



**TANZ Appraised**  
Product and System Appraisal  
Appraisal # 12121  
Date of issue 24/11/2021  
Date of expiration 24/11/2023

**Litokol**

**Litoproof Extreme**



Appraisal No. 12121

Version 001

**LITOKOL®**

## Appraised Product

### Litokol Litoproof Extreme

MJ2 Group.

103/3 Gasson Street,

Sydenham

Christchurch

Tel. +64 03 332 9130

info@milanotiling.co.nz

- 1.1 Litokol Litoproof Extreme, is a sheet membrane consisting of two outer layers of non-woven polypropylene that are heat sealed the inner layer of polyethylene. It is used for interior and exterior waterproofing applications. The scope of this appraisal is for internal wet area applications. Refer to the Litokol supplied information for exterior use application.

## Scope of this Appraisal

2.1 TANZ have appraised the Litokol Litoproof Extreme, flexible sheet, waterproofing membrane product for under-tile internal wet area applications of buildings. When designed and installed in conjunction with the following Litokol technical information and manufactured, supplied products below, they form the Litokol “system for waterproofing of bathrooms and showers with flexible sheets”

- Litoband Koll 1K
- Litoband Tape
- Litoband S.A.T tape and IC,EC
- Litoband SK self-adhesive drain collars
- Litoband SK pipe collars
- Litokol tile adhesives in the class of C2/S2
- Stylegrout range of products supplied by Litokol
- Ottoseal S70

## Scope of Product

- 3.1 The Litokol Litoproof Extreme, flexible sheet, waterproofing membrane has been appraised by TANZ as a wet area waterproofing membrane, within the following scope:
- 3.2 On floor substrates of concrete, plywood, compressed fibre cement sheet and fibre cement sheet tile underlay.
- 3.3 On Cement self-levelling floor compound product such as Litoliv S40 ECO, Litoliv Express, Litoliv Extra 15.
- 3.4 On wall substrates of concrete, concrete masonry, wet area fibre cement sheet lining systems, and wet area plasterboard lining systems.
- 3.5 When a finished surface of ceramic or stone tile is installed above the membrane.
- 3.6 When the floor substrate structure has been designed and constructed to ensure that deflections in the substrate do not exceed 1/360th of the span of the building elements used to construct the substrate.
- 3.7 When designed and constructed in accordance with the “TANZ Wet Area Waterproof Membrane and Tile System Installation” methodology.
- 3.8 When movement and control joints in the substrate are carried through the membrane and tile or stone finish surface.
- 3.9 When installed by Litokol accredited applicators of the membrane product type.

## Product Limitations

- 4.1 When designed and constructed outside of the “TANZ Wet Area Waterproof Membrane and Tile System Installation” methodology.
- 4.2 Tile and Stone finishes are outside of the scope of this product appraisal.
- 4.3 Applications for use in exterior applications have not been assessed in this product appraisal.

## Building Code Compliance (NZBC)

5.1 It is the opinion of TANZ Inc, that the Litokol Litoproof Extreme, flexible sheet, waterproof membrane product when designed and installed in accordance with the information and conditions of this appraisal will meet the following provisions of the NZBC:

- B2 Durability: Performance B2.3.1 (b) and B2.3.2
- E3 Internal Moisture: Performance E3.3.2 to E3.3.6
- F2 Hazardous Building Materials Performance F2.3.1

5.2 It is the opinion of TANZ Inc, that the Litokol Litoband Extreme, flexible sheet, waterproof membrane product, when designed and installed in accordance with the information and conditions of this appraisal, will conform to the following AS/NZS standards, nominated Acceptable Solutions of the NZBC and the Code of Practice for Internal Wet Area Membranes information as at the date of publication.

- AS- 3740: 2010 - Waterproofing of domestic wet areas
- AS/NZS 4858: 2004 – Wet-area membranes
- E3/AS2 Internal Wet-area Membrane Systems - Membranes installed in accordance with sections 1–4 of the IWAM Code of Practice (as modified by the Acceptable Solution) will comply with Building Code clauses E3.3.2 – E3.3.6.
- Internal Wet Area Membranes (IWAM) code of practice 4th edition

## Durability

6.1 Litokol Litoproof Extreme, flexible sheet, membrane, when exposed to normal conditions of the environment and subjected use, are intended to have serviceable minimum life period of 15 years and be compatible with ceramic and stone tile finishes that have a serviceable life of between 15 to 25 years.

