



SPECIFICATION

**BENTECH BENTONITE® NP5500 GCL &
BENTECH BENTONITE® NP5500 GCL/HDPE**

HEAVY DUTY TANKING MEMBRANES

Codemark Certificate – CMNZ70161

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(project name)

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(project address)

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(owners name)

1. GENERAL

This specification relates to the application of the **BENTECH BENTONITE®** tanking system and is read in association with the **BENTECH BENTONITE® PTS and Installation Guide**.

1.1 MANUFACTURER/SUPPLIER DOCUMENTS

Bentech Pacific Ltd documents relating to work:

Standard detailed drawings

Codemark™ Certificate Number CMNZ70161

BENTECH BENTONITE® NP5500 GCL & NP5500 GCL/HDPE PTS V7/23

BENTECH BENTONITE® Material Safety Data Sheet V7/23

For copies of the above documents, and for technical assistance, contact a **Bentech Pacific Ltd** representative:

Postal: PO Box 25 760
St Heliers 1740
Phone: 021 565 696
Web: www.bentechbentonite.co.nz
Email: al@bentechbentonite.co.nz

REQUIREMENTS

1.2 NO SUBSTITUTIONS

Substitutions are not permitted to any specified **BENTECH BENTONITE®** system, or associated components and products.

1.3 QUALIFICATIONS

Application to be carried out by applicators approved by **Bentech Pacific Ltd**. Approved applicators may be found at:

Web: www.bentechbentonite.co.nz
Telephone: 021 565 696

1.4 PROJECT REGISTRATION

Contact **Bentech Pacific Ltd** - confirm project has been registered.

Web: al@bentechbentonite.co.nz

Telephone: 021 565 696

If the project has not been registered, telephone at the earliest possible time to ensure Bentech Pacific Ltd are able to provide appropriate specific design information. Go to www.bentechbentonite.co.nz, or telephone 021 565 696 and provide all required details.

WARRANTIES

1.5 WARRANTY - INSTALLERS

Installer's warranty for the system under normal environmental and use conditions against failure.

5 years: Installation warranty
Provide this warranty on the Installer's standard form.

1.6 MANUFACTURERS MATERIAL WARRANTY

Provide a **BENTECH BENTONITE®** materials warranty of **25 years** when applied in accordance with application and preparation procedures as specified in the current **BENTECH BENTONITE® Product Technical Statement** and this **Specification**.

1.7 **PRE-INSTALLATION MEETING**

Convene a meeting between the applicator, contractor, all associated consultants and **Bentech Pacific Ltd** to ensure all parties know what is required for effective performance of the system.

1.8 **SPECIAL DETAILS**

Where a standard detail does not exist, or if a standard detail cannot be applied, an approved alternative must be obtained from **Bentech Pacific Ltd** before proceeding with the installation.

1.9 **PRESSURE RATING**

A Geotechnical report is to be made available to **Bentech Pacific Ltd** for assessment.

1.10 **QUALITY ASSURANCE**

Maintain quality necessary to assure that work is performed in accordance with this specification and the qualifying requirements of **Bentech Pacific Ltd**.

Installer Qualifications: Installing company should have at least three years' experience in application of bentonite tanking, who can comply with manufacturer's warranty requirements, and who is an Approved Applicator as determined by **Bentech Pacific Ltd**.

Ensure that **Bentech Pacific Ltd's** Quality Control sheets are completed fully and faithfully for each installation area.

2.0 PRODUCTS

2.1 **BENTECH BENTONITE® NP5500 GCL**
BENTECH BENTONITE® NP5500 GCL/HDPE

Manufactured from high performance, 100% natural, non-toxic mineral Bentonite, our NP5500 GCL and GCL/HDPE waterproofing membranes contain a minimum of 5.5kg/m² (average 6.1) of Sodium Bentonite, more commonly known as Montmorillonite and used for clay tanking and waterproofing since the Dark Ages. It can be installed on compacted sub base, piles, sacrificial shutters, shot-concrete and precast panels. Can also be installed on damp substrates and during wet weather, provided backfilling & compaction happen the same day.

