

# Selling Biomaterials—DuPont's Perspective

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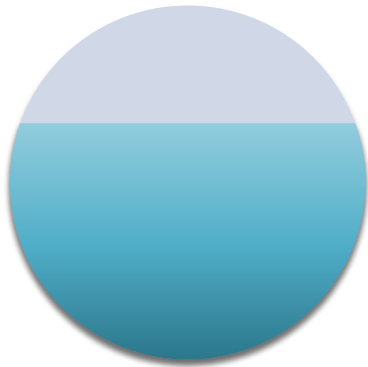
**Bioeconomy 2017: Domestic Resources for a Vibrant Future**

**July 12, 2017**

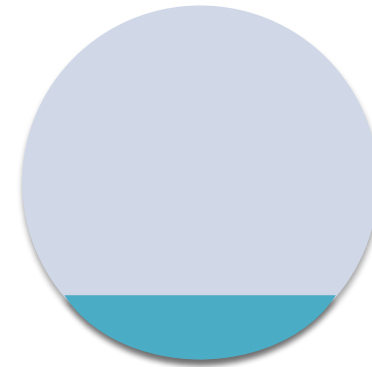
## Key Messages

- The market is hungry for innovative new materials
- Moving towards the Bioeconomy means getting to accessible price points
- DuPont believes that the winning formula for Biomaterials is:  
**New Feedstocks + New Conversion Technologies**  
**= New Better Products**
- Sorona® is one great example of how this approach has worked
- FDME/PTF and Enzymatic Polysaccharides are DuPont's next wave

## Sustainability has gone Mainstream and is highly Desirable, Yet Products still Face Adoption Challenges



84% of consumers want sustainable products.  
66% are willing to pay more.

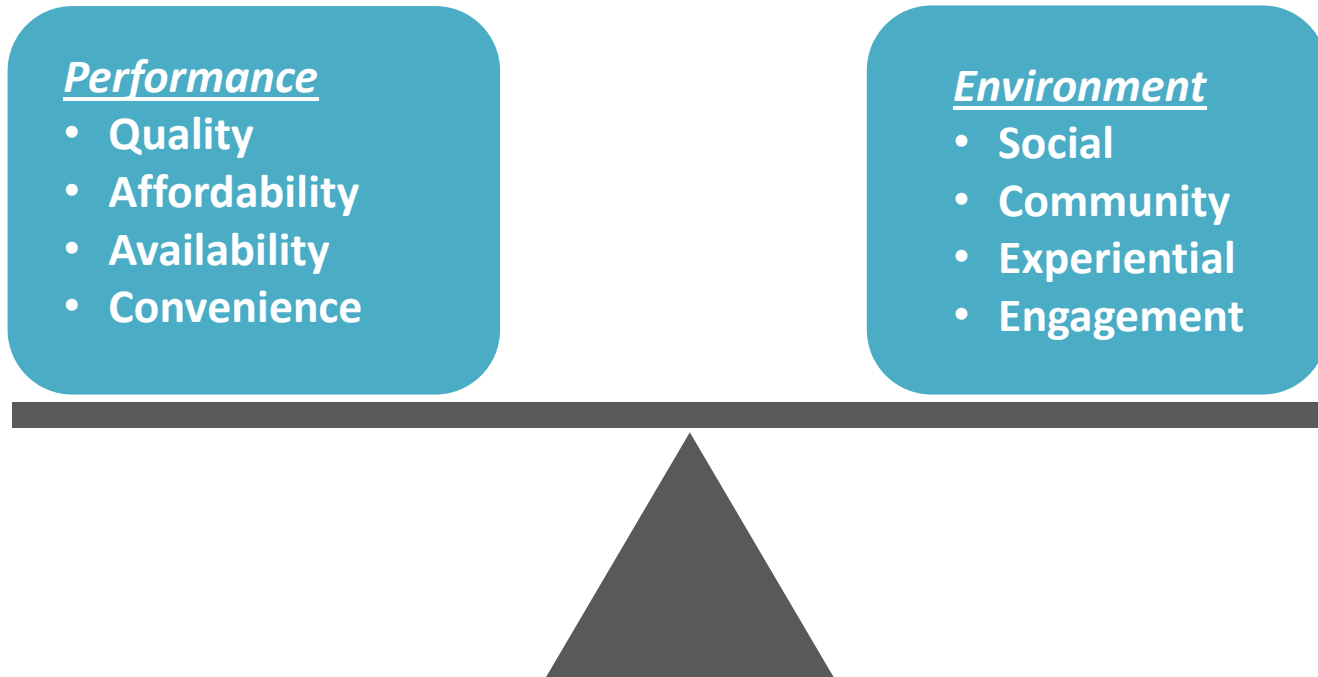


Yet only 10% buy products for sustainability  
features.

