

MAKING SMARTER, HIGHER PERFORMANCE MATERIALS



THE CHALLENGE

NEARLY **ONE-TENTH** of the world's oil is used to make the plastic products we use every day, from shopping bags to shampoo bottles to frozen food containers.

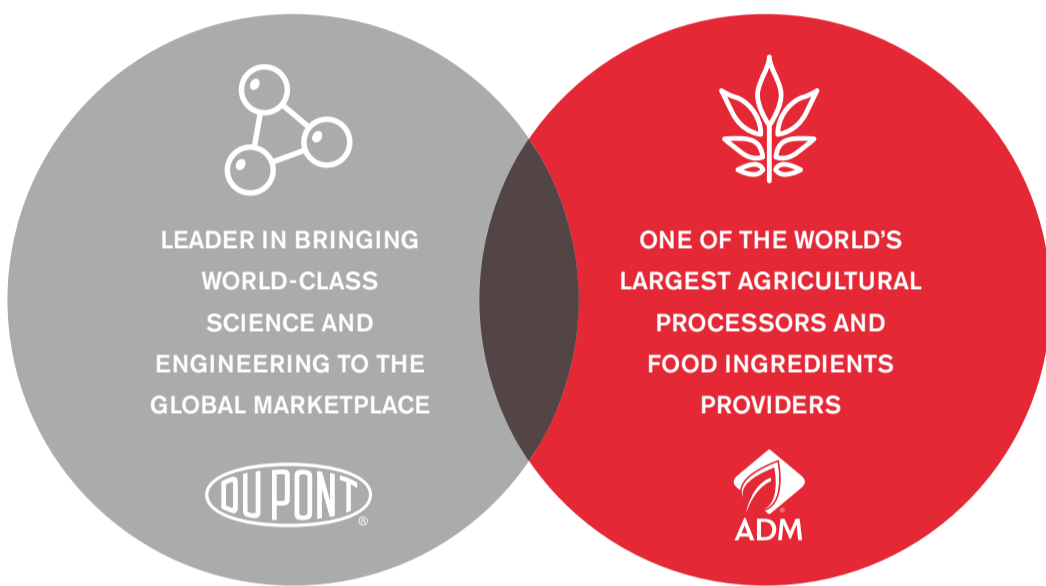
NOW, IMAGINE

if we could replace some of that oil in consumer plastics with a smarter biomaterial with even better performance...

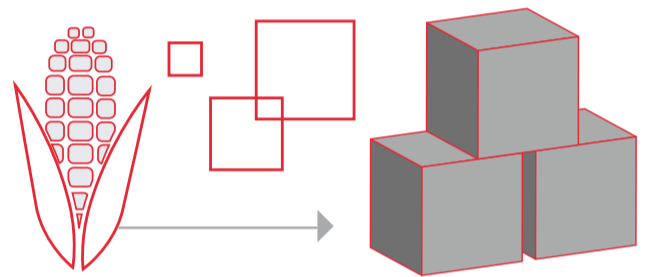
IT'S CLOSER THAN YOU MIGHT THINK.

THE BREAKTHROUGH

A REVOLUTIONARY PARTNERSHIP BETWEEN TWO SCIENTIFIC LEADERS IS BRINGING A NEW MOLECULE TO MARKET



With their combined expertise in agriculture and food science, the two companies developed an innovative new process for turning fructose into biomaterial – specifically, the molecule furan dicarboxylic methyl ester (FDME) – a building-block that can be converted into a number of high-value, bio-based chemicals or materials.



THIS SCIENTIFIC BREAKTHROUGH OPENS THE DOOR TO NEW POLYMER GROUPS AND HAS CREATED A MORE EFFICIENT, ECONOMICALLY VIABLE PROCESS.

THE IMPACT

THIS SIMPLER, MORE EFFICIENT APPROACH TO PRODUCING FDME BENEFITS CUSTOMERS IN A NUMBER OF WAYS:



HIGHER YIELDS AND LOWER OPERATING COSTS

This breakthrough process delivers the possibility of commercially available FDME. Compared to the current process, which also makes other by-products, this innovative process uses all sugar in the feedstock, either to make FDME or for energy recovery.



BETTER PERFORMANCE

This process means increased performance for all the products that will use FDME as a building block, including high-performance renewable chemicals and polymers (polyesters, polyamides, plasticizers and polyurethanes) with applications in packaging, textiles, engineering plastics and many other industries.



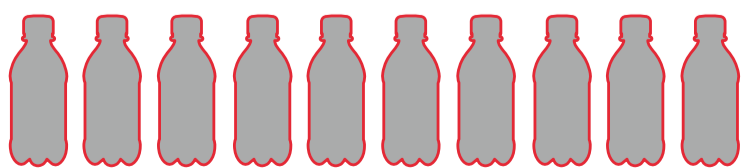
SMARTER, RENEWABLE MATERIALS

Not only can this replace petroleum-based materials in a wide variety of applications, the process of making FDME is smarter. Additionally, with all the process steps co-located in one facility, all operations are more energy efficient.

FDME PLATFORM TECHNOLOGY WILL HAVE APPLICATIONS IN PACKAGING, TEXTILES, ENGINEERING PLASTICS AND MANY OTHER INDUSTRIES – MAKING THE MANUFACTURED PRODUCTS WE USE EVERY DAY MORE DURABLE, CONSUMER-FRIENDLY AND RENEWABLE

FOR EXAMPLE:

One of the first polymers under development utilizing FDME is **POLYTRIMETHYLENE FURANDICARBOXYLATE (PTF)** a novel polyester also made from DuPont's proprietary Bio-PDO™ (1,3-propanediol).



100%

renewable and recyclable, PTF is a polymer that, when used to make bottles, beverage and other packaging applications, substantially improves gas-barrier properties compared to other polyesters. This makes PTF a great choice for customers in the beverage, bottling and packaging industries looking to improve the shelf life and lighten the weight of their products.