

Are you confused about the terms biodegradable, photodegradable, compostable, oxo-biodegradable, or even plain old degradable? Welcome to the new world of biodegradable materials.

Whether you are a compost manufacturer, compost end-user, or designer, you are affected by these terms and it is important to understand the inherent differences in these types of materials and what the industry recognizes. As part of the developing industry around biodegradable products and materials, new ASTM standards and definitions have recently been developed to categorize these materials.



ASTM Standards

ASTM D883-08: defines various types of plastics and common terms that are to be utilized in all other ASTM standards.

ASTM D5338: test method that establishes rate and extent of biodegradation (carbon transformation to carbon dioxide), using inoculation from commercial compost piles. Standardized parameters are defined in ASTM D6400.

ASTM D6400: specification for reporting and labeling based on ASTM D5338, which includes rate of biodegradation and disintegration within a commercial composting environment, and any deleterious effect on composting process or compost product quality due to inclusion. This standard provides guidelines for the required commercial composting environment, including temperature, air, and humidity controls for a period of 180 days; acceptable metals content limits established at 50% of CFR 503 standards, and phytotoxicity limits.

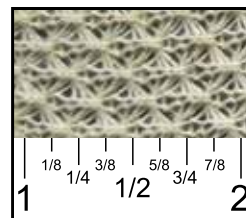


ASTM D6868: specification for biodegradable coatings used in paper and plastic materials typically used in biodegradable packaging and fiber-based bagasse products. The requirements are identical to those of ASTM D6400.

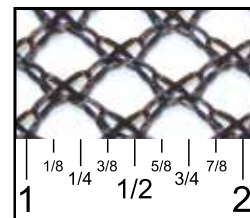
ASTM D7081: specification for non-floating biodegradable plastics explicitly designed for, and used in marine environment applications.

Filtrex Products

All Filtrex products utilize compost or recycled organics as a component of the final product. Most Filtrex mesh netting materials classify as photodegradable. Filtrex also offers a compostable (which also meets definition for biodegradable) and an oxo-biodegradable mesh netting material. Filtrex[®] BioSoxx[™] is made from 100% cotton fiber, and should readily breakdown in any commercial composting operation within 180 days, thereby meeting standards set forth in ASTM D5338 and ASTM D6400. If left in the field this product will also easily biodegrade in 3 to 6 months, leaving little or no residues.



BioSoxx[™]
Material: Cotton
Mesh Opening: 1/8"
Strength: n/d
Longevity: up to 12 mo.



5mil HDPE
Material: Oxobiodegradable
Mesh Opening: 3/8"
Strength: 26 psi; 23% @1000 hrs
Longevity: 6 – 12 mo

Filtrexx Biodegradable High Density Polyethylene (HDPE) netting is classified as oxo-biodegradable, which will biodegrade if left in the environment but not as rapid as the Filtrexx® BioSoxx™. This product is typically used when biodegradability is desired, but longevity is also a functional concern.

Currently, there is no ASTM standard for oxo-biodegradable materials and products. There are no specifications for the generic term 'biodegradable'. However, 10 years of experience from field applications with over 50,000 projects at Filtrexx International has shown that HDPE and HDPP will weaken and lose integrity in 12-18 months, depending on UV exposure. For instance, hot sunny climates like Phoenix, Arizona show the products do not last as long as cloudy, colder climates in Cleveland, Ohio. For this reason, longevity and estimated functional times are listed in the Filtrexx design manual so engineers can select the appropriate product for the proper use.

For applications where Filtrexx® Soxx™ are permanently vegetated, the canopy shields the Soxx from destructive UV exposure, which will also make the Soxx invisible. This permanent UV protection ensures long term structural integrity to Soxx and is an important design consideration for any long term, vegetative application.



Filtrexx oxo-biodegradable HDPE

Sources: Biodegradable Products Institute (BPI), ASTM

Definitions

Degradable: material will change in structure or properties under certain environmental conditions resulting in fragmentation and loss of performance or properties.

Photodegradable: material will degrade into smaller pieces or molecules when exposed to sunlight, ultraviolet light, or infrared radiation.

Biodegradable: material will break down over an unspecified time period and may or may not leave toxic residues.

Oxo-biodegradable: material will biodegrade over a longer period of time by oxidation and biodegradation processes due to an added ingredient that increases rate of breakdown (2-3 years; some studies show much longer time periods), and may leave fragmentations; typically used with plastics. These materials will fragment much more quickly than traditional plastics. However, these fragments will remain in the environment for years.

Compostable: material will break down into natural components with no toxic or visual residues within the time span attributed to compost manufacture in a commercial composting operation or environment (approximately 6 months).

Polylactic Acid (PLA): PLA is used to make bioplastic materials and is biodegradable, typically derived from cane sugar or glucose; it is an alternative to polypropylene and polyethylene plastic materials.



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