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GeoTech Insulated Drainage Panels provide these important functions:

RELIEF OF HYDROSTATIC PRESSURE

transmission of ground-born gases

Thermal insulation

Protects waterproofing

GeoTech Insulated Drainage Panels are a type of geofom material generically known as glued polystyrene porous block. The GeoTech Insulated Drainage Panel is a geocomposite which serves as a sheet-drain that consists of two geosynthetic materials: a geofom and a geotextile.

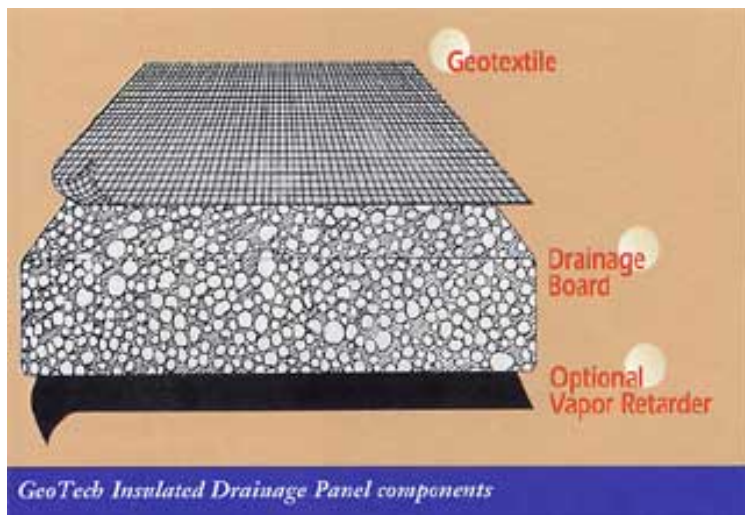


Tested according to ASTM standards and the Department of the Army Corps of Engineers Laboratory Soils Testing Manual (EM 1110-2-1906, Appendix VII), the drainage panels have exhibited excellent performance characteristics. They provide permanent, permeability efficiency which is maintained to depths of up to 40 feet (e6.55m) and with lateral pressures of up to 1,600 lbs/ft (80kPa).

With the costs of construction and energy continuing to escalate, the necessity to make all building space environmentally habitable and energy efficient is paramount. Realizing that buildings leak both water and energy, GeoTech Insulated Drainage Panels were developed to offer the following benefits:

- Relief of hydrostatic pressure
- Protects waterproofing system and structure from damage during backfill operations.
- Will not puncture, deform or injure critical waterproofing membranes.

- Adds substantial insulation value (R=3.5 per inch - dry, ASTM C-518) to below-grade interior space.
- Reduces potential of condensation by moving the dew point to the exterior of the wall.
- Lightweight, factory-fabricated panels handle and install easily resulting in time and labor savings.
- Helps protect against frost heave and stress from expansive soil movements.
- Requires no special storage areas or equipment for installation.
- No mechanical fastening necessary.
- No longer necessary to depend on site labor for construction of hydrostatic pressure relief system.
- Inspector can make quick visual check and be assured of proper installation.
- Uniform thickness and quality assures predictable drainage characteristics.



Composition and Materials: GeoTech Insulated Drainage Panels are composed of high quality expanded polystyrene (EPS) beads. The EPS beads are glued together with a specially developed waterproof, asphalt adhesive and molded into blocks. The blocks are then cut into panels of various thicknesses. The radius to radius bonding creates channels that allow free passage of ground water and produces excellent permeability ratings.

The panels typically have a geotextile factory laminated to one side of the board. A vapor retarder such as PVC, foil, polyethylene sheeting, EPS, etc., can also be added to the interior face of the drainage panel, if required. This protects the building from condensation, provides a barrier to pour concrete against in sheeting and shoring applications or

adds to the U-value of the structure.

GeoTech Insulated Drainage Panels have a standard size of 48" x 48" and can be specified in standard thicknesses of 1.5", 1.0", 2.0", 3.0", 4.0" or up to 24" depending on project specific requirements. Special shapes or other thicknesses are available, contact local manufacturer/distributor or GeoTech Systems Corporation for specific capabilities.

Applications: GeoTech Insulated Drainage Panels are recommended for use over the waterproofing material on below-grade foundation walls or roof systems. Highway or landscaping retaining walls, interior or exterior planters, pedestrian pavers, and other critical applications where ground water may present a problem now or in the future, are also excellent uses for GeoTech Panels. In areas where energy conservation or water condensation may be a design consideration, the insulation properties of the GeoTech Panels present real benefits to the owner at no additional cost.

Limitations: To function as intended, GeoTech products must be used in conjunction with a perimeter hydrostatic pressure relief system. They should not be installed under surfaces subject to heavy point loading and should not be exposed to petroleum solvents, fuels or uncured solvent-based waterproofing or damp-proofing material.

