sup>-2</sup>.

12.7 The adhesive should be allowed to dry for between 5 minutes and 20 minutes, depending on ambient conditions before the membrane is applied to the substrate by unrolling and ensuring good contact with the adhesive, confirming it is free from wrinkles and trapped air.

12.8 For a satisfactory application at least 50% of the total area of membrane must be bonded.

12.9 Laps must be sealed and flashing installed as described in section 13.

### Fully bonded application

12.10 For fully bonded application using *hertalan ks143*, the adhesive is evenly applied to the substrate by roller at an application rate of between 300 g·m<sup>-2</sup> and 350 g·m<sup>-2</sup> and allowed to dry for between 5 minutes and 20 minutes, depending on the ambient weather conditions, before application of the membrane.

12.11 For fully bonded application using *hertalan ks205*, the adhesive is applied to both the substrate and the membrane at an application rate of 150 g·m<sup>-2</sup> on each surface and allowed to become touch dry.

12.12 The membrane is then carefully positioned and applied to the substrate avoiding the formation of folds, wrinkles and air voids.

12.13 For a satisfactory application at least 90% of the total area of the membrane must be bonded.

12.14 Laps must be sealed and flashing installed as described in section 13.

### Mechanically fixed application

#### *hertalan easy cover fixed through the membrane*

12.15 The membrane is rolled out on the roof and after orientation allowed to relax for at least 45 minutes.

12.16 The membrane is then fixed using mechanical fasteners approved by the Certificate holder fixed through the membrane and sealed using strips of *hertalan S* bonded with *hertalan ks137* and sealed with *hertalan ks87*. Alternatively the fasteners can be sealed by welding strips of *hertalan easy weld* at least 120 mm wide.

12.17 The number of fasteners must be determined by calculation as described in section 7.2, and spaced at equal centres.

#### ***hertalan easy cover fixed through 'secret flaps'***

12.18 In this instance the membrane is prefabricated with flaps that appear when the membrane is unrolled on the roof.

12.19 The membrane is unfolded, laid out on the roof and allowed to relax for at least 45 minutes.

12.20 Starting with the end to be fixed last, the membrane is rolled onto a pipe with a diameter between 50 mm and 70 mm.

12.21 The membrane is unrolled in the direction of the fall revealing the fixing flaps.

12.22 The fasteners must be placed as near as possible to the hot bonded joint.

12.23 Edges are fixed using *hertalan ks137* or *hertalan ks205* in accordance with the Certificate holder's instructions.

12.24 When it is necessary to join the membrane, the edges of the sheets to be joined are butted together and covered with either a 200 mm wide adhered *hertalan S* strip or a 150 mm wide *hertalan easy weld* strip. The membrane can also be joined by making a lap joint using *hertalan ks137* and sealed with *hertalan ks87*.

#### ***hertalan easy weld MF membrane***

12.25 The first sheet of membrane is positioned and fastened in the seam area of the sheet using suitable fixings recommended by the Certificate holder.

12.26 The number of fasteners must be determined by calculation as described in section 7.2.

12.27 The next sheet of membrane is then placed and held in position with spot welds.

12.28 At T-seams a strip of TPE must be used to fill the void due to level variations between the membrane sheets.

12.29 When correctly positioned the seams must be fully sealed and edges fixed as described in 12.23.

12.30 The soundness of the seams must be confirmed using a blunt awl.

## **13 Details**

### **Standard seaming procedure**

13.1 At laps, the top sheet should be folded back by about 100 mm, both surfaces of the lap must be clean and dry, and if necessary surfaces should be cleaned using a suitable cleaning agent recommended by the Certificate holder, then *hertalan ks137* should be applied to both sides over a width of 80 mm, leaving the outer 20 mm free, by brush to give an even coverage, and allowed to dry to the touch (5 to 10 minutes). The top sheet should then be allowed to fall freely onto the bottom sheet, avoiding stretching and wrinkling. The width of the lap joint should be a minimum of 100 mm.

13.2 The lap should then be rolled with a steel roller parallel to the splice to consolidate the joint. After checking that a good seal has been achieved, the remaining 20 mm should be filled with a continuous bead of *hertalan ks87*. This bead should be rolled down, making it flush with the lap joint so that the sealant is at least 1 mm thick.

13.3 Excess sealant should be removed using a suitable cleaning agent.

### **Flashing**

13.4 Concurrently with the installation of the membrane, the flashing should be applied. It should first be bonded to the horizontal membrane and lapped in the manner described in sections 13.1 and 13.2, with a minimum lap of 100 mm.

