



FACTSHEET - BIOBASED PRODUCTS

WHAT ARE BIOBASED PRODUCTS?

Biobased products are commercial or industrial products that are composed – in whole, or in significant part – of biological materials, uses renewable resources as feedstock (agricultural material) and often replaces petroleum-based ingredients.

HOW ARE BIOBASED PRODUCTS GOOD FOR THE ENVIRONMENT?

Biobased products generally do not contain synthetics, and are biodegradable. Since biobased ingredients such as enzymes often replace harsh chemicals, they help reduce impact on the environment and in some cases reduce reliance on non-renewable resources. In addition, the use of enzymes in the processing of textiles & apparel can lower energy and water consumption.

BIOBASED PRODUCTS ARE PART OF EVERYDAY LIFE

In India, biobased ingredients are found in textile processing & clothing, personal hygiene & care, food & beverage packaging, renewable fibre & products and detergent for laundry.

The U.S. Department of Agriculture estimates there are 20,000 products made with biobased ingredients on the market today.

ECONOMIC BENEFITS OF BIOBASED PRODUCTS

Biobased products are not only good for the environment but they also provide an opportunity to boost domestic demand for renewable commodities, create jobs and create investment income. According to a 2010 report titled, "The Future of Industrial Biorefineries," commissioned by the World Economic Forum, agriculture & biobased industries will generate \$230 billion and create more than 800,000 jobs by 2020. Biobased products alone is projected to accumulate \$15 billion in revenues.

PRODUCT CATEGORIES

- **Textile processing & clothing**
India is a major cotton textile processing hub and this processing requires a huge quantity of water. Enzyme technologies help in reducing water, energy and harsh chemicals usage in cotton textile processing. DuPont launched its Primagreen Ecoscour® range of enzymes that deliver these benefits to cotton textiles processors in the region.
- **Personal hygiene & care**
Natural Betaine derived from renewable raw material can replace some of the ingredients derived from non-renewable sources in skin, hair and oral care products. Zemea® Propanediol, from DuPont Tate & Lyle BioProducts, is an innovative, skin-friendly, 100% natural glycol alternative. It is used as a humectant or natural solvent in cosmetics and personal care products. It is also used in a variety of home and industrial cleaning products as a natural solvent and enzyme stabilizer. Zemea® is petroleum-free, environmentally sustainable and is certified by the USDA as 100% biobased.
- **Food & beverage packaging**
Food and Beverage packaging with biobased materials can withstand elevated temperatures during transport, storage and use, thereby prolonging shelf life. Polylactic acid (PLA) is one Factsheet - Biobased products (India example of a biobased alternative to petroleum derived products. These biobased ingredients can be used in packaging such as clamshells and deli trays, as well as selected industrial applications.



- **Renewable fibre & products**

Rather than using nylon fibers derived from petrochemicals, products such as carpets and fabrics can be made in part from renewably-sourced fiber through a bioprocess that creates an organic building block called propanediol.

DuPont Sorona® fiber can be used as a replacement for polyester, spandex and nylon in apparels like sarees, suit material and residential/commercial carpeting. The inherent properties of softness and comfort stretch of Sorona® make it an ideal complimentary fiber along with natural fibers like cotton and viscose, making these fabrics more appealing to the end consumer.

- **Detergent for laundry**

Usage of enzymes helps reduce the amount of harsh chemicals typically used in detergent formulations. It can also help in reducing water, wash cycle times and wash temperature requirements. All these make the detergent more environmentally friendly and more effective.