

# SORONA®

PARTIALLY PLANT-BASED POLYMER

&

 sorona®  
AURA

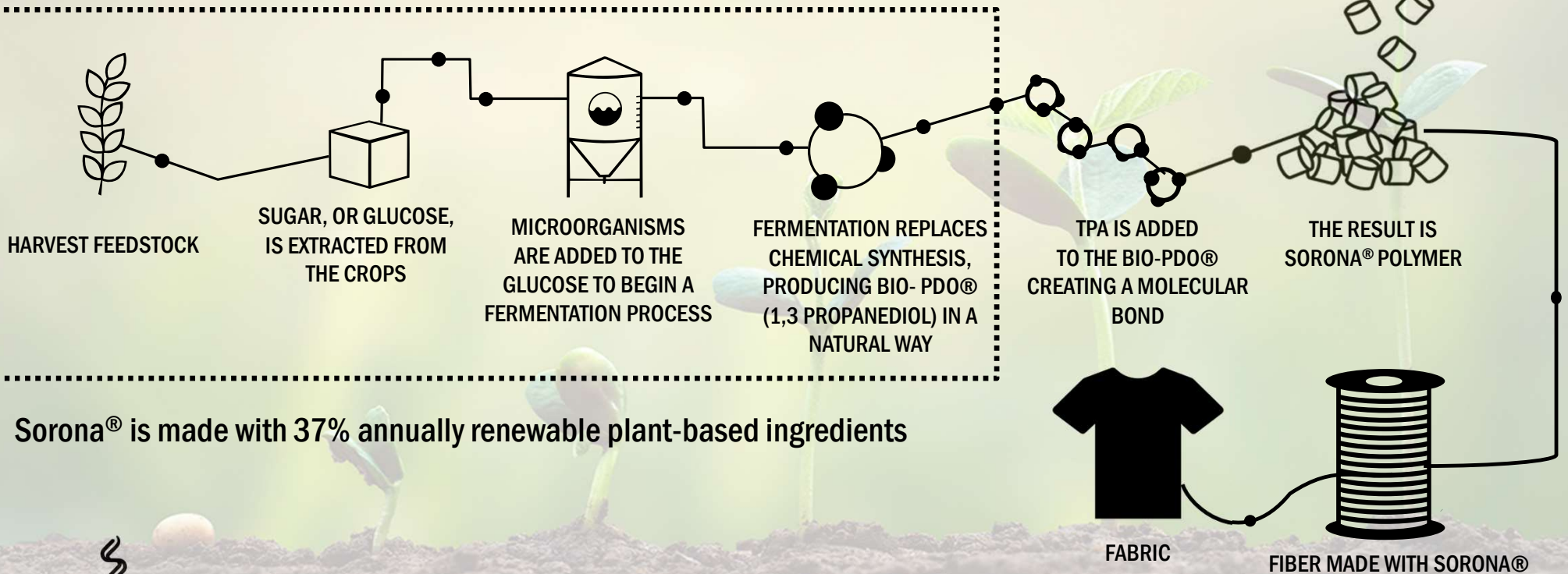
Insulation

JAN. 2024



  
sorona®

# SORONA® PRODUCTION PROCESS



Sorona® is made with 37% annually renewable plant-based ingredients



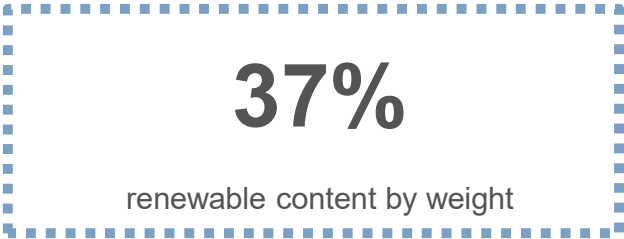
# SORONA® SUSTAINABILITY METRICS

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

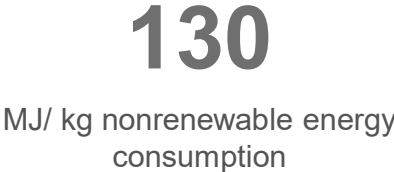
Manufacture of Sorona® uses **30% less energy** vs equal amount of nylon 6

Manufacture of Sorona® produces **50% less GHG** emissions vs equal amount of nylon 6

SORONA®



NYLON 6



# DEFOSSILIZING THE MATERIALS INDUSTRY

## THE PATH OF CARBON

Sorona® taps into nature as a source of renewable carbon, transforming plants into the building blocks for the materials that surround our lives.



