Method Statement / Specification

Bituthene 3000 – Post-Applied Below Grade Waterproofing

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| --- | --- |
| **PREPARED FOR:** |  |
| **CONTRACT:** | Installation of allnex construction products;**Bituthene 3000**Project:  |
| **DATE:** | April 2023 |
| **SCOPE:** | Product DescriptionRelated WorkDocumentsManufacturer / Supplier documentsManufacturer / Supplier Contact DetailsSystem ComponentsArea of UseLimitations of UseWarrantiesQualification of ApplicatorsPre-Install MeetingSafety & HandlingStorageInstallation of MembraneSubstrate PreparationDetailingMembrane ApplicationInspection & repairs of Damaged MembraneMembrane ProtectionBackfilling OperationsFinal InspectionApplication RecordsInformation Required for Code ComplianceMembrane Physical PropertiesMembrane Supply Details |
| **PREPARED BY:** | Colin Nolanallnex construction productsPh - +64 3 366 6802Mob - +64 21 956 160Email - colin.nolan@allnex.com[www.allnexconstruction.com](http://www.allnexconstruction.com)  |
| **NOTES:** |  |

**Product Description**

BITUTHENE® 3000 is a high performance, self-adhesive, cold-applied, flexible, preformed waterproof membrane combining a special high performance cross-laminated HDPE carrier film with a unique self-adhesive rubber bitumen compound

**Related Work**

* *Refer to 3102 CONCRETE WORK -STANDARD  or 3121 CONCRETE PLACEMENT or relevant concrete section for concrete placement over tanking membrane.*
* *Refer to 7430 DRAINAGE or 7441 GROUNDWATER DRAINAGE for subsoil drainage and backfill to basement walls.*

**Documents**

The following documents can be referred to in this section:

|  |  |
| --- | --- |
| [NZBC E2](http://www.masterspec.co.nz/redirect.aspx?pl=347)/AS1 | External moisture |
| [*NZBC H1*](http://www.masterspec.co.nz/redirect.aspx?pl=258)*/AS1-AS2* | *Energy efficiency* |
| [*NZBC H1*](http://www.masterspec.co.nz/redirect.aspx?pl=258)*/VM1-VM2* | *Energy efficiency* |
| *BRANZ* | *Good practice guide - Concrete floors and basements* |
|  |  |

**Manufacturer/Supplier Documents**

 Manufacturer and supplier documents relating to this part of the work:
Bituthene®/ Preprufe® Detail Drawings
Bituthene®/ Preprufe® Install Method Statement (including checklists)
Bituthene®/ Preprufe® Products - Technical Data Sheets
Bituthene® BBA Certification - BBA 97/3325 21/9/2018
Preprufe® BBA Certification - BBA 97/3325 11/7/2018

 [BRANZ Appraisal 1158](http://www.masterspec.co.nz/redirect.aspx?pl=2433) - allnex construction products Damp Proof and Tanking Membranes

**Manufacturer/Supplier Contact Details**

|  |  |
| --- | --- |
| Company: | **allnex construction products** |
| Web: | www.allnexconstruction.com |
| Email: | csconstructionnz@allnex.com |
| Telephone: | 0508 882288 |
| Contact | Colin Nolan021 956 160colin.nolan@allnex.com |

*It is important to ensure that all personnel on site have access to accurate, up to date technical information on the many products, materials and equipment used on a project.  In most cases individual products are not used in isolation, but form part of a building process.  Also a particular manufacturer and/or supplier requirements for handling, storage, preparation, installation, finishing and protection of their product can vary from what might be considered the norm.  Access to technical information can help overcome this potential problem.*

**System Components:**

**Products include but may not be limited to:**

**BITUTHENE 3000** — 1.5mm thick self-adhesive membrane, supplied in roll form 1m wide x 20m long.

 Designed for use in applications below grade on basement walls and sub-structures, as a horizontal and vertical blind side waterproofing membrane.

**BITUTHENE B2 Primer** A rubber based primer for use over fully prepared substrates, Bituthene B2’s patented formulation promotes the adhesion of Bituthene membranes to green concrete and damp surfaces.

**BITUTHENE** Two part polyurethane for detail sealing around penetrations and piles and also forming internal **Liquid Membrane 3000** fillets.

