# Made in Maine

New technologies from innovative companies and the University of Maine draw on the abundant natural resources of Maine's forest, farms, and sea to make biobased products and materials.

# **University of Maine Nanocellulose Pilot Plant** (Orono):

The only one of its kind in the nation. Can produce one ton of super-strong cellulose nanofibrils per day, available on a fee-for-service basis.

#### Sappi North America (Westbrook):

Makes plant-based biodegradable release paper used to create textured design patterns on the surface of fabrics and imitation leather.

Tom's of Maine/ a subsidiary of Colgate-Palmolive (Sanford): Makes plant-based personal care products.

#### True Textiles (Guilford):

First company in the world to make a dyed, woven fabric from polylactic acid (PLA), a biobased plastic.

**Grow-Tech LLC** (South Portland): Makes BioStrate® Felt, made with PLA bioplastic, to grow commercial microgreens.

**Revolution Research, Inc.** (Orono): Makes Arbolate, a rigid insulation made with cellulose nanofibrils from wood fiber.

**Cerealus** (Waterville): Makes zein-based stain resistant coatings and agricultural mulch film.

**Maine Standard Biofuels** (South Portland): Makes premium vegetable-based biodiesel for vehicles and heating.

#### ABOUT BIOBASED MAINE

**Biobased Maine** is a trade association promoting the sustainable use of renewable biomass from forests, farms, and sea to manufacture the next generation of biobased chemicals, materials, and fuels. We aim to expand biobased product manufacturing in Maine through applied research, technical assistance, and information sharing that supports new product development, process engineering, and market assessment.

#### JOIN US!

Our members include manufacturers, raw material suppliers, landowners, farmers, consultants, research institutions, private equity and non-governmental organizations—all committed to a sustainable biobased industry in Maine that can boost the state's rural economy and help keep families healthy and safe.

biobasedmaine.org

🕑 @biobasedmaine

#### ADDITIONAL RESOURCES

Our founding partner: ourhealthyfuture.org

> ENVIRONMENTAL HEALTH STRATEGY CENTER

Forest Bioproducts Research Institute University of Maine forestbioproducts.umaine.edu

USDA BioPreferred Program

Green Chemicals Blog greenchemicals.blog.com

Biodegradable Products Institute bpiworld.org

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### Assets + Opportunity = Maine

Our state's abundant forests, farms, and sea offer renewable raw material to spur production of climate-friendly products and good-paying careers.



### FOR PEOPLE AND THE PLANET

# Biobased Products Create New Jobs

Today, most products contain petrochemicals. Just 4 percent of chemicals are biobased, supporting 40,000 American jobs and \$5 billion in value added, according to the U.S. Department of Agriculture (USDA) and the Biotechnology Industry Organization (BIO).

By 2025, about 20 percent of chemical production will be biobased, creating 237,000 U.S. jobs.

#### What's driving demand for biobased products?

- Consumers wanting sustainable products
- Corporate brands responding to the climate crisis
- The volatile price of oil and gas

By deploying new technologies to convert low-grade pulp wood and forest residues to biobased chemicals, Maine companies can seize their share of the growing biobased economy, while creating good jobs and revitalizing rural communities, to make environmentally friendly products.

## Maine's Biobased Assets

Biobased Maine and our partners seek to to attract new investment in advanced biobased manufacturing by leveraging Maine's abundant assets.

- Maine is the **most forested state** in the United States with 90 percent cover and the highest percent of certified sustainable harvest.
- An **annual harvest of 14 million green tons** produces forest residues and low-grade pulpwood that seeks new markets.
- A mature forestry industry delivers raw material to mills daily.
- Ample industrial infrastructure for co-location offers combined heat and power, wastewater treatment, and existing permits.
- Rail and deepwater ports provide ready access to global markets.
- There's world-class **research and development capacity** at the Forest Bioproducts Research Institute at the University of Maine.
- Maine has a **solid**, **experienced workforce** with a strong history in manufacturing.

Making products and advanced materials from plants, not petroleum, is safer for people and the planet. That's why there's growing consumer demand across the globe.

# **The Circular Economy of Biobased Products**

## CLOSED LOOP

At the end of their useful life, many biobased products can be recycled for reuse or composted back into soil nutriments.

## PRODUCTS

Biobased materials produced in Maine can be incorporated into a wide variety of consumer and commercial products, helping to meet rising global demand for safer, more sustainable goods and service Real business opportunities in Maine lie in products and materials that are both renewable and safe for people and the planet, across their lifecycles.

## FEEDSTOCKS

le resources from Maine—including e pulp wood, forest residues, and ricultural waste—can replace climatechanging petroleum as a raw material. Woody biomass is an abundant second-generation feedstock that avoids food crops and genetically modified organisms (GMOs). Compared to industrial corn, Maine's forest resource offers a lower carbon footprint

> petrochemical inputs.

## **SUGARS**

Advanced technology can convert biomass into cellulosic sugars. Sugars are the chemical building blocks of nature.

## **3** MATERIALS

Biobased chemicals, bioplastics, and advanced biofuels can be manufactured from cellulosic sugars, creating good jobs and revitalizing rural communities.