13.5 The flashing should be bonded with *hertalan ks137* to the vertical surface of the wall.

13.6 For specific flashing requirements *hertalan* flashing can be used. The flashing (non-vulcanised) can be moulded in place using hot air, and bonded with *hertalan ks137*. The flashing cures slowly over a period of time under atmospheric conditions.

## **14 Repair**

In the event of accidental damage, repairs can be carried out by cleaning the area around the damage and applying a patch of *hertalan* in the manner described in sections 13.1 and 13.2.

## 15 Tests

The results of tests on *hertalan* 1.2 mm membrane assessed by KIWA BV are given in Tables 3 and 4.

*Table 3 Physical properties — general*

Test (units)	Mean results		Method
	Longitudinal	Transverse	
Resistance to impact (mm)	10		EN 12691
Resistance to static loading (kg)	25		EN 12730
Resistance to root penetration	Pass		FLL Procedure
Hail resistance (m·s <sup>-1</sup> )			EN 13583
hard substrate	17		
soft substrate <sup>(1)</sup>	37		
Low temperature foldability (°C)	≤ -70		EN 495-5
Peel strength of joints (N per 50 mm) <sup>(2)</sup>			EN 12316-2
control	39		
water soak <sup>(3)</sup>	79		
heat aged <sup>(4)</sup>	77		
Shear strength of joints (N per 50 mm) <sup>(2)</sup>			EN 12317-2
control			
+20°C	282		
-20°C	552		
+80°C	158		
heat aged <sup>(4)</sup>			
+20°C	340		
-20°C	656		
+80°C	154		
water soak <sup>(3)</sup>	332		
Water absorption (%)	1.56		MOAT 66 (4.3.13)

(1) Polystyrene of density 30 kg·m<sup>-3</sup>.

(2) *ks137/ks87* adhesive/sealant.

(3) 7 days in water at 60°C.

(4) 28 days at 80°C.

*Table 4 Physical properties — directional*

Test (units)	Mean results		Method
	Longitudinal	Transverse	
Tensile strength (N·mm <sup>-2</sup> )			EN 12311-2
control	8.73	8.64	
heat aged <sup>(1)</sup>	9.74	8.60	
Elongation at break (%)			EN 12311-2
control	483	531	
heat aged <sup>(1)</sup>	427	414	
Low temperature foldability (°C)			EN 495-5
control	-70	-70	
UV exposure <sup>(2)</sup>	-70	-70	
contact with bitumen <sup>(3)</sup>	-65	-	
Dimensional stability (%)	-0.08	-0.05	EN 1107-2
Tear strength (N)	47	36	EN 12310-2

(1) 168 days at 70°C.

(2) 1000 hours QUV.

(3) In contact with bitumen for 28 days at 80°C.

## 16 Investigations

16.1 The manufacturing processes were examined, including methods of quality control. Details were also obtained of the quality and composition of the materials used.

16.2 Existing data on fire performance to BS 476-3 : 1958 of the product were examined.

16.3 Data supporting the issue of Dutch Agrément K4276/03 issued by KIWA BV was examined including:

- resistance to wind loading of fully bonded and partially bonded systems using *hertalan ks143* and mechanically fixed systems
- peel adhesion of systems bonded with *hertalan ks205*.



## Bibliography

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- BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*
- BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*
- EN 495-5 : 2000 *Flexible sheets for waterproofing — Determination of foldability at low temperature — Plastic and rubber sheet for roof waterproofing*
- EN 1107-2 : 2001 *Flexible sheets for waterproofing — Determination of dimensional stability — Plastic and rubber sheet for roof waterproofing*
- BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*
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- EN 12311-2 : 2000 *Flexible sheets for waterproofing — Determination of tensile properties — Plastic and rubber sheets for roof waterproofing*
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- EN 12317-2 : 2000 *Flexible sheets for waterproofing — Determination of shear resistance of joints — Plastic and rubber sheets for roof waterproofing*
- EN 12691 : 2006 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to impact*
- EN 12730 : 2001 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of resistance to static loading*
- EN 13583 : 2001 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of hail resistance*
- MOAT No 66 : 2001 *UEAtc Technical Guide for the assessment of non-reinforced, reinforced and/or Backed Roof Waterproofing Systems made of EPDM*

## 17 Conditions

17.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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.

17.2 Publications and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

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

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- remain covered by a valid Dutch Agrément; and
- are reviewed by the BBA as and when it considers appropriate.

17.4 In granting this Certificate, the BBA is not responsible for:

- 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
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

17.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does 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; 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. 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 manufacture, supply, installation, use and maintenance of this product/system.

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