

## Geofoam No. 5002

**Subject: Understanding Sample Size for Geofoam Testing**

**Date: January 2003 (Revised January 2019)**

ThermaFoam R-Control has long published performance values for ThermaFoam R-Control Geofoam with respect to compressive resistance.

ThermaFoam R-Control conducts tests on Geofoam for compressive resistance properties using ASTM D1621 "Test Method for Compressive Properties of Rigid Cellular Plastics." Prior to 2002, the tests were conducted on twelve inch cubes samples. This large size was selected to coincide with the large Geofoam blocks used for most geotechnical applications.


The development of ASTM D6817 (see Technical Bulletin Geofoam no. 5001) for Geofoam has led to standardization in the testing of samples. Prior to the development of ASTM D6817, an industry consensus on the testing of samples for compressive resistance properties was not available. **Two inch cube samples are specified by ASTM D6817.** The relatively small size of the two inch cube sample is to accommodate most geotechnical test facilities, many of which are not capable of testing larger samples.

ThermaFoam R-Control has conducted testing in accordance with ASTM D1621 "Test Method for Compressive Properties of Rigid Cellular Plastics" using two inch cube samples. The results of these test for ThermaFoam R-Control Geofoam shows full compliance with the ASTM D6817 requirements.

A review of the values contained in the table below show that the ThermaFoam R-Control Geofoam appears stronger when tested in twelve inch cubes versus two inch cubes. The testing of two inch cubes creates a significantly greater proportion of cut edges which slightly reduce compressive resistance performance.

In addition to the sample size, results for the testing of geofoam are dependent upon the loading rate of the test. The ASTM D6817 testing specifies that the samples should be tested at a loading rate equal to 10 percent strain per minute. All ThermaFoam R-Control geofoam testing has been conducted at this loading rate.

**ThermaFoam R-Control supports the publishing of compressive resistance values related to geofoam on 2 inch cube samples loaded at a 0.2 inches per minute as specified in ASTM**

ThermaFoam R-Control Geofoam Properties							
PRODUCT							
		12	15	19	22	29	39
Compressive Resistance <sup>1</sup> @ 1% deformation, min.	psi	2.2	3.6	5.8	7.3	10.9	15.0
	psf (kPa)	320 (15)	520 (25)	840 (40)	1050 (50)	1570 (75)	2160 (103)
Compressive Resistance <sup>2</sup> @ 1% deformation, min.	psi	3.2	4.6	6.2	8.3	11.9	16.0
	psf (kPa)	460 (22)	660 (32)	892 (43)	1200 (57)	1710 (82)	2300 (110)
ASTM D6817 Compliance, Type		EPS12	EPS15	EPS19	EPS22	EPS29	EPS39

<sup>1</sup> ASTM D1621-00 using 2" (50mm) cubes.

<sup>2</sup> ASTM D1621-00 using 12" (305mm) cubes.



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