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NEWS

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GEOFOAM COMES OF AGE

Crofton, Maryland...The use of Geofoam as a highway construction material celebrated its thirtieth birthday as the ASTM International released Designation D6817– 02, *Standard Specification for Rigid Cellular Polystyrene Geofoam*. This represents the first published set of standards and values on Geofoam and covers the types, physical properties and dimensions of rigid cellular polystyrene (RCPS). RCPS Geofoam is formed by the expansion of polystyrene resin bead or granules in a molding process. The ASTM specifications feature a summary of research data that details the minimum product qualification requirements for commonly manufactured types of RCPS Geofoam. The newly published specifications identify minimum product density, minimum compressive resistance measured at 1%, 5%, and 10% strain, minimum flexural strength, and minimum oxygen index as fire rating. One important aspect of the ASTM research is the development of compression test data to establish strength and deformation parameters.

The EPS Molders Association (EPSMA) is a non-profit industry trade organization representing more than 50 manufacturers of expanded polystyrene (EPS), a product used in the manufacture of Geofoam worldwide. EPSMA coordinated a stringent round robin test program for two-inch cube samples of EPS Geofoam product in accordance with ASTM D1621 guidelines. The results of the test program were used to determine the compressive resistance values to be included in the newly published ASTM 6817 product specification. According to Jim Whalen, Technical Marketing Manager of Plasti-Fab, an EPS product manufacturer and Technical Committee Chair of EPSMA, "ASTM specification 6817 is an important industry milestone because it establishes minimum compressive resistance properties for various types of Geofoam. The specification can be used by civil engineers as a basis for specifying required Geofoam product types for use in their projects. It also provides a means for quality assurance checks that can be accomplished by using a standard sample size for Geofoam product that is delivered to the job site." The determination of structural loads and a material's ability to withstand those loads is a critical factor when specifying RCPS Geofoam.

David Suits, the Soils Engineering Laboratory Supervisor at the New York State Department of Transportation and chairman of the ASTM committee that developed the Geofoam specifications, commented, "These are the first detailed specifications that will provide guidance to the end user. This process involved industry, ASTM representatives and academia, including the Geofoam Research Institute at Syracuse University, to develop the format and the content of the specifications." The release of this standard is the result of a collaborative effort by the members of ASTM International Committee D35 on Geosynthetics and ISO/TC 221 on Geosynthetics. The EPS industry is encouraged by

the potential for market growth that this new standard represents, as Geofoam's technical performance and problem solving features need to be understood by civil engineers before RCPS Geofoam usage will increase.

Dr. Dawitt Negussey, head of the Geofoam Research Center at Syracuse University and a member of the ASTM International Committee D35 noted, "The collaborative effort that resulted in the development of D6817 will advance Geofoam applications around the world. The use of Geofoam is growing rapidly in the U.S. after a slow start relative to Northern Europe and Japan. Now that we have an ASTM Specification standard, practitioners will be more confident in specifying the material."

Geofoam was first introduced as a highway construction material in the 1970s. Geofoam has an established track record worldwide as a cost-effective engineering solution for difficult embankment stability and foundation settlement applications. One highway construction project that fully utilized Geofoam, Salt Lake City's Interstate 15 Geofoam Project, won the American Society of Civil Engineers (ASCE) 2002 Outstanding Civil Engineering Achievement. Another site where an engineering challenge was solved by using Geofoam was at the New Orleans airport under 10,000 feet of runway where the water table was high and the compressible delta deposits presented settlement problems. Geofoam is also effective for use in areas that are prone to earthquakes, and was used in a major South American bridge construction project located at the epicenter of a massive 1960 earthquake.

Geofoam is marketed by EPSMA member companies as molded blocks of expanded polystyrene (EPS) for use as a lightweight, stable, environmentally inert construction material. The density of Geofoam is only about 1-2% of the density of rock, thus it offers a super lightweight fill material alternative to reduce stresses on underlying subgrades. According to David Suits, "In many instances we are working with poor soils in our highway construction projects. In those instances, Geofoam provides a highly effective alternative that can solve a range of soil stability problems."

A new ASTM task force is currently developing the *Standard Guide for Design and Construction of Geotechnical Projects Incorporating RCPS Geofoam*. According to an initial draft produced by ASTM Committee D35 Task Force, the new guide proposes to cover the principles that must be considered in the design and installation of Geofoam for geotechnical projects.

For more information about Geofoam go to www.epsmolders.org, www.geofoam.syr.edu, or www.geofoam.org. To obtain a copy of ASTM's D6817-02 go to www.astm.org.

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