

Dam & Pond Lining using Bentoliner CBL

Liners

Water Proofing Properties of a Plastic Liner with the ease of installation of a Geosynthetic Clay Liner



Bentoliner®CBL is a reinforced GCL consisting of a layer of sodium bentonite between two geotextiles, which are needle punched together and laminated to a flexible membrane liner.

The Bentoliner® CBL has a coefficient of permeability $k=5 \times 10^{-12}$ m/sec, and is comparable with Plastic liners.

Bentoliner® CBL's are highly recommended in:

1. Pond and dam application when exposed to high hydraulic heads.
2. Applications where GCL is exposed to wetting and drying cycles.
3. Applications where GCL is placed against saline soils such as coastal use.

Other applications include base lining of landfills; as part of the leachate detection and leachate collection system; landfill capping incorporating a root control system; cut off walls; etc.



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Site Specific Subgrade Preparation

In all site areas to be used, the surface should be cleared of all vegetation, debris, large rocks (>20mm diameter), and other foreign materials. The subgrade should be graded and compacted in accordance with the Civil Works specifications, but in any event, should be compacted to at least 90 per cent of Modified Proctor maximum dry density (ASTM D1557) or such that installation equipment or other construction vehicles that traffic the area of deployment do not cause significant rutting.

In summary

- * Grade and compact existing soil. or
- * Fill voids by placing 50mm to 75mm leveling layer of fine soil. or
- * Install cushioning geotextile



Deployment

The roll of Bentoliner® is supported during its deployment so that the fabric designated as the upper surface faces out, away from the installation vehicle (refer to installation guidelines). The free end of the roll can then be secured (installers standing on edge) and the vehicle supporting the roll can slowly back away, deploying the Bentoliner® as it moves. Alternatively, the free end can be manually pulled across an area to be lined by the installation crew while the equipment simply suspends the roll.

Bentoliner® should be covered by a minimum thickness of 300 mm of approved soil or gravel at the end of the construction day.

Seaming and Joining

Bentoliner seams are constructed by overlapping adjacent panel edges and ends. Care should be taken to ensure that the overlap zone is not contaminated with loose soil or other debris. Bentoliner® RCGCL (GCL plus HDPE membrane) has no Supergroove®, bentonite in the form of granules (0.4kg/m) or premix paste is used on all overlaps. Panels of Bentoliner® should be joined as follows:

- * Adjacent panels are overlapped 300 mm -600mm along the side joints, and 600 mm at end joints;

- * Seams at the end of panels should be shingled in the direction of the grade to prevent the potential runoff flow to enter the overlap zone.



Good deployment practices

- * Deployment should always be from the highest point to the lowest to allow water to drain quickly without affecting the GCL.
- * On slopes, deployment should be down, not across the slope;
- * Bentoliner® should be kept as clean as possible at all times up to and including the time of placement of the next layer of material covering them.
- * Edges of exposed sheets should be weighed down with sand bags to prevent uplift in high wind and infiltration of runoff water.
- * GCL panels should be installed in a relaxed condition, and be free of wrinkles and folds.



Anchorage

Bentoliner GCL is typically anchored in a trench around the perimeter of the containment basin to provide the required pullout resistance. The size and shape of the trench, as well as the appropriate backfill procedures should be in accordance with the project drawings and specifications. Bentoliner® should be placed in the trench extending down the inside wall face and along the entire trench floor, secured by the controlled placement and compaction of backfill into the trench prior to placing cover soil on the slopes.