



## ABOUT MIREL™ BIOPLASTICS

Mirel is a family of performance bioplastic materials made from plant-derived sugar, a renewable resource, that are durable in use but will biodegrade at the end of their useful life. Mirel has the physical properties of petroleum-based resins, yet with a unique combination of being biobased and biodegradable when disposed in natural soil and water environments, home composting systems, and industrial composting facilities, the latter of which may not be available in all geographic areas. The rate and extent of Mirel's biodegradability will depend on the size and shape of the articles made from it. However, like nearly all bioplastics and organic matter, Mirel will not biodegrade in conventional landfills. Commercial grades are injection molding, cast and blown film, cast sheet, and thermoforming. Development grades are non-woven, blow molding, fibers, foam and monofilament. Mirel can replace many conventional plastics for a wide variety of applications and processes on existing standard conversion equipment and infrastructure.

### HEADQUARTERS

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### ABOUT METABOLIX

Founded in 1992, Metabolix, Inc. (MBLX) is an innovation-driven bioscience and engineering company focused on providing sustainable solutions for the world's needs for plastics, chemicals, and energy. [www.metabolix.com](http://www.metabolix.com)

### ABOUT ADM

Founded in 1902, Archer Daniels Midland Company is one of the largest agricultural processors in the world. Serving as a vital link between farmers and consumers, taking crops and processing them to make food ingredients, animal feed ingredients, renewable fuels and naturally derived alternatives to industrial chemicals. [www.adm.com](http://www.adm.com)

### PRODUCT APPLICATIONS

- Agriculture: mulch film, stakes, erosion control, netting, sod wrap, and plant pots
- Compost Bags: industrial can/bin liners, consumer kitchen and yard compost bags
- Consumer Retail: cosmetic packaging, gift cards, writing instruments, cell phone cases, ink cartridges, hand-held electronics, and large format advertising graphics
- Durable Goods: business equipment, printers, computer peripherals, laboratory material handling trays, and appliances
- Packaging: retail bags, single-use disposables, caps, closures, tubs, jars, and bowls
- Marine/Aquatic: erosion control for estuary and coastline restoration, and water treatment

### BIODEGRADABILITY CERTIFICATIONS AND DEFINITIONS

Mirel base resins are certified by Vinçotte to biodegrade in natural soil and water environments, and in both home and industrial composting systems. Mirel resins are also certified by the Biodegradable Products Institute / U.S. Composting Council to biodegrade in industrial composting systems. Unlike petroleum-based plastics that persist in the environment for years, Mirel is biodegradable under a wide variety of conditions.

Biodegradability is defined as:

- The degradation of material from naturally occurring microorganisms, such as bacteria, fungi, or algae, over a period of time. *Source: ASTM*
- Capable of decomposing under natural conditions. *Source: EPA*

For more information about biodegradability properties and a complete list of Mirel certifications, visit [www.mirelplastics.com](http://www.mirelplastics.com).

### GLOBAL PROBLEM: WASTE DISPOSAL

In 2007, the U.S. Environmental Protection Agency reported that the U.S. generated an estimated 254 million tons of trash, about 4.6 pounds of individual waste generated per person per day. In an earlier report the USEPA declared that:

- 29.5 million tons of plastic was generated in the municipal solid waste stream, representing 11.7% of the total weight of waste, up from less than 1% in 1960.
- Only 6.9% of total plastic solid waste in the U.S. was recycled and diverted from landfills.
- Of the 4.6 million tons of plastic bags, sacks, and wraps made, only 7.8% was recovered.

According to the U.S. Composting Council, organic materials such as yard trimmings, food scraps, packaging, and paper products are the largest component of trash and make up about two-thirds of the solid waste stream.

The American Chemistry Council reports that plastics comprise about 10% of U.S. petroleum consumption.

### ABOUT TELLES

Metabolix and Archer Daniels Midland Company (ADM) are commercializing Mirel through a joint venture called Telles. The first commercial-scale plant to produce Mirel bioplastic resins is being constructed adjacent to ADM's wet corn mill in Clinton, Iowa. The plant is expected to have commercial product available for customers in the second half of calendar year 2009.