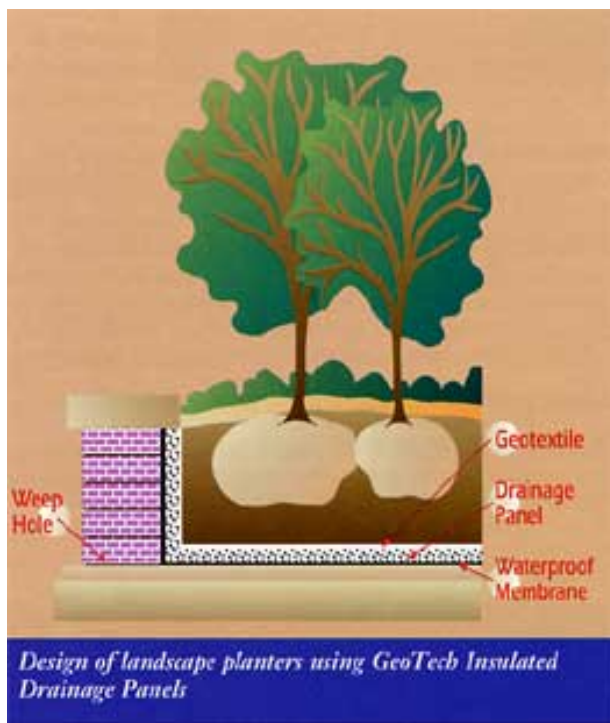
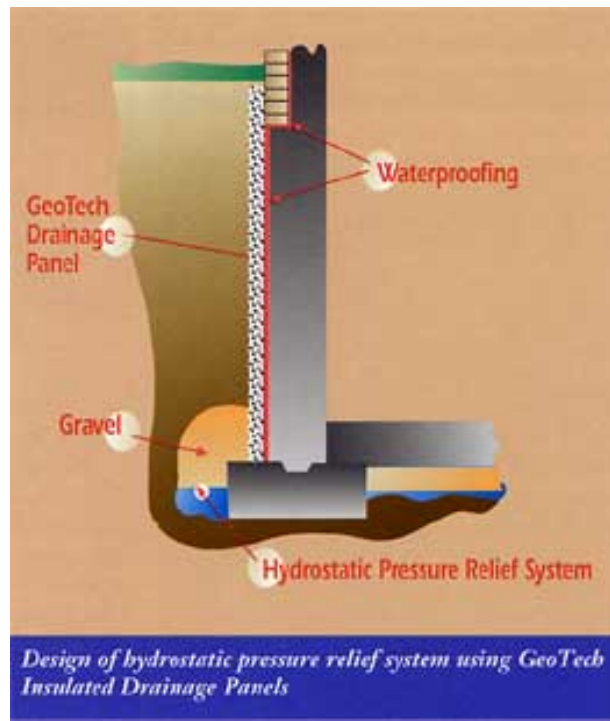
Waterproofing membranes should be adequately cured so as not to interfere with the subsequent adhesion of GeoTech Drainage Panels. Compatibility with the surrounding soil composition should also be determined to ensure product effectiveness.

EPS materials (including GeoTech Drainage Panels) should be considered combustible when directly exposed to flame. They should not be installed or stored near an open flame or other source of ignition.

Overall Product in Place: The serious and costly problem of keeping below-grade structures free of water and condensation is greatly reduced by incorporating GeoTech Insulated Drainage Panels into the initial total system design. By relieving hydrostatic pressure from the subsurface wall or roof, the waterproofing system specified is permitted to function as designed. Additionally, the waterproofing membrane and structure is protected during the backfill operation. Safety factors for structural loading are also increased due to lower stress on the walls. This is especially true in horizontal underground roof applications. By replacing the gravel filtration medium with GeoTech panels, hydrostatic pressure is reduced as well as the weight of the gravel on the structure.

Problems associated with condensation are reduced due to the insulating qualities of the GeoTech panels. The energy requirements necessary to maintain a comfortable environment are also reduced, thus creating a return on investment for the owner at no additional cost.

GeoTech Insulated Drainage panels also provide a conduit for the transmission of ground-borne gasses such as radon and methane away from below-grade structures.



Technical Data:

- Density/Weight: 2.0 pcf nominal
- Coefficient of Permeability: 1.24 cm/sec (ASTM D-2434)*
- Hydraulic Transmissivity: Approximately 12 gpm at 4" thickness. Radial flow to gravity well - 10' radius.
- Thermal Conductivity: $K=0.285$ (dry) @ 75°F (ASTM C-518)
- Thermal Resistance: $R=3.5$ (dry) @ 75°F (per inch of thickness uncompressed)
- Compression Strength: Under short term loading, compression of approximately 800 psf (40 kPa) will result in a 10% deformation (ASTM D-1621-73).
- Under installed conditions, pressure of 1200 psf (57 kPa) (equivalent to ground pressure at a depth of 50 feet with an equivalent fluid pressure of 40H psf), will result in compression of approximately 30%.
- Stability: GeoTech products are permanently resistant to moisture, including total immersion, and are unaffected by normal acidic or alkalyinic soil conditions.

*Tested under compression according to Department of the Army Corps of Engineers Lab, Soils Testing Manual (EM 1110-2-1906, May 1980) Appendix VII.

