

What is BIOflex?

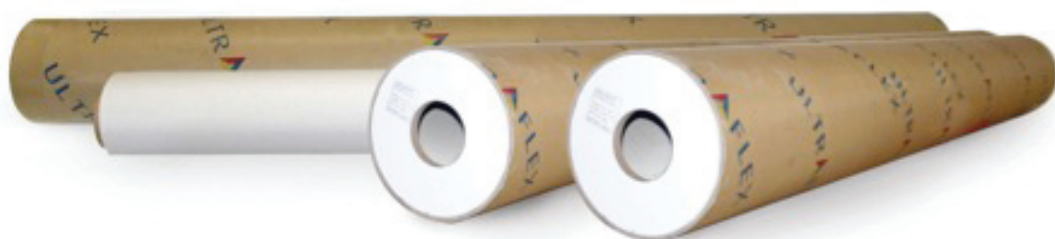
BIOflex™ is a new alternative to traditional non-biodegradable banner PVC. BIOflex™ is designed to work without loss of performance until it is exposed to landfill conditions.

The greener alternative in wide format banner printing

Environmentally friendly Ultraflex Systems, Inc. (US) has patented a completely biodegradable PVC called BIOflex™ that will revolutionise the way we look at the sign industry globally.

“Manufacturers have been searching for the most efficient way to make PVC recyclable, with millions of printed sign faces which will never degrade sitting in landfills worldwide. These efforts have been fruitful in relation to creating recyclable products. In order for the entire recycling process to succeed, however, it is necessary to pay the increasingly expensive costs to transport the discarded signs to the limited recycling locations that can actually reuse the PVC.”

Ultraflex has been working diligently to demonstrate its dedication to environmental responsibility and is proud to be the first sign supplier on planet Earth to create this new formula for biodegradable PVC. When exposed to conditions in a landfill (darkness, high heat and moisture), BIOflex™ attracts microbes that break down PVC and turn it into dust.



Are PVC banners immortal in the landfill?

- 2003 report: After 32 years in a landfill, plasticized PVC sheet showed only minor holes where fungi had consumed plasticizer or other additives.
- 1994 report: Addition of 8% starch resulted in microbes eating the starch in the landfill, leaving the PVC.
- Recent reports by the Dept. of Waste Management, Hamburg Technical Univ. and Dept. of Environmental Studies, Univ. of Linköping, Sweden indicate that only additives in PVC biodegrade in the landfill, not the polymer itself.

BIOflex™ - Formula Details

PVC has a remarkable balance of properties. It is strong, resistant to oil and chemicals, easily decorated, resistant to sunlight and weathering, flame resistant, and low in cost. At one time, PVC was often formulated with little regard for avoidance of toxic ingredients. This is no longer true.

BIOflex™, for example, contains no toxic materials. It is based on the latest technology, highly pure PVC resin, fine particle limestone to provide opacity, plasticizer of vegetable origin to provide flexibility, and the titanium pigment used in the highest quality paint to add to sunlight resistance. Overall, more than 80% of the content of BIOflex™ is derived from sources other than petroleum.

Previously PVC had been immortal in the landfill; no degradation was found after decades of landfill burial. When degradable materials, such as starch, were added, they were consumed in the landfill but the PVC itself was untouched. Ultraflex Systems has developed a nontoxic formula that, at very low levels, enables landfill decomposition of BIOflex™. BIOflex™ has been engineered to be the FIRST truly environmentally friendly, biodegradable PVC. Worldwide patents covering the BIOflex™ composition are pending.

In the landfill, the carbon and hydrogen content of BIOflex™ are partly consumed by the biomass organisms and partly released as methane from fermentation. In a well managed landfill, methane is harvested for use as fuel. The chlorine content of BIOflex™ is partly consumed and partly converted to soluble chloride. This has value as fertilizer since it makes soil nitrogen more rapidly available to plants. In experiments using landfill into which BIOflex™ had decomposed, as compost in potting soil, vegetables sprouted more rapidly than in controls.

