

# Substructure Waterproofing - Membranes

## Bituthene® 4000 / 4000S

### Self-adhesive HDPE waterproofing membrane with enhanced bonding characteristics

#### Description

Bituthene® 4000/ 4000S is a flexible waterproof membrane combining a high performance cross laminated, HDPE carrier film with a unique super sticky self-adhesive rubber bitumen compound.

#### Installation

At air temperatures below +5°C measures should be taken to ensure that all surfaces are free from ice or frost.

All surfaces except those below ground bearing slabs and Preprufe® R membranes should be primed with one coat of Grace's water-based primer - Bituthene Primer W2, which is suitable for use on damp surfaces. Bituthene Primer W2 can be applied by brush or roller.

Alternatively, if time is critical, Grace's solvent based primer - Bituthene Primer S2, which can be used to allow priming and installation of membrane on damp surfaces or "green" concrete. Bituthene Primer S2 can be applied by brush or roller.

The drive for continual improvements in performance may result in product modifications. Your Grace representative will be able to provide up-to-date advice.

Bituthene 4000/ 4000S shall be laid by peeling back the protective release paper and applying the adhesive face onto the prepared surface, free from ice, frost, condensation or any contaminants which could adversely effect adhesion. Once the membrane is applied, cover with a protection board as soon as possible. On "green" concrete or damp surfaces, cover the membrane immediately.

Bituthene LM to be applied at all internal and external corners, penetrations etc. prior to applying the overall membrane.

Bituthene 4000/ 4000S should be brushed onto the surface to ensure good initial bond and exclude air. Adjacent rolls are aligned and overlapped 50 mm minimum at side and ends and well rolled with a firm pressure, using a lap roller to ensure complete adhesion and continuity between the layers. On high walls it may be necessary to batten fix the membrane to prevent slippage.

#### Repairs, Protection & Drainage

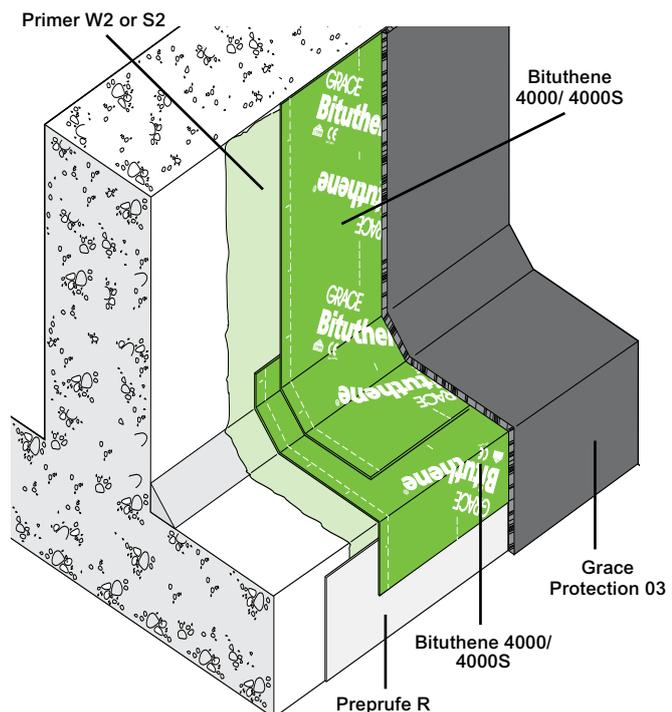
- Damaged areas to be repaired with an oversize patch applied to a clean dry surface extending 100 mm beyond damage and firmly rolled.
- The membrane should be protected against damage using Grace Protection 03 boards bonded to the membrane using Bitustik 4000 double sided tape or Pak Adhesive and firmly rolled.
- If the area around the substructure can be drained to a low level outlet then Grace recommends the Hydroduct range of drainage membranes.

#### Performance

Bituthene 4000/ 4000S complies with the following national standards: BS 8102: 2009, The Building Regulations (as amended) (England and Wales) 2000, The Building Regulations (Northern Ireland) 2000 (as amended), Building Standards (Scotland) Regulations 2004 (as amended).

#### Advantages

- **Cold applied** - simple application to substrates especially at low temperatures.
- **Suitable for application to "green" concrete** - reduces programme schedules.
- **Moisture tolerant primer system** - allows application in damp or marginal weather conditions.
- **Wide application temperature range** - excellent bond to self and substrate from -5°C to +35°C.
- **Overlap security** - enhanced-bond provides additional security.
- **Cross laminated high density polyethylene carrier film** - provides high tear strength, puncture and impact resistance.
- **Flexible** - accommodates concrete shrinkage cracks.
- **Gas resistant** - methane, carbon dioxide and radon gas protection in excess of the standard membrane requirements in BRE Reports 211 (radon) and 212 (methane and carbon dioxide).



Details shown are typical illustrations only and not working drawings. For assistance with working drawings and additional technical advice please contact Grace Technical Services



## Supply

<b>Bituthene® 4000/ 4000S</b>	1 m x 20 m roll (20 sq m) Weight 36 kg
Storage	Store upright in dry conditions below +30°C
<b>Bituthene® Primer W2</b>	5 litre can
Coverage	9-11 sq m per litre approx.
<b>Bituthene® Primer S2</b>	5 & 20 litre can
Coverage	10-12 sq m per litre (depending upon method of application, surface porosity and ambient temperature)
<b>Ancillary Products</b>	
Bituthene® LM	5.7 litre packs
Grace® Protection 03 boards	3mm x 0.9m x 2.03m (± 6%)
Adcor® 500S	6 x 5 m rolls
Adcor® 550MI	8 x 5 m rolls
Bitustik™ 4000	150 mm x 12 m roll
Pak Adhesive	5 litre can
Hydroduct®	Refer to Hydroduct Vertical Drainage Sheets datasheet.

