TREMCO
Construction Products Group

Paraseal LG

Dual Layer Sheet Waterproofing Membrane to provide Superior Protection to Below Grade Structures

PRODUCT DESCRIPTION

Paraseal LG is a multi-layer sheet membrane waterproofing system consisting of a self-sealing, expandable layer of bentonite laminated to an impermeable, high density polyethylene (HDPE). The dual components form a tough, high performance waterproofing membrane system manufactured in controlled thicknesses of 4.25mm to 5mm.

USAGE/PURPOSE

Paraseal LG is typically used in the following applications:

- ❑ Elevator pits
- ❑ Retaining walls
- ❑ Below grade waterproofing
- ❑ Tunnels
- ❑ Below footing slab

PACKAGING

1.2m x 7.3m Rolls

COLOUR

Grey Bentonite & Black HDPE

SHELF LIFE

12 months when stored as recommended in original unopened packaging

STORAGE

Store in a dry cool place in an upright position in original unopened packaging

FEATURES & BENEFITS

- ❑ Dual layer waterproofing system provides redundancy and added security to the builder and owner that water will not enter.
- ❑ Can be installed 24 hours after the concrete formwork has been removed, allowing for a faster construction schedule.
- ❑ Does not need to cure, so backfill can commence as soon as the sheet has been installed.
- ❑ >30 years and millions of square meters installed all over the world demonstrates that the product is robust and can handle a variety of site conditions.



- ❑ The bentonite can expand up to 8 times its original thickness to stop water that may make it past the HDPE layer, providing a second layer of failsafe protection.
- ❑ The robust HDPE layer provides significant (180kg/m^2) of puncture resistance to ensure damage doesn't occur to the waterproofing membrane by careless trades.

LIMITATIONS

- ❑ Paraseal products require a minimum of 117kg/m^2 of compaction/ confinement.
- ❑ Paraseal LG is not to be installed over ponding or standing water or snow.
- ❑ If ground water is brackish or if installing near the ocean, please contact your local Tremco Representative as Paraseal Saltwater may be recommended.
- ❑ Not suitable for applications below water table.

SUBSTRATE PREPARATION

1. Paraseal products require a minimum of 117 kg/m^2 of compaction/ confinement.
2. All surfaces to be covered with Paraseal must be smooth, sound and free from angular projections.

TYPICAL PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	Paraseal LG
Installation Temperatures	N/A	-31.7 to 55°C
Freeze/Thaw Cycles	N/A	No effect before or after installation
Resistance to Chemicals & Gases	N/A	Extremely high resistance. Contact Tremco for specific information
% Solids	By Weight	100%
Elongation	ASTM D412	500%
Strength at Break	ASTM D412	281.22kg/cm^2
Strength at Break	ASTM D6693, Type IV	14.28kg/cm^2
Resistance to Micro-Organism	ASTM D4068	Unaffected
Puncture Resistance Index	ASTM D4833	54.57kg/m^2
Resistance to Hydrostatic Head Pressure	ASTM D5385	70.4 m
Resistance to Hydrostatic Head Pressure (with Permanent Seam Tape)	ASTM D5385	70.4 m
Water Vapour Permeance	ASTM E96	1.7 ng/Pa*s*m^2
Puncture Resistance Load	ASTM E154	689.47 N

3. All voids in the substrate greater than 6mm in depth should be appropriately filled, with a non-shrink mortar/ grout or other approved patching material.
4. Refer 'Method of Application' for further specific information regarding substrate preparation requirements.
5. Consult Tremco Technical Services for project specific recommendations.

JOBSITE MATERIALS

Recommended materials and their uses are as follows:

- ❑ Dymonic 100: A one-part, exceptional movement (+100/-50%) moisture-curing, gun grade polyurethane sealant for use in precast, masonry, expansion joints, control joints and for use in forming cant/ fillet bead.
- ❑ Tremflex 25FC: A one-part, fast curing, flexible fillet joint sealant for use in professional waterproofing applications.
- ❑ Paragranular: A 22.7 kg bag of loose bentonite used for filling voids and creating floor to wall fillets.
- ❑ Paramastic: Bentonite infused mastic used for creating fillets and detailing laps and penetrations in the Paraseal system.
- ❑ Prateterm Bar: An aluminum alloy pressure seal bar used to terminate the Paraseal system at the top of wall condition.
- ❑ Permanent Seam Tape: A rubberised bitumen pressure sensitive tape membrane used for sealing end-laps of the Paraseal membrane.
- ❑ Tremco Water-Stop: Bentonite based, expanding, hydrophilic waterstop for cold joints.

