

1. PRODUCT NAME

GeoTech® TerraFlex™ Synthetic Compressible Inclusion. (US Patent # 5713696)

2. MANUFACTURER

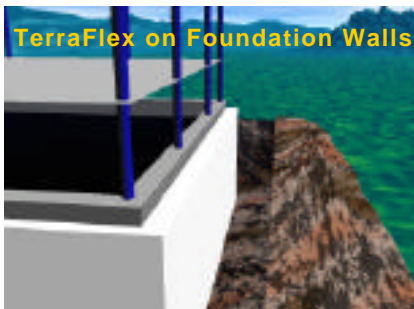
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3. PRODUCT DESCRIPTION

Basic Use: The TerraFlex Synthetic Compressible Inclusion is used in compressible inclusion applications where a strong yet lightweight material is required to reduce stresses on structural elements such as:

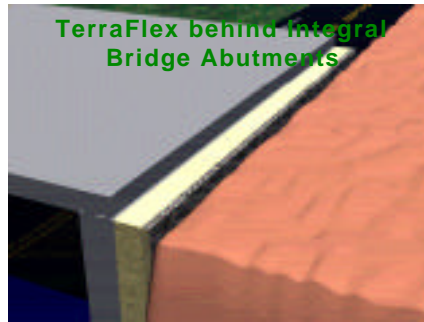
- retaining walls,
- bridge abutments,
- foundation walls,
- culverts,
- structural slabs,
- pipes, etc.

TerraFlex Synthetic Compressible Inclusion is also beneficial when rehabilitating or retrofitting existing structures by adding an increased safety factor against one or more geotechnical and/or structural failure mechanisms such as seismic forces and expansive soils and rock. When a compressible inclusion is required with a drainage component refer to the GeoTech Geoinclusion® manufactured by GeoTech Systems Corpora-



tion.

Other materials such as bales of hay or straw, wood chips, and cardboard have been used in compressible inclusion applications worldwide since the early 20th Century. However, these materials are unpredictable in their mechanical and physical behavior, and eventually



decay.

Using TerraFlex Synthetic Compressible Inclusion will provide predictable and consistent mechanical (stress-strain-time) behavior that is totally under the control of the design engineer.

TerraFlex is a revolutionary geosynthetic product with the following beneficial attributes:

- Increased compressibility compared to other buried materials,
- Predictable mechanical behavior,
- Provides thermal insulation,
- Provides noise and vibration damping,
- Will not decompose,
- Will not contaminate the environment,
- Recyclable.

Composition and Materials:

TerraFlex Synthetic Compressible Inclusion is a cellular plastic material that is strong, but has very low density (1% of traditional earth materials). The nominal (average) density of TerraFlex is 14.4kg/m³ (.9 pcf).

TerraFlex Synthetic Compressible Inclusion is made under a Quality Assured manufacturing process monitored by a third party laboratory.

TerraFlex Synthetic Compressible Inclusion contains a patented additive that resists termite infestations.

Size and Shape:

TerraFlex Synthetic Compressible Inclusion is produced in block form and is easily fabricated to required dimensions for individual projects. The blocks have dimensions of 48" x 48" x 35" (122 x 122 x 89cm) and are generally provided in square sheets of varying thickness from 1/2 inch (1.27cm) up to 35" (89cm).

Environmentally Safe:

TerraFlex Synthetic Compressible Inclusion contains no CFC's, HCFC's, HFC's, or formaldehyde. It is inert, non-nutritive and highly stable. It will not decompose, decay, or produce undesirable gases or leachates. TerraFlex is recyclable and safe for WTE Systems and landfills.

Limitations and Cautions: TerraFlex Synthetic Compressible Inclusion stands up well to normal weather conditions encountered during installation. Long-term (6 months or greater) exposure to UV will cause discoloration. Material should be covered as soon as practical.

TerraFlex Synthetic Compressible Inclusion is unaffected by freeze thaw cycling, moisture, or road salts. Protect TerraFlex Synthetic Compressible Inclusion from exposure to hydrocarbons, highly solvent extended mastics and coal tar pitch.

TerraFlex Synthetic Compressible Inclusion contains a flame retardant additive; however, it should be considered com-



bustible and should not be exposed to open flame or any source of ignition.

Applicable Standards:

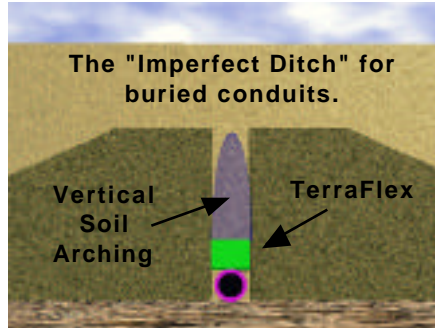
TerraFlex Synthetic Compressible Inclusion is a proprietary product with physical properties that have been altered during the manufacturing process of elasticization. It is manufactured from materials with third-party (UL) certification defining their composition, and the elasticization process is precisely regulated so as to ensure the final product will perform as advertised with predictable, well defined mechanical properties of stress versus strain.