## Maintenance

- 7.1 When designed and installed correctly, no maintenance of the Litokol Litoproof Extreme, flexible sheet, membrane is required or is achievable.
- 7.2 A regular check of the finished surfaces must be made to ensure it remains fully adhered to the substrate. Any cracks or damage that may occur must be repaired by a professional tradesperson immediately.

## Litoproof Extreme – Product Technical Information

- 8.1 **Litoband SK** self-adhesive drain collars – A self-adhesive butyl rubber compound integrated with two layers of non-woven polypropylene used to seal into a floor drain outlet. Refer to Litokol TDS information n.616 dated January 2021 for correct installation methods.
- 8.2 **Litoband SK** pipe collars – A thermoplastic elastomeric fabric coupled with two layers of non-woven polypropylene used for sealing wall and floor pipe penetrations. Refer to Litokol TDS information n.614 dated January 2021 for correct installation methods.
- 8.3 **Litoband S.A.T** - is a sealing tape in butyl rubber coupled with non-woven alkali-resistant polypropylene, used for sealing of junctions between horizontal and vertical surfaces.
- 8.4 **Litoband SK Corner IC-EC** - A thermoplastic elastomeric fabric coupled with two layers of non-woven polypropylene used for sealing internal and external corners. Refer to Litokol TDS information for this item.
- 8.5 **Litoband Tape** – A double layer of polyester fabric in butyl rubber centre, used for sealing of junctions between horizontal and vertical surfaces. Refer to Litokol TDS information n.611 dated January 2021 for correct installation methods.

- 8.6 **Litoband Koll 1K** – An adhesive component used to adhere Litoband tape. Refer to Litokol TDS information n.617 dated January 2012 for correct installation methods.
- 8.7 **Litoproof Extreme** – A sheet membrane that is, consisting of two outer layers of non-woven polypropylene that are heat sealed to an inner layer of polyethylene. It is available as a 1.0m wide by 10m or 30m long roll and has a white appearance.

## Handling and Storage

- 9.1 All materials must be stored inside in a dry, frost-free environment out of direct sunlight. Materials must be stored up off concrete floors and cannot be exposed to freezing conditions.
- 9.2 These products have a 24-month shelf life from date of manufacture in the original unopened packaging.
- 9.3 Once opened, the materials must be used within 3 months. Refer to Litokol product information.

## Litokol Technical Literature

- 10.1 The Litokol Litoproof Extreme technical literature must be read in conjunction with this appraisal.
- 10.2 All aspects of the appraisal information pertaining to the scope, design, installation, and maintenance, must be followed.
- 10.3 Accompanying technical literature supporting this appraisal has been used in the assessment of the Litokol Litoproof Extreme, flexible sheet, membrane product. See clause ref later

## Design Information

### General

- 11.1 The Litokol Litoproof Extreme, flexible sheet, waterproofing membrane, has been appraised as an under-tile waterproof membrane system to be used in conjunction with:

1. Litokol Primer C
2. Litoproof Extreme system accessories refer to 7.1 to 7.6
3. Litokol tile adhesives in the class of C2/S2
4. Stylegrout range of products supplied by Litokol
5. Ottoseal S70 supplied by Litokol
6. Aquatite Wetwall Caddy -Cavity Wall Protector
7. N.T. Waterstops

11.2 It is for use in buildings where an impervious waterproof membrane is required to floor and wall wet areas as defined in E3/AS2 to prevent damage to building elements and adjoining structures.

11.3 Sections 1-4 of the Internal Wet Area Membranes (IWAM) code of practice must be utilised in the design of internal wet areas that utilise the Litokol Litoproof Extreme, flexible sheet, membrane product.

11.4 The "TANZ Wet Area Waterproof Membrane and Tile System Installation" design information must be utilised in the design of internal wet areas that utilise the Litokol Litoproof Extreme, flexible sheet, waterproofing membrane product.