Installation: For foundations or retaining walls below-grade, attach Drainage Panel to the wall after installation of the waterproofing system. Place six daubs of OSI QB-300 (or equal) adhesive on the board surface and press onto vertical surface with the filter fabric placed toward the earth.

Factory laminated panels are furnished with a 2" minimum fabric lap joint. Installation should begin at the perimeter drain. When applying to walls, butt sheets together and stagger vertical joints. All outside or inside corners should be lapped with the full thickness of the board. If field applying geotechnical fabric over panels, follow fabric manufacturer's recommendations regarding the amount of overlap at joints.

Field cutting of the Drainage Panel is accomplished with a handsaw. For walls placed directly against sheeting or shoring, Drainage Panel must be secured by adhesive and/or mechanical fastening prior to placement of concrete or masonry. A polyethylene separator sheet should be installed, thus blocking the migration of concrete into the Drainage Panel. Sleeves (4" min.) spaced at 20 foot centers must be provided through the foundation wall beneath the floor slab to provide through-drainage to the interior hydrostatic pressure relief system.

For planter boxes, etc., apply Drainage Panel to bottom and or side surfaces with sufficient amount of OSI QB-300 (or equal) adhesive to prevent dislodging during placement of earth. Ensure that filter fabric side faces the soil.

Adhesives specified other than GeoTech products should be checked for compatibility with the Drainage Panel.

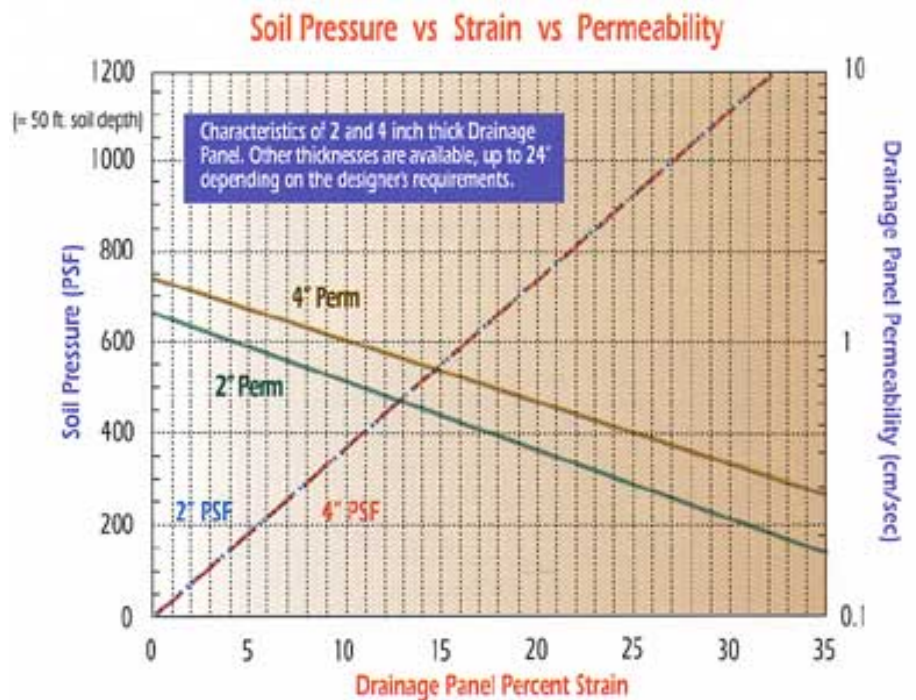
Availability and Cost: GeoTech products are available nationally. Material costs vary depending on thickness and, if necessary, the type of geotextile laminate applied. For pricing and delivery contact GeoTech Systems Corporation, P.O. Box 1045, Georgetown Pike, Great Falls, Virginia 22066, (703-759-0300).

Warranty: GeoTech Systems Corporation warrants for a period of 5 years that the Drainage Panel will be free of manufacturing defects. The company will, at its option, either replace any material proven to be defective or refund the purchase price of the material. GeoTech Systems Corporation does not assume any other liability, direct or indirect, nor any consequential damages.

THE ABOVE WARRANTY IS OFFERED IN LIEU OF ALL OTHERS, IMPLIED OR EXPRESSED, AND MAY BE MODIFIED OR EXTENDED ONLY IN WRITING BY CORPORATE OFFICERS OF THE COMPANY.

Maintenance: GeoTech Insulated Drainage Panels require no maintenance once installed.

Technical Services: Complete technical services are available from GeoTech Systems Corporation and its licensed manufacturers or distributors. Services include assistance during the design and specifications stages. Sales representatives can also work with the contractor through the initial stages of application to assure proper installation.



NOTICE: The information contained herein is, to the best of GeoTech's knowledge, accurate and reliable as of August 1998. Freedom from patents of GeoTech or others is not to be inferred. For any information that may have been developed subsequent to August 1998, consult the nearest GeoTech sales office.

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GeoTech Systems Corporation

PO Box 1045
Great Falls, VA 22066

(v) 703 759 0300

(f) 703 757 0119

(e) info@geosyscorp.com

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