2.2 **BENTECH BENTONITE® Granules/Paste** used to seal laps and around complex detailing and protrusions.

2.3 **TREMCO Dymonic FC®** or **BOSTIK SafeSeal®** premium commercial polyurethane sealant applied continuously between the T-Bar and wall. This isn't required if the T-Bar is below the concrete level.

2.4 **BENTECH BENTONITE® BCC** is a discretionary 2 part cementitious membrane used to seal difficult details and areas requiring extra protection.

2.5 **BENTECH BENTONITE® ACCESSORIES –**
Termination Bar – Aluminium 2-fold or 4-fold 1.5mm Flat Bar (attached by 316SS Drive Pins)
Nails & Washers - Mechanically Fixed nails & flat washers for fixing GCL/Coreflute to wall.
Non-Rigid Protection Sheet 3.3mm Plastic Coreflute Protection Board

3.0 SCOPE OF WORKS

3.1 **LAYOUT** - Confirm the layout suits site conditions and **Bentech Pacific Ltd** specifications. Pre-plan the work to keep the number of membrane laps to a minimum.

3.2 **DE-WATERING**

Ensure dewatering system is maintained consistently 24/7, below the level of work area during the progress of tanking project and until all protective Coreflute is installed and fully compacted with Gap 20/40.

3.3 **DRAINAGE**

Install certified drainage system to remove water from foundations. Ensure drain is protected with a geotextile cloth to prevent clogging from fines, and that it is correctly located with falls. Ensure drain is placed >150 mm away from all **BENTECH BENTONITE®** membrane.

3.4 **CHECK SUBSTRATE**

Check the substrate will allow work of the required standard. Complete any remedial work identified before commencing works. Substrate to comply with performance requirements of the NZBC.

3.5 **PRE-INSTALLATION MEETING**

Convene a meeting between the applicator, contractor, concrete supplier, all associated consultants and **Bentech Pacific Ltd** to ensure all parties know what is required for effective performance of the system.

- Co-ordinate work to minimise the time membrane is left exposed.
- Agree detail drawings.
- Discuss the importance of concrete placement.
- Discuss the importance of **confining pressure** with no voids.
- Discuss with back-fill contractor back-fill compaction process, particularly for penetrations and correct metal and confining pressure.
- ***Discuss the importance for 24/7 dewatering.***

3.6 **STORAGE**

Store **BENTECH BENTONITE®** membranes in their protective wrapping, and away from water, heat, and direct sunlight until use. Return part rolls and part boxes to their wrapping.

3.7 **SUBSTRATE CONDITION**

Ensure that the substrate is in a suitable condition to allow work of the required standard. Ensure compacted base is smooth, without voids or organic debris and compacted to 85% Modified Proctor. Blinding concrete substrates to be 50 mm+ thick, smooth finish and free from contaminants or foreign matter that may impair the performance of the waterproofing system. **Substrates do not have to be dry.** Check for live cracks in the concrete substrate and report for special attention to detail.

3.8 **SUBSTRATE PREPARATION**

Carry out any remedial work required to substrate.

3.9 **WEATHER CONDITIONS**

BENTECH BENTONITE® can be installed on to damp substrates and during inclement weather including rain.

**N B - Ensure the membrane is not left exposed to water.
24/7 dewatering of site is required.**

3.10 **INSTALL **BENTECH BENTONITE®** 'Black Side Out'**

GCL is applied BLACK WOVEN side facing out to substrate/backfill.

GCL/HDPE is installed BLACK HDPE side facing out to substrate/backfill.

Ensure **BENTECH BENTONITE® Granules/Paste** is applied to all penetrations. Stagger rolls to prevent seam continuity, ensuring laps remain intact while placing confining concrete over the top (prepared sub-base surface).

Install wall membrane sheets horizontally around structure (or vertical fixing depending on applicable height and safety). Fix with mechanical guns, Hilti or Ramset nails and flat 48mm washers as required to effect 100% coverage. Nail 150mm below top of the sheet. Ensure subsequent rows overlap by 150mm fixing through second layered membrane at 200mm centers ensuring a good closing joint.