11.5 Consideration must be made in the design to ensure that all aspects of E3/AS2 are met. Products that are not nominated in this document are outside of the scope of this appraisal. No substitutions to any element of this appraisal are permitted.

11.6 The design must ensure that the shower mixer and tap penetrations are sealed correctly. Refer to:

- E3/AS2 4.3.5 see figure 9 page 56
- E3/AS2 4.4.6
- IWAM code of practice 4th edition
- TANZ Wet Area Waterproof Membrane and Tile System Installation Design Methodology
- Aquatite Wetwall Caddy product and installation information and details.

11.7 Consideration must be made in the design to allow for the installation of the correct waterstop products. Refer to:

- TANZ - N.T Waterstop details

- E3/AS2 4.5.1 Water-stops (refer to amended details)
- E3/AS2 4.5.4 shower Area to adjacent floor
- E3/AS2 4.3.2 General Design Principals for Shower Areas
- IWAM code of practice 4th edition
- TANZ Wet Area Waterproof Membrane and Tile System Installation Design Methodology

- 11.8 Movement and control joints may be required to satisfy the design requirements of a projects size and shape and the stone or tile finished surface.
- 11.9 The installed membrane must be protected prior to and during installation of a stone or tile finished surface.
- 11.10 Timber framed systems must comply with:
- NZS 3604
- 11.11 When a specific engineered design (SED) has been utilised, the framing elements must be at least the equivalent stiffness to the framing provisions, outlined in:
- NZS 3604 or comply with the serviceability scope of
  - AS/NZS 1170.
- 11.12 In all substrates uses, structural framing must be provided so that the maximum span of the substrate meets all requirements of the substrate manufacturers technical information.
- 11.13 All sheet edges of the substrate must be fully supported, unless stated otherwise in the manufacturers technical and installation information and the provided test data to support a claim is available to view and complies to an appropriate standard or verification method.
- 11.14 The timber framed systems that support the substrate must be constructed to prevent deflection in the substrate from exceeding 1/360th of the span.
- 11.15 Where NZS 3604 has been utilised, the allowable joist spans that are nominated in Table 7.1 shall be reduced by 20%.

## Substrates

### 12.0 Surface Preparation

All structural building components must comply with the New Zealand Building Code and relevant New Zealand standards including



- NZS 3604,
- NZS 3603,
- NZS 3403
- E2/AS1. 2.2

Ensure the substrate is clean and free of dust, oil, paint epoxy coatings.  
All contaminates must be removed prior to commencing.

## Concrete and Masonry

12.1 All concrete and masonry substrates must be to specific engineering design (SED) meeting the requirements of the NZBC and the following NZS requirements:

- NZS 3101 Concrete Structures Standard
- NZS 3604 must meet concrete slab on ground requirements (or)
- NZS 4229 Concrete masonry buildings not requiring specific engineering design
- NZS 4230 Design of reinforced concrete masonry structures

## Plywood

12.2 Plywood must be a minimum of 17mm thick and comply with

- AS/NZS 2269 Plywood-structural

12.3 CD grade structural with the sanded C face installed upwards.

12.4 Treated H3 CCA treated.

12.5 LOSP treated plywood must not be used.

12.6 Plywood substrates must be supported with nogs/dwangs or framing with a maximum span of 400mm in each direction.

12.7 Fixed with 10g x 50mm stainless steel countersunk head screws, fixed at 150mm centres along the sheet edges and 200mm centres through the body of the sheet.



## Fibre Cement Compressed Sheet and Fibre Cement Sheet Tile and Slate Underlay

12.8 All fibre cement sheet products must be manufactured to the requirements of:

- AS/NZS 2908.2 Cellulose-Cement Products-Part 2: Flat sheets type B cat 3+

12.9 Must be specified by the manufacturer as being fit for purpose for wet area membrane substrates.

12.10 Installation must be carried out in accordance with the supplied manufacturers installation and product technical information and all test data confirming suitability for the intended use of the product.

12.11 Membrane installation must not proceed where the substrate surface temperature is below 10oC or above 35oC.

### Particle Board

12.12 Particle board must not be used as a new substrate in any wet area refer to:

- IWAM code of practice page 41.