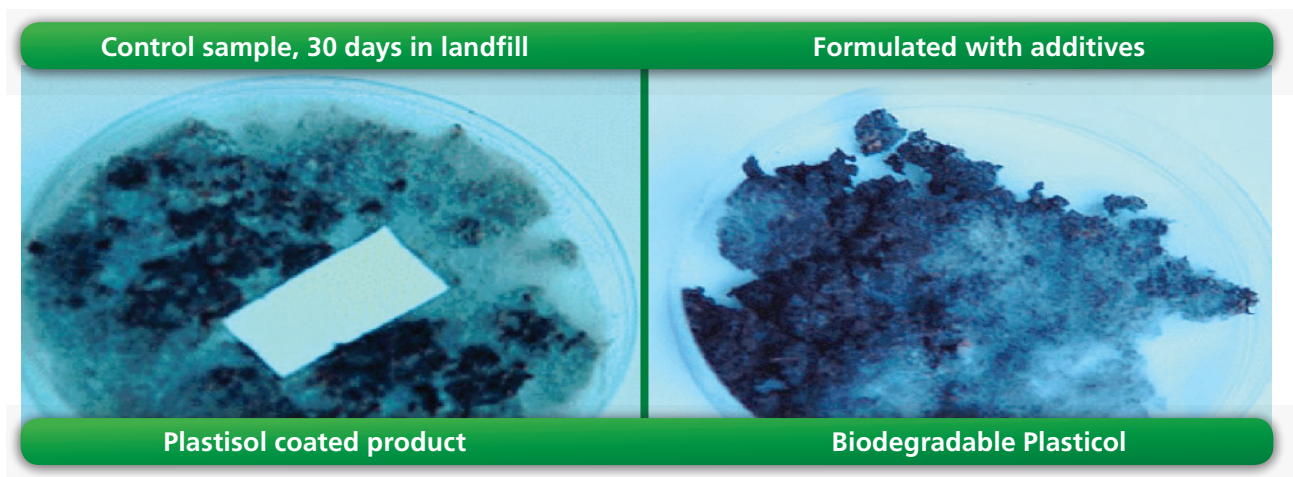
Certified Testing

In an ISO 13641- Potential Inhibition of Biogas Production of BIOflex™ study by an independent testing laboratory, the addition of BIOflex™ to a landfill not only did not inhibit, but actually increased the level of biological activity. The minor amount of refined calcium carbonate in BIOflex™ also adds to fertilizer value. This test is designed to ensure that materials added to a landfill do not release toxic substances. BIOflex™ begins to degrade in the landfill within a few weeks and depending on thickness and quantity added, the PVC will vanish in 3 to 5 years. It should be noted that landfills can be managed by control of temperature and moisture content so as to increase the level of biological activity.

ASTM D5526- Standard Method for Determining Anaerobic Biodegradation of Plastic Materials under Landfill Conditions- data show that the ratio of the fraction of organic carbon and hydrogen from BIOflex™ released to the air, and the fraction delivered to the solid biomass varies with landfill conditions, such as temperature and water content. The fraction released to the air is mostly methane, which can be harvested for fuel, along with the methane released by other components of the landfill, such as paper. Variability in the ratio end product to the air and to the biomass is also typical of other landfilled materials, i.e.. paper. BIOflex™ loses molecular weight to the point where microbes can consume it. No detectable monomer is formed.

BIOflex™ has passed fire testing for the most stringent of US tests; NY MEA; NFPA 701 and the CA Fire Marshal Title 19 test.

BIOflex™ has been tested for strength and weathering in the above tests as well as exposure to 2000 hours of laboratory UV, which showed no signs of discoloration.



Specifications

BIOflex™ is a durable white, flexible 13oz PVC readily available in seamless widths up to 16'4" (5.00m). With 1000 x 1000 denier, it is tear and fade resistant and will withstand all types of weather conditions; BIOflex™ can last years in indoor and outdoor applications depending on weather conditions. BIOflex™ is RF- weldable and compatible with UV, solvent and screenprinters. It is well suited for applications that require a front-lit digital or screen-printed sign or banner.

Physical properties

The following information on physical and chemical characteristics is based upon tests believed to be reliable. The values are intended only as a source of information. They are given without guarantee and do not constitute a warranty. The purchaser should independently determine, prior to use, the suitability of this material for his/her specific purpose. (Data represents averages and is not intended for use as a specification.)

Characteristics	Test Method	Metric	English
Support Cloth	1	Polyester	Polyester
Yarn dtex	DIN EN ISO 2060	1100 x 1100 dtex	1000 x 1000 denier
Type of Coating	N/A	PVC	PVC
Total Weight	DIN EN ISO 2286-2	450g/m ²	13.2 oz/yd ²
Width	N/A	Up to 5.00m	Up to 16'4"
Tensile Strength (warp/weft)	DIN EN ISO 1421	2400/2200 N/5cm	273/250 lbs./inch
Tear Strength (warp/weft)	ISO 13934-1	250/250 N	56/56lbs.
Flame Resistant	DIN 75200	NFPA 701, CA Fire Marshall, NYC (MEA)	
Low Temperature No Crack at:	ISO 1876	Low at -15° C	Low at 5°F
RF Weldable (Heat Sealable)	N/A	Yes	Yes



BIOFlex™ Interest

BIOflex™ had been embraced all over the world starting in the US. Europe, Latin America, India and Australia are just a few countries with great interest for BIOflex™.

Major global corporations with green incentives turned to BIOflex™ to broaden their sustainability.

Nike, Warner Brothers, Walmart, Fed Ex Kinkos, Tesco's, Marks & Spencers and many more



Eco-Friendly Trends

BIOflex™ was a trend setter for the industry's efforts to become more eco-friendly. As the industry "greens", Ultraflex intends to introduce more eco-friendly media into the market over the next few months. BIOmesh™ will be the next one in our "Green" product line.



Now available from The Image Group, BIOFlex can be used in a wide range of printed banner, exhibition and portable display solutions. Visit us online or call us FREE on 0800 389 9898 for a competitive quotation or further details. Please register with our e-newsletter or our RSS news feed service to keep up-to-date with our green agenda.