

Innovation With a Marine Focus

New Film Products for Marine and Anaerobic Digestion

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Mirel Bioplastics by Telles

Through a mutual development effort, Cortec Corporation and Telles have advanced proprietary film processing and extrusion methods that have resulted in a series of finished flexible film products based on Mirel™ P5001. Cortec is an innovative film converter headquartered in Minnesota, and was the first bioplastic film extruder in North America to attain BPI certification for film products. The company recently announced the launch of their new film material EcoOcean™ based on Mirel P5001. This new bioplastic offers a combination of environmental and performance benefits previously unattainable—flexibility and strength; commercial and low-temperature backyard compostability; 77% annually renewable raw material content; anaerobic and marine biodegradability.

EcoOcean is the only bioplastic on the market that offers users this combination of benefits. The material is the result of not only novel bioplastics resin technology, but also production and processing breakthroughs attained after years of development work by Cortec's extrusion plants in Cambridge, Minnesota, USA and Beli Manastir, Croatia. The new EcoOcean films and bags bridge the environmental and performance gap that has existed for decades with other films.

"The combination of Mirel film resin with the new extrusion and processing method brings benefits for end-users, including multiple end-of-life options," explained Boris Miksic, president and CEO of Cortec. "EcoOcean will revolutionize the use of flexible packaging, especially in coastal areas of the world," said Miksic. "Ideally, EcoOcean is disposed of in commercial composting, or in oxygen deprived anaerobic digestors. However, as is seen worldwide, plastics can still end up in the waterways—even in communities with the harshest and strictest penalties for litter.

[Photo: Cortec Corporation]





(Photo: Algalita Research Foundation)

"With legislation-restricted plastic bag and film usage, and plastics debris in the oceans and fresh waterways, we're finding a growing demand for a durable film material that is also marine biodegradable," explained George Kipouras, film business development manager with Telles. "Mirel offers more responsible end-of-life disposal options and can help reduce the amount of persistent plastic waste in the environment."

Mirel P5001 is a new biobased film grade for producing innovative films that are durable in use and shelf stable, yet biodegradable in ambient temperature environments. The material has high melt strength and is suitable for blown and cast film extrusion lines. Its physical properties are near LLDPE and include heat sealable, excellent tensile properties, moisture and heat resistance, UV resistant and good weatherability. Films made from P5001 can be easily printed to make customized retail bags, advertising, and premium shopping bags.

Plastics pollution at sea is a major environmental issue with the plastics occurring through discharge from rivers and waterways from land, spillage from marine craft, illegal dumping and a range of other sources. Mirel bioplastics is a responsible solution in a marine environment that can help to reduce the problem because of its unique ability to biodegrade in marine and freshwater environments

Growing Opportunities for Anaerobic Digestion and Organics Recycling

Cortec is also responding to markets requiring anaerobic digestion with a new Mirel-based film product called Eco Works®AD. P5001 was tested by Organics Waste Systems (OWS), Belgium to the ASTM D5511 standard test method for anaerobic biodegradation. The results concluded that the Mirel achieved 100 percent biodegradation in 15 days.

"Eco Works AD is the result of more than 13 years of development work," said Miksic. "We've now achieved the high renewable content that was previously unattainable in a flexible film that has a range of disposal options after use including anaerobic digestion."

In the United States and Canada there are several pioneering large scale commercial anaerobic digestion facilities starting up in 2012. The City of San Jose California will have a 9,300 m² (100,000 sq. ft.) enclosed facility that will house dry fermentation and composting tunnels, part of a large urban integrated solid waste system that is first of its kind in the US. The first phase of the new anaerobic digestion and composting facility will process 75,000 to 90,000 tons/year, and its full design capacity is up to 270,000 tons/year. In Canada, Harvest Power's 50,000 tons/year high solids anaerobic digester facility will open at the existing Richmond composting facility in British Columbia.

Polyhydroxyalkanoates (Mirel PHA) are now becoming available for a range of films and flexible packaging applications due to their combination of high biobased content, performance and biodegradability properties. Telles is now commercializing the new Mirel P5001 film grade. This new film material has high biobased content and offers a wider range of biodegradability possibilities including anaerobic digestion, marine, soil, and home backyard and municipal composting. This unique range of biodegradability properties broadens the scope of end-use applications from horticulture, packaging, marine-related uses, retail bags, packaging films, and compostable bags.

Companies like Cortec and Telles are positioned for this growing market where anaerobic digestion is part of the managed waste stream to produce renewable energy and compost in response to the growing demand for more sustainable solutions.