12.13 For existing particle board substrates refer to:

- E3/AS2 4.1.3
- Page 41 of the IWAM code of practice 4th edition

## Wet Area Wall Linings

12.14 Plasterboard linings must be deemed by the manufacturer as fit for purpose for wet area construction and comply with:

- AS/NZS 2588 Gypsum Plasterboard

12.15 Fibre Cement sheet must be deemed by the manufacturer as fit for purpose for wet area construction and comply with:

- AS/NZS 2908.2 Cellulose-Cement Products-Part 2: Flat sheets type B cat 3+

12.16 Installation of both types of the forementioned wet area wall linings, must be installed to the manufacturer's instructions.

12.17 All shower mixer and tap penetrations must be sealed and incorporate the specified wall lining material to meet the requirements of:

- E3/AS2 4.3.5 General Design Principals for Shower Areas see figure 9 page 56
- E3/AS2 4.4.6 General Design Principals for Baths see figure 9 page 56
- IWAM code of practice 4th edition
- TANZ Wet Area Waterproof Membrane and Tile System Installation Design Methodology
- Aquatite Wetwall Caddy installation and design details

## Internal Moisture

13.1 The Litokol Litoproof Extreme, flexible sheet, waterproofing membrane has been independently tested and is deemed to be impervious to water as per:

- BS EN 13956:2012 – Flexible sheets for Waterproofing - Requirements, test methods, evaluation of conformity, classification, and designation.

13.2 The means of demonstrating compliance to NZBC clause E3 Internal Moisture for this appraisal is given as:

- E3/AS2 Internal Wet-area Membrane Systems - Membranes installed in accordance with sections 1–4 of the IWAM Code of Practice (as modified by the Acceptable Solution) will comply with Building Code clauses:
- E3.3.2 – E3.3.6.
- AS- 3740: 2010 - Waterproofing of domestic wet areas
- AS/NZS 4858: 2004 – Wet-area membranes
- Internal Wet Area Membranes (IWAM) code of practice 4th edition
- TANZ Wet Area Waterproof Membrane and Tile System Installation Design Methodology

13.3 When designed and installed to the requirements of this appraisal, the Litokol Litoproof, flexible sheet, waterproofing membrane, will prevent the passage of moisture from penetrating behind wall linings or entering concealed spaces.

13.4 All surfaces of the membrane must have a finished surface of ceramic or stone tile.

13.5 Falls in showers and shower areas must be at a minimum of 1 in 50 or 1.15 degrees.

13.6 For level entry wet area designed showers and bathrooms, the fall must extend out a minimum of 1500mm from the position of the shower rose outlet.

13.7 There must be positive fall directed towards the drainage outlet.

13.8 Where impervious wall finishes are used such as an acrylic liner, they must overlap the waterproof membrane by a minimum of 50mm.

13.9 All penetrations must be sealed by the requirements set out in E3/AS2

## General Installation Information

### Skill Level Requirement

- 14.1 The installation of the framing and substrate must be completed by, or under the supervision of a Licenced Building Practitioner (LBP) with the relevant Licence class and in accordance with information contained inside this appraisal and the manufacturers supplied technical information.
- 14.2 The installation of the Litokol Litoproof, flexible sheet, waterproofing membrane must be performed by Litokol approved applicators who have completed the required product training of the membrane type, have a good knowledge of the Litokol Litoproof Extreme, flexible sheet, product technical information, and can demonstrate good waterproofing practices.

## Substrate Preparation

### General

- 15.1 All installed substrate types must be dry, free of dust/dirt and any grease/oils and detritus.
- 15.2 Are installed to the requirements of this appraisal and to the manufacturers supplied information.
- 15.3 Substrate surfaces must be even in plane and be free from nibs and sharp edges and concrete formwork release agents.
- 15.4 Wall substrates must be flat and true over a 4.0m straight edge placed in any direction of the wall area.
- 15.5 The relative humidity of the concrete substrates must be 75% or less before the application of the Litokol Litoproof Extreme, flexible sheet, waterproof membrane
- 15.6 All voids, cracks, holes, rough areas must be filled with an appropriate type of material that is compatible with the installed substrate type. Refer to Litokol TDS n.609 dated January 2021.
- 15.7 All joints, junctions of substrate intersections at wall to floor and wall to wall areas are prepared, primed, and have the appropriate Litoproof Extreme,

waterproof membrane accessories installed to the Litokol Litoproof Extreme technical information requirements.