**Many consumers believe products that are better for the  
environment don't work & are hard to find.**

Sources: Cone Communications "2015 Global CSR Study,"  
Nielsen "2015 Global Survey of CSR & Sustainability,"  
Nielsen "2015 Global Sustainability Report."

# Products must offer both Performance and Sustainability

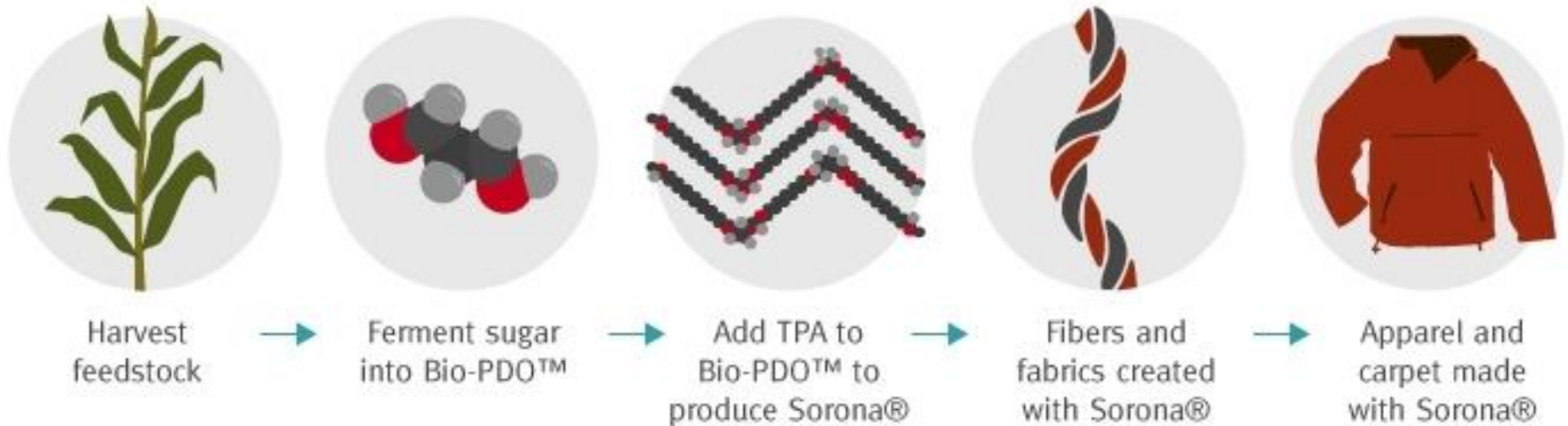


# DuPont Biomaterials Delivers the Eco-Conscious Product Trifecta

## Rethink Renewable Performance



## The Story of Sorona®



Sorona® is made, in part, with annually renewable plant-based ingredients.



DUPONT™  
sorona®

## Carpet



Exceptional Softness



Inherent Stain Resistance



Crush Resistant Durability

## Apparel



Exceptional Softness



Stretch & Recovery



Wicking, Fast Drying



Lightweight,  
Breathable Warmth

# Performance Benefits are Critical and Lead Sorona® Messaging



**COMFORT STRETCH**

**MOVEMENT**  
For living each moment to its fullest.

**DURABILITY**  
For utmost vibrancy and resilience over time.

**SOFTNESS**  
For day-in, day-out comfort.

**EASY CARE**  
For keeping life simple.

**ECO-EFFICIENCY**  
For sustainable living.

**INSULATION**

**WARMTH**  
For lightweight, breathable comfort.

**QUICK-DRY**  
For taking on any challenge.

**DURABILITY**  
For resilience over time with easy care.

**RECOVERY**  
For staying on the move.

**ECO-EFFICIENCY**  
For sustainable living.

**INDULGE YOUR SENSES IN SOFTNESS**

venture beyond the ordinary into a place where smooth, bounding waves pulse the beats of touch to new and unexpected ways. A place that's so rich and soft, it's like dreaming of land. Soar and journal in the silky elegance of Sorona® and discover the feeling.