Equipment by others: Lap Roller

 0836	<b>Grace Construction Products Ltd</b> Ipswich Road, Slough, Berkshire SL1 4EQ United Kingdom 06 06/F017
	<b>EN 13967</b> Bituthene® 4000/4000S Flexible Sheets for Waterproofing, Type T Reaction to fire: E Watertightness: Pass at 60 kPa

## Health and Safety

There is no legal requirement for a Material Safety Data Sheet for Adcor 500S, Adcor 550MI, Bituthene 4000/4000S, Grace Protection Boards, Bitustik or Hydroduct. Refer to product carton for additional safety information. For health and safety questions on these products please contact Grace Construction Products Limited.

For Bituthene Primer W2, Bituthene Primer S2 and Bituthene LM read the product label and Material Safety Data Sheet (MSDS) before use. Users must comply with all risk and safety phrases. MSDS's can be obtained from Grace Construction Products.

## Specification Clause

Refer to Clause 180 and 190.

## Physical Properties

Property	4000	4000S	Test Method
Colour	Dark grey-black	Dark grey-black	
Application Temp.	-5°C to 20°C	+5°C to 40°C	
Resistance to hydrostatic head	>70 m of water	>70 m of water	ASTM D5385
Methane Permeability (note 1)	113.14 ml/m <sup>2</sup> .day.atm	114.30 ml/m <sup>2</sup> .day.atm	Versaperm Ltd
Radon Diffusion Coefficient	2.3 x 10 <sup>-11</sup> m <sup>2</sup> /s	1.1 x 10 <sup>-11</sup> m <sup>2</sup> /s	University of Prague

Note 1: Typical value for BRE recommended minimum standard (BRE Report 212) is 360 ml/m<sup>2</sup>/day.

## Declared values according to EN 13967

Property	Declared Value		Test Method	Property	Declared Value		Test Method
	4000	4000S			4000	4000S	
<b>Bituthene</b>				<b>Bituthene</b>			
<b>Visible defects - MDV</b>	No	No	EN 1850-2	<b>Straightness - MDV</b>	Pass	Pass	EN 1848-2
<b>Length (m) - MDV</b>	20.15 ± 0.15	20.15 ± 0.15	EN 1848-2	<b>Thickness (mm) - MDV</b>	1.52 ± 0.08	1.52 ± 0.08	EN 1849-2
<b>Width Carrier Sheet (m) - MDV</b>	0.987 ± 0.007	0.987 ± 0.007	EN 1848-2	<b>Mass per unit area (g/m<sup>2</sup>) - MDV</b>	1510 ± 90	1490 ± 90	EN 1849-2
<b>Width Overall (roll) (m) - MDV</b>	1.000 ± 0.005	1.000 ± 0.005	EN 1848-2	<b>Durability of water tightness against ageing/degradation (at 60 kPa)</b>	Pass	Pass	EN 1296 EN 1928 Method B
<b>Water tightness to liquid water (at 60 kPa)</b>	Pass	Pass	EN 1928	<b>Durability of water tightness against chemicals (at 60 kPa)</b>	Pass	Pass	EN 1847 Method B EN 1928 Method B
<b>Resistance to impact (A-board) (mm) - MLV</b>	150 - Pass	150 - Pass	EN 12691	<b>Durability of tensile properties against chemicals</b>	Pass	Pass	EN 13967 Annex C
<b>Resistance to impact (base EPS) (mm) - MLV</b>	1000 - Pass	1000 - Pass	EN 12691	<b>Compatibility with bitumen</b>	Pass	Pass	EN 1548
<b>Resistance to tearing (Nail Shank) - unreinforced sheets (N) - MLV</b>	Long <sup>1</sup> 120 Trans <sup>2</sup> 130	Long <sup>1</sup> 120 Trans <sup>2</sup> 130	EN 12310-1	<b>Resistance to static loading</b>	Pass	Pass	EN 12730
<b>Joint strength (N/50mm) - MLV</b>	155	185	EN 12317-2	<b>Tensile properties - unreinforced sheets (N/6mm) - MLV</b>	Long <sup>1</sup> 18 Trans <sup>2</sup> 25	Long <sup>1</sup> 18 Trans <sup>2</sup> 25	EN 12311-2 Method B
<b>Water vapour transmission (μ= sD/d) - MDV</b>	110.000 ± 30%	140.000 ± 30%	EN 1931 Method B	<b>Tensile properties - unreinforced sheets (Elongation %) - MLV</b>	Long <sup>1</sup> 150 Trans <sup>2</sup> 40	Long <sup>1</sup> 150 Trans <sup>2</sup> 40	EN 12311-2 Method B
<b>Resistance to deformation under load</b>	NPD <sup>5</sup>	NPD <sup>5</sup>	EN 13967 Annex B	<b>Reaction to fire (Class; test conditions)</b>	E	E	EN 13501-1

**Footnotes:** 1. Longitudinal - related to the roll direction 2. Transversal - related to the roll direction  
3. MDV: Manufacturer Declared Value 4. MLV: Manufactured Limiting Value 5. NPD: No Performance Declared

All declared values shown in this data sheet are based on test results determined under laboratory conditions and with the product sample taken directly from stock in its original packing without any alteration or modification of its component parts.

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