CO2 absorbed by feedstocks



Feedstock harvested



Chemical conversion of feedstock sugars into molecules



Molecules become building blocks of biobased materials



Application of biobased materials

## SUPPORT FOR REGENERATIVE AGRICULTURE OUR PARTNERSHIP WITH TRUTERRA™

*We have partnered with Primient and Truterra, the only farmer-owned agriculture sustainability program in the U.S., to support the adoption and success of sustainable, regenerative agricultural practices at scale in the U.S, on the amount of land equal to 100% of the industrial corn we source every year.*

- Truterra™ helps US farmers to more effectively target and measure their efforts to protect the land, air and water.
- Participating corn farmers in the US receive customized support to drive measurable improvements in:
  - Greenhouse gas emission reduction, nitrogen efficiency, water and wind erosion, soil quality, and more.
- Through the implementation of up to 26 different regenerative agricultural practices such as:
  - No-till farming, crop rotation, post-harvest winter cropping, reduced fertilizer & pesticide use, contour conservation management, and more.
- Provides visibility of environmental impact-related data on 100% of acres vs. 10% industry standard



# SORONA® RAW MATERIAL TRACEABILITY: TRUTERRA PROGRAM

## 26 CONSERVATION PRACTICES

SUPPORTED BY TRUTERRA, INCLUDING:

- No-till farming
- Crop rotation
- Post-harvest winter cropping
- Reduced fertilizer & pesticide use
- Contour conservation management

## 100%

OF OUR AGRICULTURAL RAW MATERIAL FOOTPRINT COVERED BY THE TRUTERRA PROGRAM



## 100 DATA POINTS TRACKED AT THE FIELD LEVEL ON 100% OF ENROLLED ACRES, INCLUDING:



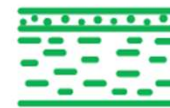
GHG EMISSIONS



SOIL QUALITY



NITROGEN USE EFFICIENCY



SHEET & RILL EROSION



CONSERVATION PRACTICES DEPLOYED



NON-HARMFUL CROP PROTECTION

# SORONA® RECYCLABILITY

## Post-consumer & post-industrial recycle of Sorona®

Fibers and textiles can be recycled two ways:



**Mechanically  
recycled**



**Chemically  
recycled**

## Sorona® polymer can be part of 100% polyester recycling streams

CovationBio's lab-scale testing indicates Sorona® polymer can be mechanically recycled to produce:



New fibers (closed-loop recycling)



A variety of new materials from nonwovens for furniture and mattresses to sound-deadening barriers and sediment erosion control solutions (open-loop recycling)

# SORONA SUSTAINABILITY VALUE PROPOSITION

## Biobased Content to Defossilize the Supply Chain

- 37% annually renewable bio-content.
- Biobased Sorona® displaces conventional products.
- Reduces over-reliance on fossil resources.

## Truterra™ Sustainable Sourcing and Traceability Program

- Traceability program for the corn from which Sorona® is derived.
- Tracks farming practices and soil health at field level.
- Covers 100% of our agricultural raw material footprint
- Encourages more sustainable farming practices

## Third Party Reviewed Life Cycle Assessment

- Versus Nylon 6, Sorona® energy footprint is 30% lower and carbon footprint 50% lower
- 2016 peer-reviewed field-to-pellet study covers all steps of production from corn grain to Sorona® polymerization.

## Recyclability with Polyester

- CovationBio's R&D team has shown that Sorona® polymer can be mechanically recycled with 100% PET.
- Lab-scale testing also indicates Sorona® polymer can be chemically recycled with 100% PET.



# SORONA® POLYMER CERTIFICATIONS



Sorona® renewably sourced polymer is one of the first 11 products approved as part of the United States Department of Agriculture (USDA) BioPreferred Program for certified bio-based products



Sorona® polymer is bluesign® approved, complying with the strict ecological and toxicological requirements of the bluesign® criteria.



Sorona® fiber has undergone stringent testing and has been proven to be safe for use by infants and toddlers, earning it Class 1 certification from the OEKO-TEX Standard 100.



Sorona® PTT polymer is listed as a plant-derived plastic according to the Eco Mark certification standard of the Japan Environment Association.

# COVATION BIO™ SUSTAINABILITY ENGAGEMENTS



# THE UNIQUE MOLECULAR STRUCTURE OF SORONA®

## Differentiated Performance in Key Textile Applications

- Sorona® is bio-based PTT (polytrimethylene terephthalate), made in part from renewable feedstock.
- U.S. FTC granted a new generic (triexta) for Sorona® in 2009, based on the unique combination of attributes and benefits.
- Properties differ from other existing fibers, combining many of the best benefits into a single product.