- 15.8 All shower mixer and tap penetrations have been prepared and installed correctly to meet the requirements of E3/AS2.
- 15.9 All falls meet the requirements as set out in this appraisal.
- 15.10 All drainage outlets are installed correctly and have positive fall directed towards them.

## Use of Primer

- 15.11 Smooth and compact substrates such as existing ceramic or agglomerate coverings, must be properly degreased with specific detergents such as Litoscrub EVO
- 15.12 In the case of anhydrite screeds, check for the presence of a suitable vapour barrier to prevent rising damp.
- 15.13 Use a carbide method hygrometer to check that the residual humidity is less than 0.5%.
- 15.14 The surface must be sanded and treated with Primer C
- 15.15 Any cracks must be repaired with Multifondo EVO, sprinkling the fresh surface with sand or dried quartz with granulometry 0.4-1 mm.
- 15.16 All Litokol respective technical data sheets must be consulted for correct use of the indicated products.
- 15.17 In the case of cementitious substrates that produce surface dust, these must be treated beforehand with the ready to-use consolidating primer in aqueous dispersion, Primer C. Refer to Litokol TDS information sheet N.515 dated January 2021.

## Membrane Installation

- 16.1 The choice of adhesive used to fix the membrane to the substrate depends on the type of substrate itself. For most substrates, it is nonetheless possible to use an adhesive in class C2 according to UNI EN 12004.
- 16.2 For the correct choice of adhesive, refer to the technical data sheets of the products intended for use for the specific substrate type.
- 16.3 Apply the correctly selected adhesive type onto the substrate using a suitable 3.5 mm (recommended) notched trowel.

- 16.4 Lay the previously cut-to length sheet of Litoproof Extreme, respecting the indicated open time of the adhesive, compressing it with a smooth round-edged trowel or specific pressure roller from the centre outwards, squeezing out any excess adhesive and avoiding the formation of air bubbles or folds.
- 16.5 The sheets must be laid next to each other, using the centimetre markings on the edges of the Litoproof Extreme membrane for correct positioning.
- 16.6 After installation, immediately protect the surface of the membrane from foot traffic and any mechanical damage.
- 16.7 Sheet Joining Application
- 16.8 It is not necessary to wait for the adhesive type used to install the Litoproof Extreme membrane to set before sealing the sheet joints.
- 16.9 Seal the joints between the sheets of the Litoproof Extreme membrane using the Litoband SK Tape band, bonding it to the sheet with the waterproof Litoband Koll adhesive, applied using a 3.5 mm notched trowel.
- 16.10 After applying the Litoband Koll adhesive, lay the Litoband SK Tape and apply firm pressure with a smooth round edged steel trowel to avoid the formation of air bubbles or folds.
- 16.11 After installation, immediately protect the surface of the membrane from foot traffic and any mechanical damage.

### Alternative Method – Sheet Joining Application

- 16.12 Seal the joints between the sheets using the Litoband SK Tape band, bonding it to the sheet with the hybrid MS polymer adhesive Litosil MS, applied using a 2 mm notched trowel.
- 16.13 After applying the Litosil MS adhesive, lightly spray the surface with water for rapid cross-linking and lay the Litoband SK Tape, applying firm pressure with a smooth round-edged steel trowel to avoid the formation of any air bubbles or folds.
- 16.14 After installation, immediately protect the surface of the membrane from foot traffic and any mechanical damage.

## Sealing of Penetrations and Through Elements

16.15 Wet area wall penetrations for shower mixers and taps must be sealed in accordance with the requirements of this appraisal and to the following:

- E3/AS2 4.3.5 see figure 9 page 56
- E3/AS2 4.4.6
- IWAM code of practice 4th edition
- TANZ Wet Area Waterproof Membrane and Tile System Installation Design Methodology
- Aquatite Wetwall Caddy product and installation information and details.

16.16 Dress the Litoproof Extreme membrane to the edge of the clear flange of the proprietary cavity wall protector and apply the appropriately sized Litoband SK Self Adhesive drain collar over the remainder of the clear flange ensuring the access hole in the clear flange is sealed to the outer edges.

