

DID YOU KNOW

THE IMPORTANCE OF COMPRESSIVE STRENGTH WHEN IT COMES TO GEOFOAM



Geofoam is an ultra-lightweight fill material manufactured from molded expanded polystyrene that significantly reduces loads on underlying soils or structures.

It is approximately 1% the weight of most soils and less than the weight of other lightweight fill alternatives. The high compressive resistance and lightweight nature of geofoam makes Atlas' Elevation® geofoam a smart choice for both new construction and renovation projects.

Geofoam must withstand the weight of cover materials (dead loads) and activity (live loads) without significant deformation. The industry accepted design recommendation for geofoam is that the compressive resistance at 1% not be exceeded. The 1% compressive resistance ensures limited elastic deflection while also limiting long term deflections from sustaining loads.

Compressive resistance is a measure of how much load an object can withstand while being compressed. It is measured with units of force over an area, most commonly as pounds per square inch (psi).

Geofoam, when subjected to loads, behaves as a linear elastic material up to a strain of 1%, as shown in Figure 1. This means Geofoam compresses slightly but will return to its original shape when the load is removed. In other words, the material acts like a spring.

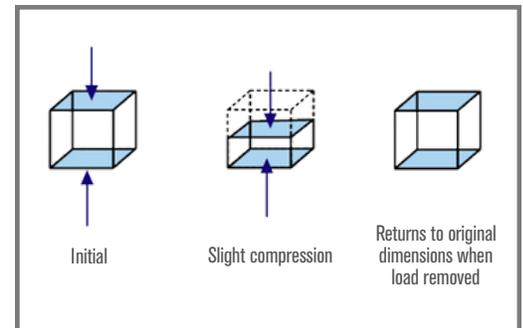


FIGURE 1

When compressive loads continue beyond the compressive resistance at 1%, the geofoam will undergo plastic deformation. Therefore, 5 and 10% strain values are NOT used for geofoam design.

Geofoam behavior is shown on the stress vs strain graph Figure 2:

Atlas manufactures geofoam with a range of compressive resistance at 1% from 2.2 to 18.6 psi. in compliance with ASTM D6817, "Standard Specification for Rigid Cellular Polystyrene Geofoam". This wide range gives engineers the choice of materials to meet their project requirements. Additional information on geofoam is available in ASTM D7180, "Standard Guide for Use of Expanded Polystyrene (EPS) Geofoam in Geotechnical Projects".

Compressive Resistance @ 10%
Compressive Resistance @ 5%
Compressive Resistance @ 1%

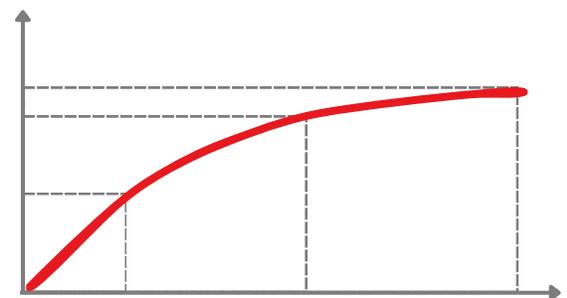


FIGURE 2

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