4. TECHNICAL DATA

To select the required thickness of TerraFlex Synthetic Compressible Inclusion required, the design professional should develop project-specific design curves relating deformation of the ground surface and stress at the ground surface from the expanding ground. In general, the largest stress occurs under confined (zero deformation) conditions and the largest deformation occurs under free-swell (zero stress) conditions. The designer must select a magnitude of surface stress and corresponding deformation that is intermediate to these limiting conditions and for which the structure will be designed.

Note: In the absence of data relating surface stress and deformation, the designer can use deformations estimated using free-swell tests and arbitrarily select a stress level for which the structure will be designed.

The thickness of TerraFlex required should be such that the material will

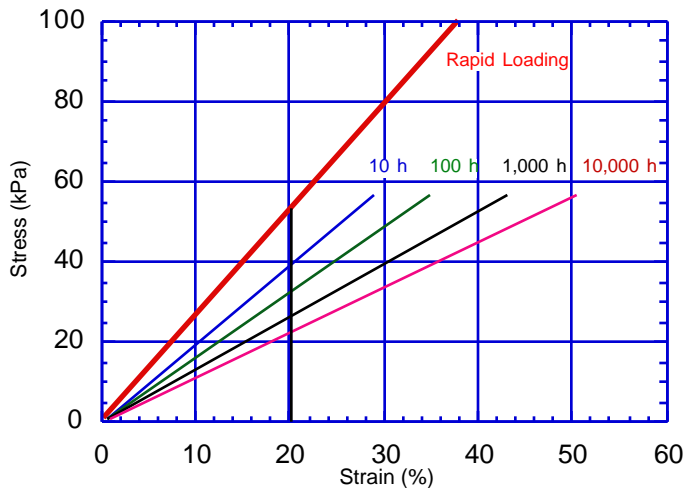


level in the Synthetic Compressible Inclusion. Having determined that, determining the required thickness as follows:

Step 1. Find the stress magnitude for which the structure will be designed on the vertical axis. If this corresponds to less than a strain level of 20% for TerraFlex, use step 3, otherwise use step 2.

Step 2. Based upon the maximum displacement determined from analysis of the structure or prevailing soil conditions, select a thickness of TerraFlex

TerraFlex™ Isochronous Strain-Stress Curves



not experience sustained stresses resulting in more than 20% strain as this is the elastic strain limit. Transient loading (as might occur during seismic events) beyond this limit are allowable.

The graph above shows the stress-strain relationship of TerraFlex Synthetic Compressible Inclusion in unconfined axial compression at room temperature. To determine the thickness of TerraFlex required for project specific conditions This graph is used to estimate the strain

such that under this degree of compression, it will be experiencing less than 20% strain.

Step 3. If it is necessary to limit the stress on the structure to less than that with TerraFlex at the elastic strain limit (20%), determine the thickness needed by determining the maximum strain from the rapid loading curve, and divide the estimated displacement by that value instead of 20%.

5. INSTALLATION

For most applications the following guidelines apply. Additional guidelines for specific applications should be developed by the design engineer.

1. At time of material delivery, verify Quality Assurance and identification marks on face of the product.
2. Surfaces should be clean, dry and sound; free of excessive dust, dirt, loose paint, oil, grease or any foreign matter that would interfere with a good bond.
3. Apply GeoTech DB-784 adhesive using trowel or putty knife to TerraFlex Synthetic Compressible Inclusion. Place walnut sized daubs of adhesive alternately spaced every 8" - 12" apart across the surface of the TerraFlex board, beginning 3" from the edges.
4. Set TerraFlex Synthetic Compressible Inclusion board in place immediately. Press firmly over the entire surface to level board and establish good adhesive contact. Butt all board joints tightly.

6. AVAILABILITY AND COST

Cost is directly related to the thickness of the material. Please contact GeoTech Systems Corporation or the licensee listed below to determine current material cost. TerraFlex is available throughout the United States, Canada and Puerto Rico.

7. TECHNICAL SERVICES

Complete technical services are available from GeoTech Systems Corporation and its licensed manufacturers or distributors. Services include assistance during the design and specification 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 April, 1999. Freedom from patents of GeoTech or others is not to be inferred. For any information that may have been developed subsequent to April, 1999, consult the nearest GeoTech sales office.

For further information and pricing, please contact GeoTech Systems Corporation or your local GeoTech TerraFlex licensee.