T-Bar is fixed using 316SS pre-drilled drive pins at 3-400mm centres.

When installing on to precast panels and there is **insufficient** access behind the panel to manually form the floor to wall junction, contact **Bentech Pacific Ltd** for specific design. Ensure when the tilt slab panels that are seated on packers, the bottom of the tilt slab panel is tightly pressure fitted onto the edge of the **BENTECH BENTONITE®** membrane.

3.11 **COVERING AND CONFINEMENT**

Confine horizontal membrane. Confine with reinforced concrete immediately after the membrane installation is complete - this prevents premature edge paste hydration or overnight rain causing premature swelling. Concrete to be vibrated ensuring no voids.

In situ shutter pour - Ensure all voids are plastered smooth. Concrete lumps and bumps are removed from piles. Ensure all laps are mechanically fixed preventing any concrete grout spreading between membrane layers.

3.12 **PROTECTION CORFLUTE**

Ensure Coreflute 3.3mm plastic protection is installed to vertical membrane application. Fixing off at 150mm to 200mm centers to the termination bar, then apply suitable polyurethane sealant to top of termination bar and concrete substrate wall preventing any metal getting behind protection sheet and membrane. Ensure the **BENTECH BENTONITE®** membrane is not damaged during backfill.

3.13 **BACKFILL**

Ensure the quality of the back fill (GAP 20/40) is such that the **BENTECH BENTONITE®** membrane is not damaged and allows uniform compaction and confining pressure of the membrane. Preferably a whacker is best for compaction or very least vibrating plate compactor. Backfill in layers and compact every 400mm.

Ensure loose backfill or debris does NOT get behind the membrane during installation and compaction.

Sand, soil, organics and SCORIA are NOT suitable as backfill.

3.14 **PROTECT HORIZONTAL SURFACES**

After laying is complete, the membrane can be protected **until the floor slab** is poured by covering the tanking with a 50 mm layer of 20 MPA blinding concrete. This situation arises when there is an extended delay between the membrane installation and the placement of the floor slab or where construction machinery is being taken over the membrane.

3.15 **SECTIONAL COMPLETION**

As sections of the tanking are completed, arrange for inspection of the work before covering with protective sheets, walls, or slabs. Complete the **Bentech Pacific Ltd** Quality Control Sheets and provide to them for Material Warranty issuing.

- 3.16 **ACCEPTANCE**
Arrange for an inspection of the completed work.
Protect the membrane until completion of the contract works.
- 3.17 **CLEAN UP**
Clean up as the work proceeds.
- 4.0 **PRODUCT SPEC/RATING**
- 4.1 **PRESSURE RATING**
Designated water pressure head: 70 metres
- 4.2 **CODEMARKED PRODUCTS:**
BENTECH BENTONITE® NP5500 GCL
BENTECH BENTONITE® NP5500 GCL/HDPE
Location: Auckland, New Zealand
Supplier: **Bentech Pacific Ltd**
- 4.3 **BENTECH BENTONITE® BCC**
Location: Auckland, New Zealand
Supplier: **Bentech Pacific Ltd**
- 4.4 **TREMCO Dymonic FC® or BOSTIK SafeSeal®** premium commercial polyurethane sealant applied continuously and unconfined between the T-Bar and wall.
- 4.5 **BENTECH BENTONITE® GRANUALS/PASTE**
Supplier: **Bentech Pacific Ltd**
Brand: **BENTECH BENTONITE®**
 20Kg bag
- 4.6 **COREFLUTE PROTECTION SHEET/BOARD**
Supplier: **Bentech Pacific Ltd**
Thickness: 3.3mm (2.4x1.2) or (1.8x1.2) White or black
- 4.7 **BENTECH BENTONITE® 2- or 4-fold Alloy Termination Bar**
Supplier: **Bentech Pacific Ltd**
 1.5mm Flat Alloy bar
- 4.8 **NAILS** Mechanically Fixed 316SS Drive Pins
- 4.9 **WASHERS** Flat washers