# FIBER TYPES MADE WITH SORONA® POLYMER

Sorona® has four different fiber variations and can be used alone or blended with synthetic or natural fibers for various performance benefits and endless combinations.

SORONA® POLYMER

1

Homo filament fiber

2

Bicomponent Stretch filament fiber\*

3

Homo staple fiber

4

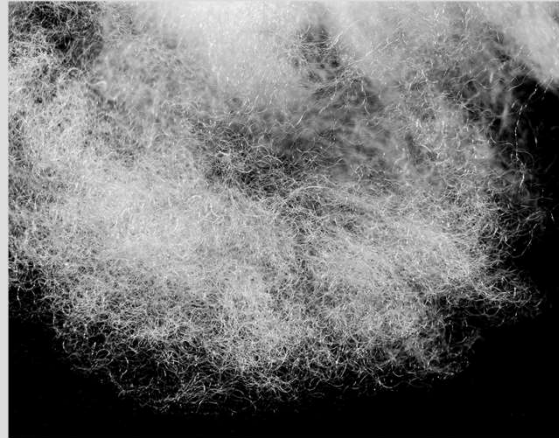
Bicomponent Stretch staple fiber\*

INSULATION / FABRIC made with SORONA® POLYMER

\*Sorona® bicomponent stretch fiber must be at least 40% Sorona® PTT content

# ATTRIBUTE OF STAPLE FIBER MADE WITH SORONA® POLYMER FOR INSULATION

**The unique molecular structure of Sorona® polymer offers exceptional performance**



**Staple Fiber made with Sorona® polymer in 3-dimensional spiral structure offers**

- Soft and voluminous hand feel
- High loft holds more air for warmth retention
- Excellent compression recovery, longer lasting warmth and shape retention



**Conventional polyester fiber**

- Stiff hand feel
- Less crimp effect, therefore more difficult to hold air for warmth
- Less compress and recovery

# SORONA® AURA INSULATION

Light Weight, Breathable Warmth



## **SORONA® AURA INSULATION**

Insulation designed with lightweight,  
breathable warmth.

### **Branding Criteria**

- Apparel insulation product contains a  
minimum of 24% Sorona® polymer

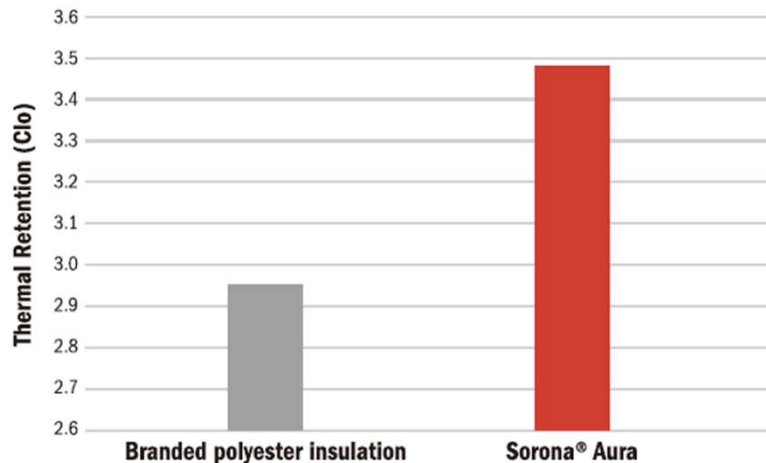
Sorona® Aura insulation are evaluated  
to ensure the performance and plant-  
based content to make sure you're  
making an impact on the industry



# SORONA® AURA INSULATION ATTRIBUTES

## LIGHTWEIGHT BREATHABLE WARMTH

Provide warmer wears in colder air. Sorona® Aura insulation provides the same level of thermal resistance as premium branded polyester insulation in less filling by weight.



■ Composition: premium branded polyester staple fibers. Weight: 200gsm

■ Composition: polyester fiber with partially Sorona® polymer. Weight: 200gsm

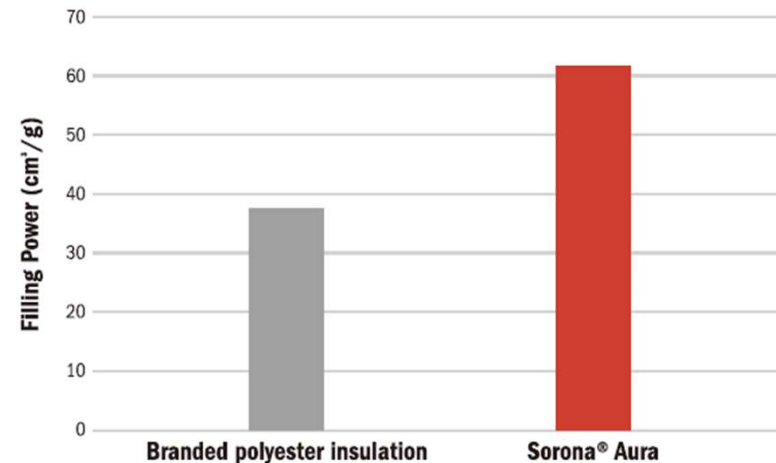
\* Clo = 1 - corresponds to the insulating value of clothing needed to maintain a person in comfort sitting at rest in a room at 21°C (70°F) with air movement of 0.1 m/s and humidity less than 50%.