**ADCOR 500 T** Preformed 20mm x 10mm hydrophilic waterstop for secondary waterproofing to construction joints, piles, pile caps, and around cast-in penetrations etc.. In concrete walls and floors.

**BITUSTICK 4000 TAPE** Double sided, self-adhesive bituminous tape for specialized membrane detailing.

**SWELLSEAL MASTIC WA** Hydrophilic mastic waterstop used as secondary waterproofing to construction joints, piles, pile caps, and around cast-in penetrations also used for detailing starter bars and forming hydrophilic water stops to rough concrete surfaces.

**ALUMINIUM TOP EDGE** Allnex9.2mm rebated aluminium strip to provide a straight top termination edge.

**TERMINATION STRIP**

**ALLNEX NPX** Membrane drainage and protection boards.

**Area of Use**

**Post-applied waterproofing membrane that is directly adhered to the structure for use below slabs or behind basement walls.**

**Limitations of Use**

Approved uses only include those uses specifically detailed in current Technical Data Sheets.

Bituthene 3000 should not be applied when the temperature is below -4º without consultation with the allnex construction products technical representatives.

**Warranty – Manufacturer / Supplier**

Provide a material manufacturer/supplier warranty:

|  |  |
| --- | --- |
| 20 years | For Bituthene 3000 Tanking Materials |

* Provide this warranty on the Allnex construction products Waterproofing Materials Warranty form
* Commence the warranty from the date of completion of installation of tanking

**Warranty – Installer / Applicator**

Provide an installer/applicator warranty:

|  |  |
| --- | --- |
| 5 years | For installation of Bituthene 3000 Tanking Materials |

* Provide this warranty on the installer/applicator standard form
* Commence the warranty from the date of practical completion of the contract works.

 Note – Modifications to all warranties must be in writing prior to the tanking installation.

**Qualification of Applicators**

Workers to be approved by allnex construction products.

*Contact allnex construction products for a list of approved applicators as required.*

**Pre-Installation Meeting**

Convene a meeting between the applicator, contractor, all associated consultants and allnex construction products to ensure all parties know what is required for effective performance of the system, prior to the tanking installation.

**Safety and Handling**

Users must read and understand the product label and Safety Data Sheets (SDS’s) for each system component before

use. All users should acquaint themselves with this information prior to working with the material. Carefully read

detailed precaution statements on the product labels and SDS’s before use. The most current SDS’s can be obtained

from the GCP web site at gcpat.com.

Minimum 2 person lift.

**Storage**

Observe 1 year shelf life and use on a first in first out basis

Store in dry conditions between 4.5°C - 32°C

Store off ground under tarps or otherwise protected from rain and ground moisture

Do Not Stack Pallets

**Installation**

Technical Support, Details and Technical Letters

The most up to date detail drawings and technical letters are available at gcpat.com.

For other technical advice, site visits contact allnex construction products technical team, 0508 88 22 88.

All detailing to be in accordance with allnex construction products & GCP Construction Solution standard details.

Where required, specific details must be requested and provided prior to proceeding with installation.

For complete application instructions, please refer to the current Literature on (www.gcpat.com). Documents in hardcopy as well as information found on websites other than www.gcpat.com may be out of date or in error. Before using this product it is important that information be confirmed by accessing www.gcpat.com and reviewing the most recent product information,

including without limitation Product Data Sheets, Technical Bulletins, Detail Drawings and detailing recommendations.

Please review all materials prior to installation of Bituthene 3000 system.

**SUBSTRATE PREPARATION - ALL**

**Pressure Rating**

Provide a written assurance to allnex construction products that the waterproofing system, comprising membrane and jointing methods, is capable of sustaining the designated water pressure head.

 *Where applicable confirm the designated water pressure head with the design engineer.
For applications where hydrostatic pressure is present, all details and specification to be reviewed by allnex construction products & GCP Construction Solutions*

**Acceptance of the Substrate**

Inspect substrate in its entirety, verify all details, penetrations and conditions comply with GCP/Allnex requirements prior to membrane installation.

Installation of the membrane indicates acceptance of substrate by installer.

**All surfaces**

Effective site dewatering is recommended, to provide dry conditions for membrane installation.