16.17 Near drains and pipework, cut out the Litoproof sheeting with the necessary diameter.

16.18 In the presence of pipework, drains, spotlights, etc., lay the special Litoband SK Pipes Collar and Litoband SK Self Adhesive Drains Collar pieces.

16.19 For the sealing of pipework, install the Litoband SK Pipes Collar accessories in a suitable diameter.

16.20 Fix the Litoband SK Pipes Collar gaskets to the Litoproof membrane with the MS-polymer-based hybrid adhesive, Litosil MS, applied with a 2 mm notched trowel.

16.21 After applying the Litosil MS adhesive, lightly spray the surface with water for rapid cross-linking and lay the Litoband SK Pipes Collar gaskets, applying firm pressure with a smooth round-edged steel trowel to avoid the formation of any air bubbles or folds.

### Alternatively:

16.22 Fix the Litoband SK Pipes Collar gaskets to the Litoproof Extreme membrane with the Litoband Koll adhesive applied with a 3.5 mm notched trowel.



- 16.23 After applying the Litoband Koll adhesive, apply the Litoband SK Pipes Collar gaskets and apply firm pressure with a smooth round-edged steel trowel to avoid the formation of any air bubbles or folds.
- 16.24 Floor drains must be sealed with the Litoband SK Self-Adhesive Drains Collar sheet in self-adhesive butyl, bonded directly to the Litoproof Extreme sheet after creating a hole in the middle with the same diameter as the drain, using a cutter.

**Alternatively:**

- 16.25 For the sealing of pipework and through-elements in general with irregular sizes and/or shapes, create a connecting bead between the element and the waterproof membrane with the ready-to-use adhesive grout Litosil MS.
- 16.26 For correct use of the products to be used, always refer to the respective Litokol technical data sheets.

## Sealing of Perimeter

- 16.27 On any internal and external corners, apply the special pieces in self-adhesive butyl, Litoband S.A.T. – AI (internal corner) and Litoband S.A.T. – AE (external corner).
- 16.28 Partially remove one of the two protective liner tabs and position the corner, pressing hard from the innermost point outwards, avoiding the formation of folds or air bubbles.
- 16.29 Remove the other liner tab and complete the operation. Then position the Litoband S.A.T. tape along the entire floor-to-wall junction after cutting it to the desired length, overlapping it by at least 5 cm over the internal and external corners previously applied.
- 16.30 Once again, partially remove the protective liner and fix the tape onto the horizontal part of the junction, avoiding the formation of folds or any air bubbles.
- 16.31 Remove the other half of the protective liner and fix the tape onto the vertical part of the junction. Litoband S.A.T. must also be applied along the perimeter in order to seal the junction between the Litoproof Extreme

sheeting and the base of any perimeter profiles in aluminium or steel with drip channel.

**Alternatively:**

- 16.32 Apply the Litoband Koll waterproof adhesive with a 3.5 mm notched trowel on the corners and install the internal and external corners, Litoband SK Corners IC and EC.
- 16.33 After applying the Litoband Koll adhesive, lay the special Litoband SK Corners IC and EC pieces and apply firm pressure with a smooth round-edged steel trowel to avoid the formation of air bubbles or folds.
- 16.34 Similarly, install the previously cut-to-size Litoband SK Tape sealing tape over the fresh layer of Litoband Koll on all wall-to-wall and wall-to-floor corners, overlapping it by a few centimetres over the Litoband SK Corners IC and EC.
- 16.35 After applying the Litoband Koll adhesive, lay the Litoband SK Tape and apply firm pressure with a smooth round edged steel trowel to avoid the formation of any air bubbles or folds.
- 16.36 For correct use of the products to be used, always refer to the respective technical data sheets.
- 16.37 After installation, immediately protect the surface of the membrane from foot traffic and any mechanical damage.
- 16.38 After waterproofing and overlapping as necessary on the corners and junctions, the finished surface can be installed.
- 16.39 It is a requirement under the conditions of this appraisal that the adhesive used to install the membrane is allowed to fully set before installing the over surface finish
- 16.40 For the correct choice of adhesive, refer to the Litokol technical data sheets of the products.