USAGE

The following is a guide to estimate material usage:

COVERAGE RATE		TOTAL COVERAGE
1.2m Wide	7.3m Long	8.76m^2

**All coverage rates are approximate & vary with substrate condition.*

METHOD OF APPLICATION - BACKFILLED WALL

1. Install a continuous 50mm fillet of Paragranular where wall meets footing and at all other vertical to horizontal junctures.
2. Install a continuous 25mm vertical fillet of Paramastic at all vertical inside corners.
3. Following good concrete industry practices, a waterstop should be used at all construction cold joints. Install Tremco WaterStop a minimum of 50mm from outer face of wall.
   - Remove release paper to expose adhesive. Butt ends together and fasten with nails and 25mm washer every 300mm O.C.
4. Paraseal shall be installed against backfilled walls with the granular bentonite side against the substrate and the black HDPE side facing the installer.
5. Paraseal may be installed with a minimum of 50mm overlapped seams running either vertically or horizontally or a combination with equal performance.
6. Seams shall be shingle lapped so that upper sheet is over lower sheet when seams run horizontally.
7. Fasten with nails and 25mm washers every 900mm to 1200mm O.C.
8. Taping all vertical seams with Permanent Seam Tape is required. In cold/cool weather, heat permanent seam tape using a heat gun or hair dryer to give the permanent seam tape more initial tack.
9. Install Prateterm Termination bar and nail every 200mm O.C.
10. Best practice is to terminate the Paraseal membrane immediately below the finished grade.
11. Complete installation at penetrations as required per Tremco's recommendations and any site specific details.
12. Paraseal membranes seldom require additional protection unless the backfill contains substantial amounts of either lava rock, basalt or any other course or highly abrasive materials.
13. Following good industry practices, Tremco recommends a drainage mat should be installed prior to backfilling.

METHOD OF APPLICATION - BLINDSIDE WALL

AUGERED CAISSON:

1. When the surfaces of the individual augered piers, which make up the caisson wall, are relatively smooth, Paraseal LG may be installed directly against piers. However the "crotch" between each pier must first be filled in with a concrete grout and all sharp projections must be removed from the caisson wall.
2. When the surfaces of the augered piers are very rough and irregular, continuous minimum 19mm or thicker, as determined by engineer, pressure-treated plywood must be anchored every 300mm O.C. to the caisson wall.
3. The void created behind the plywood shall be filled with sand or aggregate.
4. The proper plywood thickness and anchor spacing shall be determined by a civil, structural or soil engineer at the site and depend on the height of the caisson wall, the span of the plywood between piers and the resultant lateral pressure exerted by the sand/aggregate fill.

STEEL SHEET PILING:

1. When the waterproofing is going to be in continuous contact with the profile of the steel piling, all sharp protrusions must be removed.
2. When the waterproofing installation is going to span the sheet piling voids, sheets of a minimum 19mm or thicker as determined by engineer, pressure-treated plywood should first be installed across the void and shot into place every 300mm O.C.
3. The void behind the plywood should be filled with sand and/or aggregate.
4. The proper plywood thickness and anchor spacing shall be determined by a civil, structural or soil engineer at the site and depends on the height of the piling, the span of the plywood and the resultant lateral pressure exerted by the sand fill.

SHOTCRETE WITH CONCRETE PILES:

1. Prior to the installation of Paraseal LG against the shotcrete wall remove all sharp protrusions and fill all voids which exceed 50mm wide by 25mm deep with concrete grout.
2. Fill smaller voids with Paramastic or concrete grout.

SLURRY WALL:

1. Prior to the installation of Paraseal LG against the exposed slurry wall, clean off all mud and dirt.
2. Remove all sharp protrusions and fill all voids which exceed 50mm wide by 25mm deep with concrete grout.
3. Smaller voids shall be filled with Paramastic, or concrete grout.

ALL BLINDSIDE WALL:

1. All penetrations shall be secured prior to detailing. For single pipe penetrations, refer to Tremco's site specific recommendations and details.
2. Multiple penetrations shall be spaced a minimum of 150mm apart to allow for proper detailing. If 150mm spacing is not available, contact Tremco for a job-specific recommendation. If sealed or cored pipes are present, contact Tremco.
3. Expansion joints should be treated in accordance with Tremco standard detail BSW-21.
4. Following good concrete industry practices, a waterstop should be used at all construction cold joints.
   - Install Tremco Water-Stop a minimum of 50mm from face of wall.
   - Remove release paper to expose adhesive. Butt ends together and fasten with nails and 25mm washer every 300mm O.C.
5. If nails are pounded flush in the lagging boards, install a protective layer of Coreflute over the I-Beam.
6. If a drainage mat is required, install the proper drainage mat.
7. Paraseal LG shall be installed with the bentonite side facing the installer.