All substrates are to be sound and smooth

**SUBSTRATE PREPARATION**

**Concrete Substrate Quality**

Concrete provided to the waterproofing applicator to be of high, uniform quality, well compacted and finished by light steel trowel without burnishing.

Highly porous concrete may require patching, repair or additional priming to make good.

Burnished concrete may require diamond surface grinding to make good.

Concrete surfaces should be set to falls to ensure correct drainage.

Drainage outlets/puddle flanges should be set flush with or below the surface of surrounding concrete to allow correct drainage. Where screeds will be installed, drainage outlets employed must allow full drainage of the area both above and below the screed.

**Verify Concrete Cure**

New concrete shall be cured for a minimum 28 days before commencing preparation or application of GCP products, OR to a maximum moisture content of 5.0%. Depending on ambient conditions, concrete thickness, structural design, concrete mix design etc, a 5.0% concrete moisture content may require 7 to 21 days cure time.

**Verify Substrate Moisture Content**

Prior to application of primer or membrane, internal slab/masonry humidity content shall be tested in accordance with ASTM F2170 or an equivalent New Zealand Standard (NZ/AS) test method, using a commercially available impedance-based moisture meter, calibrated specifically for concrete testing, such as a Tramex CMEX II moisture meter.

For moisture contents greater than 5.0%, consult the allnex / GCP Technical department for advice, or allow additional time for substrate drying.

**PREPARE SUBSTRATE SURFACE**

**Concrete Substrates**

Remove all traces of chemicals, dirt, dust, concrete residue, laitance, curing compounds, oil, grease, paint and other contaminants from the concrete substrate by an appropriate method. This may include, brooming, vacuuming, scraping, water blasting (4000 psi with rotor jet head), captive sand blasting or surface grinding.

Repair substrate defects greater than 12mm in size, including voids, honeycombing, bug hole’s and pinholes using high strength (minimum 25 MPa), low shrinkage, polymer modified cementitious repair or fairing compounds. Allow all repairs to cure fully.

Fill small defects less than 12mm in size using BITUTHENE® Liquid Membrane or high strength repair mortar. Allow all repairs to cure fully, or a minimum 24 hours.

Allow cured concrete and repairs to dry to below 5.0% moisture content.

Chamfer or radius (minimum 15mm) all external corners receiving BITUTHENE® membrane.

Where concrete shrinkage cracks or shrinkage at construction joints, greater than 1.0mm is evident, square cut chase the crack a minimum 8mm x 8mm. Clean chase to remove all loose dirt, dust and concrete waste

**Other Masonry Substrates**

Remove all traces of chemicals, dirt, dust, concrete residue, oil, grease and other contaminants from the substrate by an appropriate method. This may include, vacuuming, scraping, water blasting (4000 psi with rotor jet head) or surface grinding.

Repair substrate defects and flush point blockwork using high strength (minimum 25 MPa), low shrinkage, polymer modified cementitious repair or fairing compounds.

Allow repairs to dry to below 5.0% moisture content.

**Metal Substrates**

Remove all traces of dirt, dust, oil, grease and other contaminants. Remove completely all corrosion and oxides from steel, aluminium, zinc/galvanising copper etc. and roughen surface by mechanical abrasion. For stainless steel substrates, please consult the allnex / GCP technical department for advice.

Note - Immediately prior to primer application, abrade steel, aluminium, zinc/galvanising, copper or other metals prone to rapid oxidation. Solvent wipe with xylene or methyl ethyl ketone solvent and apply primer within 10 minutes to minimise metal oxidation.

**Plastic Substrates**

Remove all traces of dirt, dust, oil, grease and other contaminants. For PVC, ABS or fibre reinforced epoxy/polyester polymers, mechanically abrade to roughen surface.

Note - Immediately prior to primer application, solvent wipe with methyl ethyl ketone solvent only. As soon as solvent flash dries, apply primer to surface.

For HDPE or polypropylene polymers, consult the GCP technical department regarding suitable preparation and priming methods.

**DETAILING**

**Chased Concrete Cracks and Construction Joints**

Fill chases with BITUTHENE® Liquid Membrane and tool smooth and flush with substrate surface.

Allow to cure a minimum 24 hours.