## Tiling - Over Surface Finish

17.1 It is a requirement under the conditions of this appraisal that the adhesive used to install the membrane is allowed to fully set before installing the system accessories. Ceramics, natural stones, or mosaics can be installed with cementitious adhesives in class C2 or reactive in class R2 according to UNI EN 12004. 17.2 The choice of adhesive depends on the size of the tiles and expected operating conditions.

17.2 In the case of large tiles (side > 60 cm), it is preferable to use deformable adhesives in class S1 or highly deformable adhesives in class S2.

17.3 The tiles must be installed with a solid bed using the back-buttering technique, with joint widths suited to their size. Spot fixing techniques must not be used.

17.4 For the correct choice of tile or stone adhesive, refer to the technical data sheets of the products.

17.5 Waterstop details must be installed in accordance with the information contained in this appraisal and the following:

- TANZ - N.T Waterstop details
- E3/AS2 4.5.1 Water-stops (refer to amended details)
- E3/AS2 4.5.4 shower Area to adjacent floor
- E3/AS2 -clause 4.3.2 General Design Principals for Shower Areas
- IWAM code of practice 4th edition
- TANZ Wet Area Waterproof Membrane and Tile System Installation Design Methodology.

## Basis of the Appraisal

18.1 The following information supplied by Litokol has been reviewed by TANZ and the test data results, form the basis of this appraisal for the product "Litoproof Extreme" flexible sheet waterproof membrane. (Table 1)

18.2 The following information has been utilised by TANZ to determine compliance to the NZBC and the relevant Acceptable Solutions of E3 Internal Moisture as outlined in this appraisal. See clause 11.2

18.3 A review of the Test results independently conducted on behalf of Litokol, has been undertaken by TANZ and found to be satisfactory to comply with:

- TANZ - N.T Waterstop details
- E3/AS2 4.5.1 Water-stops (refer to amended details)
- E3/AS2 4.5.4 shower Area to adjacent floor
- E3/AS2 -clause 4.3.2 General Design Principals for Shower Areas
- IWAM code of practice 4th edition
- TANZ Wet Area Waterproof Membrane and Tile System Installation Design Methodology.
- Cyclic movement, adhesion to substrates, resistance to aging, resistance to water, resistance to chemicals and water absorption.

18.4 A review of the Litokol Litoproof Extreme technical information, installation methods and scope of use, has been undertaken by TANZ and found to be satisfactory to comply with:

- AS 3740: 2010 Waterproofing of domestic wet areas
- E3/AS2

18.5 It is the opinion of TANZ that the when the Litokol Litoproof Extreme membrane is used, designed, installed, and maintained to the extent of this appraisal information, is deemed fit for purpose as an under-tile waterproof membrane.

18.6 It is the opinion of TANZ that the when the Litokol Litoproof Extreme membrane is used, designed, installed, and maintained to the extent of this appraisal information, and used in conjunction with the information outlined in clause 7.1 to 7.6 of this appraisal, is deemed fit for purpose as a “Waterproofing and Tile Installation System”.

## Further Investigations

19.1 Litokol have achieved the following accreditations

19.2 Quality Management System standard: UNI EN ISO 9001:2015 (ISO 9001:2015).

This certificate is valid for the following scope: Design, manufacture, service and sale of adhesives, sealants, adhesive paste, and additives for the building sector; trade of tiling accessories (EA Sector: 12)

19.3 EPD - Environmental Products Declaration - Environmental Products Declaration, which provides environmental data on the life cycle of the products in accordance with the international standard ISO 14025.

The International EPD System is a program allowing the development and registration of EPDs for all types of goods and services. The system is international and certified by a third party.

19.4 The results of the study and other information, as required by the PCR, are then reported in the EPD format. The EPD developed as such is then verified by an accredited independent body. Litokol have utilised.

19.5 UL Underwriters Laboratories Inc., an independent safety certification company, which develops standards and tests for products, materials, components, and instruments, with a particular focus on safety. The EPDs are then inserted in the UL portal and can be accessed by a vast network of companies.

19.6 GBC - Green Building Council – The Litokol products acquire points for LEED certification (Leadership in Energy and Environmental Design), the US system used to classify the energy efficiency and ecological footprint of buildings, developed by the GBC (Green Building Council) of which Litokol is a part, providing a set of measurement standards to assess sustainable constructions in terms of their environmental impact.