8. Paraseal LG may be installed with the long seams running either vertically or horizontally with equal performance.
9. All seams are lapped a minimum of 100mm.
10. Fasten all seams using a nail and 25mm washer every 600mm O.C. and staple every 75mm O.C.
    - Use a staple hammer on wood lagging and a box stapler on all other earth retaining systems.
11. For shotcrete walls, all horizontal seams should be lapped with the open edge aiming upward.
12. Vertical seams should not occur at either inside or outside vertical corners.
13. When the placement of either footings or a mat slab is scheduled prior to waterproofing installation, a horizontal starter strip of Paraseal LG should be installed first.
14. When there is below-floor and/or below-footing waterproofing, the tie-in detail between wall and floor waterproofing varies depending on the floor waterproofing system. Contact Tremco for recommendations.
15. Temporarily terminate Paraseal LG at the top of the earth retaining system by folding it over and tacking it in place.
16. Prior to wall placement repair any Paraseal LG which has been damaged.
17. Detail all rebar support anchors. Contact Tremco for specific instructions.
18. If the structural wall is poured-in-place, the concrete should not be dropped from higher than 1.2 m, and the concrete should be forced towards the form work and not the membrane.
19. If the structural wall is shotcrete, the spray should be blown in at an upward direction in 1.2 m lifts so as not to lodge between the seam lap.

METHOD OF APPLICATION - BELOW SLAB

1. The grade should be prepared by either installing a blinding slab (preferred), compacting the original earth, or compacting a granular base meeting a minimum modified 85% proctor density per Engineer's design.
2. Irrespective of the sub-base preparation, the substrate should be free of angular projections and voids, consult Tremco Technical Services for project specific recommendations.
3. All penetrations shall be secured prior to detailing. For single pipe penetrations, refer to Tremco's site specific recommendations and details.
4. Multiple penetrations shall be spaced a minimum of 150mm apart to allow for proper detailing. If 150mm spacing is not available, contact Tremco for a job-specific recommendation.
5. If sealed or cored pipes are present, contact Tremco.
6. Following good concrete industry practices, a waterstop should be used at all construction cold joints.
    - Install Tremco Water-Stop minimum of 50mm from face of wall.
    - Remove release paper to expose adhesive. Butt ends together and fasten with nails and 25mm washer every 300mm O.C.
7. Bentonite facing up is the preferred installation method. However, if for reasons of protection, the bentonite is facing down, builder's plastic must first be installed on top of the earth or base.
8. All below floor slab installations shall be lapped 100mm minimum at the seams.

BENTONITE FACING UP:

1. All seams shall be stapled every 200mm O.C. for Paraseal LG.
2. Protect Paraseal LG from damage caused by reinforcing chairs by using plastic sand chairs.
3. For slabs thicker than 150mm, Tremco recommends a 50mm sand slurry protection slab.
4. Concrete placement should not be dropped over 1.2m directly on Paraseal LG. Best to flow in place.

BENTONITE FACING DOWN:

1. All Paraseal LG seams shall be taped with Permanent Seam Tape when bentonite is facing down. In cool/cold weather, heat permanent seam tape using a heat gun or hair dryer to give the permanent seam tape more initial tack.
2. Terminate around perimeter or tie-in to wall application of system.
3. Concrete placement should not be dropped over 1.2m directly on Paraseal LG. Best to flow in place.

CLEAN UP

Wash all equipment immediately on completion of application and mixing.

HEALTH & SAFETY PRECAUTIONS

The Safety Data Sheet (SDS) must be read and understood prior to use.

TECHNICAL SERVICE

Tremco CPG Australia Pty Ltd has a team of Representatives who provide assistance in the selection and specification of products. For more detailed information or service and advice, call Customer Service on (02) 9638 2755 or fax (02) 9638 2955.

GUARANTEE/WARRANTY

Tremco CPG Australia Pty Ltd products are manufactured to rigid standards of quality. Any product which has been applied (a) in accordance with Tremco CPG Australia written instructions and (b) in any application recommended by Tremco CPG Australia, but which is proved to be defective, will be replaced free of charge.

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CONTACT OUR TEAM

Tremco CPG Australia Pty Ltd
ABN: 25 000 024 064
Unit 12, 4 Southridge Street
Eastern Creek, NSW 2766

P: (02) 9638 2755
F: (02) 9638 2955
E: tremco@tremco.com.au