**Penetrations**

All pipe or other penetrations must be stabilised to prevent movement during membrane installation.

**Expansion Joints**

Where movement joints are present, consult your allnex / GCP representative for specific details prior to commencing works.

**FINAL PREPARATION FOR MEMBRANE APPLICATION**

Inspect substrate to verify suitability and readiness.

Remove standing water.

Remove dirt, dust, debris, construction waste, stones or other sharp objects from the substrate surface

**MEMBRANE APPLICATION**

**Evaluate Local Conditions**

Before proceeding with membrane application, determine if weather conditions will be conducive to achieving quality application. This must be determined by the applicator on site.

Guidelines follow:

 a) Ambient temperature - between -4°C and 40°C.

 b) Substrate temperature - between -4°C and 60°C.

 c) Do not apply materials during conditions of rain, mist, fog or snow.

If these conditions cannot be met, application should be suspended until conditions are more favourable.

**General**

During cold or damp conditions, the membrane selvedge and tape adhesive may be gently warmed using a hair drier or low temperature hot air gun or similar to remove moisture or condensation and improve initial adhesion.

**PRIMER APPLICATION**

Prior to primer application to prepared surfaces, ensure substrate moisture content is below 5.0%, relative humidity is below 85%, dew point is at least 3°C below substrate temperature, substrate and ambient temperatures are between 5°C and 35°C.

By brush or roller, apply BITUTHENE® Primer to clean, dry, dust free and prepared substrate in one or more coats to give an evenly primed surface. Minimum application rate is typically 0.3kg/m².

When completed successfully, primed substrate should have an even black-brown colour, with no substrate visible through the primer. More than one coat of primer may be required for porous substrates.

Allow primer to dry tack free.

Only apply primer to surfaces that will receive membrane within 24 hours. If this is not possible, ensure primed surface remains clean, dust free and locked out for access by other trades and equipment.

Reprime the area with BITUTHENE® Primer, as detailed above.

Ensure all surfaces receiving waterproofing membrane are primed correctly.

**Final Detailing Before Membrane Application**

Install and tool smooth minimum 20mm fillets of BITUTHENE® Liquid Membrane to all internal corners.

Membrane application may commence before the fillet material has cured fully.

At all internal corners, chamfered external corners, construction joints and chased & filled cracks, install a minimum 300mm wide strip of BITUTHENE® 3000 membrane, centred over the corner/joint/chase, ensuring that membrane release paper is first removed, revealing the self-adhesive surface.

At internal corners, apply the membrane strip to the horizontal surface, then smooth the membrane by gloved hand into the BITUTHENE® Liquid Membrane fillet.

Avoid distorting the fillet excessively, while ensuring full contact between the membrane and the liquid membrane fillet.

Continue smoothing the BITUTHENE® 3000 membrane onto the vertical surface of the internal corner.

After installing strips, pressure roll BITUTHENE® 3000 membrane to the primed concrete surface using a hand vinyl flooring roller. Do not pressure roll membrane directly over BITUTHENE® Liquid Membrane fillets.

**Membrane Application**

Install BITUTHENE® 3000 membrane as a single layer installation with 50mm selvedge laps and minimum 50mm over laps at roll ends or cut edges.

Accurately position successive sheets the required 50mm overlap is indicated on the Bituthene 3000 by a printed line.

Ensure roll ends and cut edges are clean, dry and free of contamination.

Peel back the protective release paper and unroll the adhesive surface of the BITUTHENE® 3000 onto the primed surface. The membrane should be firmly smoothed and brushed onto the surface using a gloved hand or hand held vinyl installers roller to ensure that air is excluded from under the membrane, minimising air bubbles and wrinkles in the membrane.

Apply membrane with water shedding laps, by installing from low point of the structure to high point.

Stagger end laps between successive sheets to prevent the possibility of water tracking along laps and ensure waterproofing continuity.

For best practice, pressure roll all laps and the bulk membrane using a heavy walk behind vinyl flooring roller.

Where new membrane laps to existing, overlap a minimum 200mm.

Pressure-roll overlaps to ensure complete adhesion between both layers.

