Sustainable Polymer/Thermoplastic Starch Blend Effectively Replaces Pure Polyethylene

Ecole Polytechnique de Montreal

A major issue with commodity plastics is that they are derived from nonrenewable petroleum resources. Researchers at the École Polytechnique de Montréal in Québec, Canada, have invented a material that allows shippers and packagers to replace a large percentage of its plastic packaging material with a more environmentally friendly polymer/thermoplastic starch blend that has a similar cost and performs just as well as pure polyethylene.

The technology was developed by Basil Favis, Ph.D., Bruce Ramsay, Ph.D., and Francisco Rodriguez, Ph.D., at École Polytechnique de Montréal's Chemical Engineering Department. About $800,000 Canadian in funding was provided by the Natural Sciences and Engineering Research Council of Canada, Gestion Univalor, Limited Partnership (the commercial arm of the Université de Montréal and of its affiliated schools) and Valorisation Recherche Québec.

The patent was submitted in 1999 and U.S. product and process patents were issued in 2003 and 2005 respectively. Cerestech, a spin-off company of the École Polytechnique de Montréal, secured the license for the worldwide

commercial exploitation of this technology in 2002.

Starch is both a renewable resource and inexpensive, compared to even a low-cost polymer such as polyethylene. The polyethylene/thermoplastic starch blend has similar properties to pure polyethylene, is of low cost and does not depend on nonrenewable resources. It is a much more sustainable technology than pure polyethylene. It requires less energy and water resources to produce and has a significantly lower carbon (greenhouse gas) footprint.

> *Prior to this discovery, there was no commercially available bio-based product that used a large proportion of starch in conventional polyethylene products.*

Cerestech's proprietary new blend process allows producers to adopt a more sustainable technology at a similar cost and performance to pure polyethylene. This offers new options for innovative processors worldwide.

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