- 19.7 GEV Emission EC1 PLUS - Litokol products come with EMICODE EC1 PLUS certification and labelling, for “products with a very low volatile organic compound emission rate” in compliance with the guidelines issued by GEV (association for the control of building material emissions), with much lower values than the limit values. E3/AS2 4.5.1 Water-stops (refer to amended details)
- 19.8 E3/AS2 4.5.4 shower Area to adjacent floor
- 19.9 E3/AS2 -clause 4.3.2 General Design Principals for Shower Areas
- 19.10 IWAM code of practice 4th edition
- 19.11 TANZ Wet Area Waterproof Membrane and Tile System Installation Design Methodology.
- 19.12 Cyclic movement, adhesion to substrates, resistance to aging, resistance to water, resistance to chemicals and water absorption.
- 19.13 TANZ has visited the premises of Litokol NZ and have inspected the storage and handling facilities and procedures and find them to be satisfactory to the requirements for storage and handling as outlined in the litokol TDS information.

## Table1

### Performance

| Compliance                       | EN 13956      |                          |
|----------------------------------|---------------|--------------------------|
| Longitudinal tensile strength    | 390 N/50 mm   | EN ISO 527-3             |
| Lateral tensile strength         | 140 N / 50 mm | EN ISO 527-3             |
| Longitudinal elongation at break | 55%           | EN ISO 527-3             |
| Lateral elongation at break      | 130%          | EN ISO 527-3             |
| Longitudinal pull-off strength   | 65N           | EN 12310-2               |
| Shear pull-off strength          | 140N          | EN 12310-2               |
| Shear pull-off strength          | ≥ 1.5 bar     | DIN EN 1928<br>version B |
| Resistance to UV rays            | ≥ 450 h       | EN ISO 4892-3            |
| Water vapour permeability "Sd"   | ≥ 50 m        | EN ISO 12572             |
| Reaction to fire Class           | B2            | EN 4102                  |

### Chemical Resistance

#### Active Substance (+ = resistant / 0 = weakened / - = non-resistant)

|                                   |   |                 |
|-----------------------------------|---|-----------------|
| Hydrochloric acid at 3%           | + | Internal method |
| Sulphuric acid at 35%             | + | Internal method |
| Citric acid 100 g/l               | + | Internal method |
| Lactic acid at 5%                 | + | Internal method |
| Potassium Hydroxide at 3%         | + | Internal method |
| Potassium Hydroxide at 20%        | + | Internal method |
| Sodium hypochlorite 0.3 g/l       | + | Internal method |
| Salt water (20g/l Sea salt water) | + | Internal method |
| Alkalis                           | + | ETAG 022        |
| Alkalis 28d - 40°C - 3%           | + | AbP             |



## Limitations of the Appraisal

The above appraisal is to be read in conjunction with the Litokol TDS.

The products described in the appraisal are limited to the use for Internal Waterproofing and wet area application in accordance with E3 and B2 of the NZBC

The Litokol products are deemed fit for purpose as waterproof membrane products for wet area use in the New Zealand construction industry and all substrates must meet the relevant NZBC requirements to perform as an acceptable waterproofing barrier.

All information presented to TANZ to produce the following document has been provided by Litokol ITALY and is relied upon as accurate.

All test information from TCNA laboratories with test results have been relied upon by TANZ as being accurate.

TANZ has provided the above appraisal in accordance with ISO9001 requirements for an appraisal of product/system.

The performance of the above products listed in this appraisal is reliant on the product performing in the same way or like manner as the tested product samples and the products being installed strictly as per the required installation process.

Litokol NZ warrants that all products used within the "system" will perform as required for the specified time frame as per the NZBC when installed as per the Litokol TDS.

TANZ offers no guarantee or warranty within this appraisal on behalf of the manufacturer, supplier, installer, or third party of the product/products or system.

TANZ does not act as an agent Litokol ITALY or Litokol NZ.

This appraisal must be read in its entirety, in conjunction with the Litokol TDS and must not be partly duplicated and used in any other documentation.

Litokol agrees to the TANZ Terms and conditions for appraisal responsibilities.