At penetrations, apply membrane snuggly up to penetrations. Cut a square of BITUTHENE® 3000 extending a minimum 150mm in all directions around the penetration. Pie cut a hole in the membrane slightly smaller in size than the penetration.

Install a 20mm fillet of BITUTHENE® Liquid Membrane at the penetration-primed substrate junction. Remove the release paper and push fit the membrane square over the penetration and seat into the BITUTHENE® Liquid Membrane fillet. Smooth the membrane square onto the surrounding BITUTHENE® 3000 membrane and pressure roll to ensure high adhesion without air bubbles or blisters.

Complete the penetration by tooling a 20mm fillet of BITUTHENE® Liquid Membrane at the penetration-membrane square junction.

When membrane installation is complete, examine all laps to ensure full adhesion without wrinkles or “fish mouth” openings along the lap edge that could allow water entry to the lap.

Where wrinkles or fish mouths are identified, pressure roll to seal. If pressure rolling does not seal wrinkles or fish mouths completely, apply a minimum 50mm x 2.5mm thick application of BITUTHENE® Liquid Membrane, centred over the lap edge.

The perimeter edge of BITUTHENE® 3000 placed in any given day’s operation shall have the free edges sealed by pressure-rolling down tightly to prevent entry of moisture and cleaned before continuing with application.

If rain is imminent, seal the free edge using a 50mm x 2.5mm thick application of BITUTHENE® Liquid Membrane centred over the membrane edge.

On completion of the membrane application detail all BITUTHENE® 3000 termination edges with a minimum 50mm x 2.5mm thick application of BITUTHENE® Liquid Membrane centred over the membrane termination edge.

On vertical installations at turn-ups etc, fix membrane top termination edges using allnex termination trim bedded in BITUTHENE® Liquid Membrane along the membrane edge, or terminate membrane into a saw cut reglet, sealed over using a 50mm x 2.5mm thick application of BITUTHENE® Liquid Membrane.

**Slab Edges**

Bituthene 3000 membrane should continue up all perimeter slab edges to ground level or to the top of ground slab surface.

All extended footings shall be fully membraned to ground level.

**INSPECTION & REPAIR OF DAMAGED MEMBRANE**

Immediately prior to installing membrane protection, carefully inspect membrane for accidental damage. Any damaged areas shall be cleaned and patched using a square of BITUTHENE® 3000 membrane extending a minimum 150mm in all directions beyond the damaged area. Pressure roll the repair fully and seal edges of the repair using a 50mm x 2.5mm thick application of BITUTHENE® Liquid Membrane.

**FINAL INSPECTION**

Prior to release of membraned area to other trades, carryout the following examinations to confirm correct membrane installation. Record examination results, proving correct membrane installation, by ITP entry and full photographic documentation.

 1) All membrane has been applied to correctly engineered structures

 2) All selvedges have been overlapped by the correct amount and aligned with the selvedge guide marks printed on the Bituthene 3000

 3) All selvedge overlaps are fully sealed, without wrinkles or fish-mouths and have been pressure rolled.

 4) Using hook ended engineer’s scribe or similar, gently run the hook end along all selvedge laps to ensure laps are gap free. Where gaps are identified, pressure roll the gap and retest.

 Where gaps remain after additional pressure rolling, fully seal by application of Bituthene LM to the lap, (details above).

 5) All corners are formed correctly including pre-strip of Bituthene 3000

 6) All penetrations (piles, pipes etc) are detailed and sealed using Bituthene® LM.

 7) All Bituthene® LM applications are cured, non-tacky and of required dimensions detailed in this document and GCP detail drawings.

 8) Construction joint locations have been confirmed by the main contractor and have been detailed correctly.

 9) All hydrophilic waterstop & swellseal mastics have been installed as required and recorded as such on plans final documents etc..

 10) Surface of Bituthene 3000 is largely clean, free of all ponded water, concrete splashes dirt or other contaminants.

**MEMBRANE PROTECTION**

All installed membrane and waterproof detailing must receive membrane protection. Membrane protection should be installed within hours of membrane installation where possible.

No membrane or membrane detailing shall remain exposed longer than 14 days.

 Where a protection slab will be installed over membrane, membrane protection shall consist of 2 layers of minimum 250 micron polyethylene builders plastic, forming a slip layer between membrane and slab.

