Tempo Biofoam

The additive used by EPSilyte is added during the manufacturing process. It is a unique material designed not only to attract specific naturally occurring microorganisms to the foam, but also to induce rapid microbial acclimatization to polymers and resulting biodegradation. To learn about landfill biodegradeable foam see: https://www.styrochem.com/videos/StyroChemEPSBiodegrades.mp4 and https://epsilyte.com/

The method of biodegradation caused in this manner is strictly enzymatic and is designed to utilize naturally occurring microorganisms within waste environments, including landfills. During the degradation process gasses such as methane , carbon monoxide, etc. are released and combined, these gasses are referred to as landfill gas.(LFG) LFG can be captured and refined for use as a replacement for fossil fuels in heating, electricity generation and vehicle fuel.

At a certified independent laboratory, an ASTM D5511test revealed that expanded polystyrene made from ADEPT® EPS biodegraded by 40% in less than 306 days in comparison to zero degradation for standard expanded polystyrene when tested under the same conditions for the same period of time.

ADEPT EPS is designed to biodegrade in anaerobic landfills only. In our testing there was no physical degradation of the expanded polystyrene made from ADEPT™ EPS after six months in warehouse conditions.

Cups made from EVRgreen™ EPS have been shown to biodegrade 92% over 4 years under conditions that simulate both wetter and biologically active landfills using ASTM D5511 tests. Wetter or biologically active landfills may not exist in your area. The stated rate and extent of degradation do not mean the product will continue to degrade.

ASTM D5511 - 18

Standard Test Method for Determining Anaerobic Biodegradation of Plastic Materials Under High-Solids Anaerobic-Digestion Conditions

5.1 Biodegradation of a plastic within a high-solids anaerobic digestion unit is an important phenomenon because it will affect the decomposition of other waste materials enclosed by the plastic and the resulting quality and appearance of the digestate after an anaerobic digestion process. Biodegradation of plastics could allow for the safe disposal of these plastics through aerobic and anaerobic solid-waste-treatment plants. This procedure has been developed to permit the determination of the rate and degree of anaerobic biodegradability of plastic products when placed in a high-solids anaerobic digester for the production of digestate from municipal solid waste.

5.2 Limitations—Because there is a wide variation in the construction and operation of anaerobic-digestion systems and because regulatory requirements for composting systems vary, this procedure is not intended to simulate the environment of any particular high-solids anaerobic-digestion system. However, it is expected to resemble the environment of a high-solids anaerobic-digestion process operated under optimum conditions. More specifically, the procedure is intended to create a standard laboratory environment that will permit a rapid and reproducible determination of the anaerobic biodegradability under high-solids digestion conditions.

1. Scope

1.1 This test method covers the determination of the degree and rate of anaerobic biodegradation of plastic materials in high-solids anaerobic conditions. The test materials are exposed to a methanogenic inoculum derived from anaerobic digesters operating only on pretreated household waste. The anaerobic decomposition takes place under high-solids (more than 30#% total solids) and static non-mixed conditions.

1.2 This test method is designed to yield a percentage of conversion of carbon in the sample to carbon in the gaseous form under conditions found in high-solids anaerobic digesters, treating municipal solid waste (1, 2, 3, 4).2 This test method may also resemble some conditions in biologically active landfills where the gas generated is recovered and

biogas production is actively promoted by inoculation (for example, codeposition of anaerobic sewage sludge, anaerobic leachate recirculation), moisture control (for example, leachate recirculation), and temperature control (for example, short-term injection of oxygen, heating of recirculated leachate) (5, 6, 7).

1.3 This test method is designed to be applicable to all plastic materials that are not inhibitory to the microorganisms present in anaerobic digesters operating on household waste.

1.4 Claims of performance shall be limited to the numerical result obtained in the test and not be used for unqualified “biodegradable” claims. Reports shall clearly state the percentage of net gaseous carbon generation for both the test and reference samples at the completion of the test. Furthermore, results shall not be extrapolated past the actual duration of the test.

1.5 The values given in SI units are to be regarded as the standard.

1.6 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use. Specific hazards are given in Section 8.

NOTE 1: This test method is equivalent to ISO#15985.

1.7 This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.