**EXPERIENCE THE POWER OF PURITY**

There's a unique application for specialty with nothing extra added to it. Sorona® is born soft and it goes on into the world that way. Its melting, correct between your skin and the supremely beautiful, malleable softness of the fiber.

SORONA.COM



# Performance Benefit Icons Are Used Throughout Sorona Communications



**SMOOTHER FEEL:**



**PATENTED TECHNOLOGY:**



**INSULATION:**



**STRETCH & RECOVERY:**



**RENEWABLY SOURCED:**



**QUICK-DRY:**



**FADE RESISTANCE:**



**DURABILITY:**



**REDUCING PILLING:**



**SOFTNESS:**



**WRINKLE RESISTANCE:**



**BRILLIANT COLOR:**

# Sorona Brand Partners Highlight Performance and Sustainability



DUPONT™  
sorona®

**ROYAL ROBBINS®**

**MERINOLUX™**

THE PERFORMANCE OF MERINO.  
THE SOFTNESS OF  
ECO-CONSCIOUS SORONA.

- Eco-Conscious Sorona Blend
- Shrink Resistant
- Extra Soft
- Temp Regulating
- Controls Odor

ECO-CONSCIOUS UPF PROTECTION MOISTURE WICKING WRINKLE RESISTANT QUICK DRY

**ROYAL ROBBINS®**

**DIABLO**

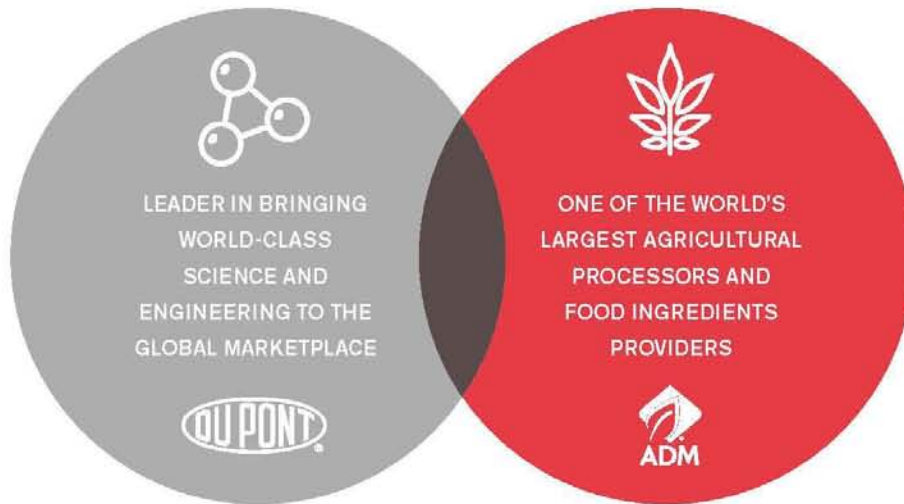
COOL AS HELL

- Eco Conscious Sorona Blend
- Lightweight Performance
- Extreme Breathability
- Quick Drying Fabric

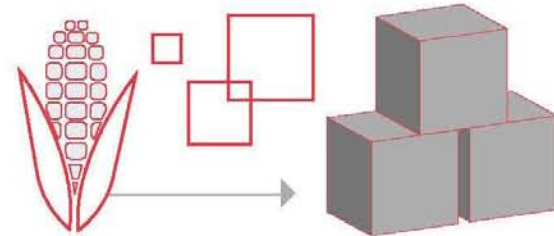
ECO-CONSCIOUS LIGHTWEIGHT VENTILATION QUICK DRY WRINKLE RESISTANT MOISTURE WICKING

# Extending Sorona®: FDME-Based Polymers

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 of FDME

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.

**New monomer creates new polymers with breakthrough barrier properties**

## The Next Breakthrough in Biomaterials: Enzymatic Polysaccharides



Learning from Nature to create new high performance Biomaterials

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