Tape all laps between builders plastic sheets, using a quality, temperature and water resistant duct tape.

Where backfill or landscaping is to be placed over the membrane, membrane protection shall consist of allnex NPX drainage sheet.

All membrane protection or drainage sheets used must be free of sharp edges or protrusions that could damage or cut membrane.

**BACKFILLING OPERATIONS**

Backfilling must be carried out with care. Backfill shall be free of sharp materials that could puncture membrane and membrane protection during filling or compaction operations.

The back-filling process shall be monitored to prevent membrane damage or displacement of membrane protection.

Any damage or displacement that occurs must be reported and corrected by the waterproofing contractor prior to continuing with fill operations.

Failure to do so may void warranty conditions.

Likewise, installation of reinforcing and protection slabs must be carried out with care by other trades to prevent damage or breaching of the membrane.

**APPLICATION RECORDS**

The waterproofing applicator shall maintain records for future reference, including a photographic record of each stage of application.

The application manager shall produce a standard ITP form indicating the records required and allowing record storage on the ITP. ITPs are to be completed daily by the applicators.

 If all examination parameters above are met, the area may be released for reinforcing installation etc.

**INFORMATION REQUIRED FOR CODE COMPLIANCE**

Provide the following compliance documentation: -

* Applicators approval certificate from allnex construction products
* Manufacturer's, importer's or distributors warranty
* Installer's / applicator's warranty
* Producer Statement - PS3 Construction from the applicator / installer
* Other information required by the BCA in the Building Consent Approval documents.

*Construction (PS3) required from installers that are required as a condition of carrying out this work.*

*Construction Review (PS4) required from consultants to be engaged by the Contractor.*

*Design (PS1), may be required where certain design work is undertaken by the Contractor.*

**PHYSICAL PRPERTIES**

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| --- | --- | --- |
| **Property**  | **Typical Values**  | **Test Method**  |
| Colour  | Dark Grey  | NA  |
| Nominal Thickness\*  | 1.5mm  | NA  |
| Tensile Strength Of Membrane  | 4N / mm  | ASTM D412 modified \*\*  |
| Elongation Of Membrane (To Ultimate  | 200%  | ASTM D412 modified \*\*  |
| Failure Of Rubberised Asphalt)  |
| Lap Adhesion @23°C  | 683 N/ m  | ASTM D1876  |
| Cycling over crack @-32°C  | No effect 100 cycles  | ASTM C836  |
| Puncture Resistance Of Membrane  | >220N  | ASTM E154  |
| Resistance To Hydrostatic Head  | 60m  | ASTM D5385  |
| Tear Resistance  | 23N / mm  | ASTM D624  |
| Permeance  | 1.9na Pa. m2. S  | ASTM E96 [12]  |

Typical test values represent average values from samples tested. Test methods noted may be modified. \* Nominal thickness refers to the thickness of the membrane without release liner.

\*\* The test is run at a rate of 100 mm per minute.

**SUPPLY**

|  |  |  |
| --- | --- | --- |
| Dimensions (Nominal) | Bituthene 3000 |  |
| Roll size Note#1 | 1m x 20m roll (20sqm) |  |
| Roll weight |  39 kg |  |
| Minimum side/end laps | 50 mm |  |
| Note: when calculating coverage account for the Minimum side/end lapsNote#1 Individual roll length may vary +/-1% |

The following documents can be specifically referred to if required

|  |  |
| --- | --- |
| [NZBCE2](http://www.masterspec.co.nz/redirect.aspx?pl=347)/AS1 | External moisture |
| [*NZBC B2*](http://www.masterspec.co.nz/redirect.aspx?pl=223)*/AS1* | Durability |
| [BRANZ Appraisal](http://www.masterspec.co.nz/redirect.aspx?pl=2141)  | 805 |
| BRANZ Good Practice Guide: | Concrete Floors and Basements |
| Allnex Construction Products | Preprufe Installation Manual |
| Allnex Construction Products Technical Data Sheets | [www.allnexconstruction.com](http://www.allnexconstruction.com/) |
| GCP Technical Data sheets | www.gcp.com |

This advice is given in good faith, for further advice or information do not hesitate to contact the allnex technical team.

April 2023

Replaces Oct 2019

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