\* Thermal resistance(Rct)= 0.155\* Clo m² K/W

\* Test method GB/T 11048-2008 Method A , conducted by GTTC

## LONG-LASTING SHAPE AND LOFT

Keep the warmth in and your costs down. Sorona® Aura insulation has a fill power 24% or higher than premium branded polyester insulation, providing a lighter, warmer garment with less filling.



■ Composition: premium branded polyester staple fibers. Weight: 200gsm

■ Composition: polyester fiber with partially Sorona® polymer. Weight: 200gsm

\* Actual percentage will be based on construction

\* The Fill Power rating value is calculated by measuring how many cubic inches an ounce of insulation creates at maximum loft.

\* Test method FZ/T 64003-2011 , conducted by GTTC



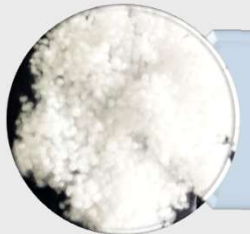
## DIFFERENT TYPES OF INSULATION MADE WITH SORONA® POLYMER OFFER BY OUR DOWNSTREAM PARTNERS



Wadding



Down like



Ball fiber



# BEST PRACTICE OF SORONA® RECYCLABILITY

## FULLY STRETCHABLE, FULLY RECYCLABLE JACKET

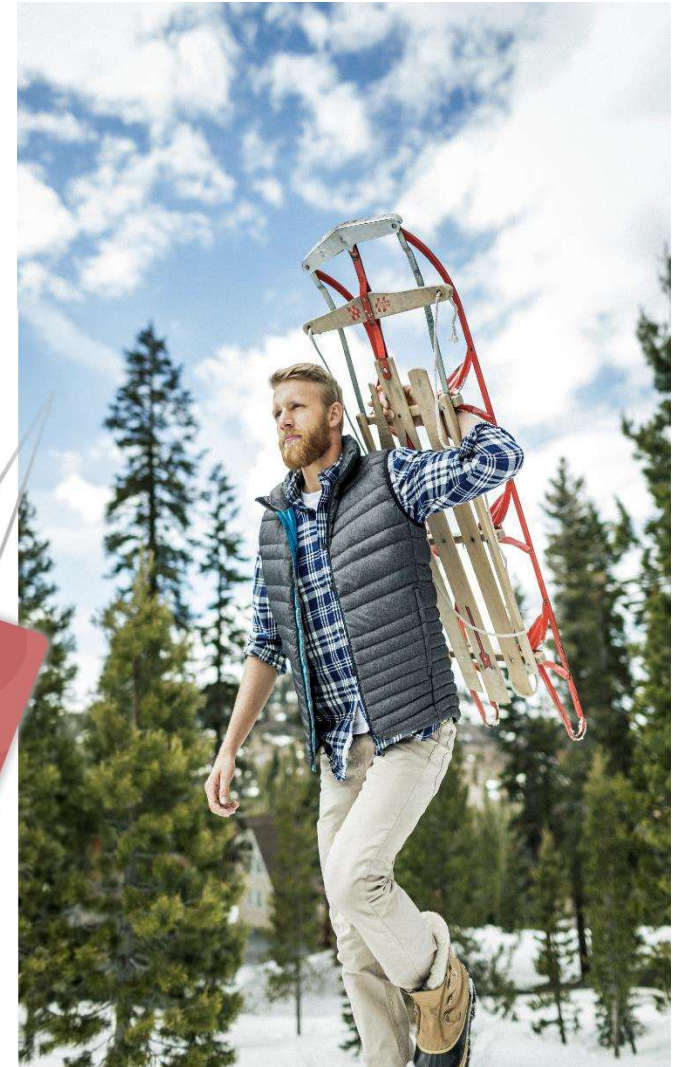


- Sorona® four-way stretch shell fabric
- Sorona® light warm stretchable breathable insulation
- Sorona® stretchable light inner-liner
- Sorona® super soft faux fur trims

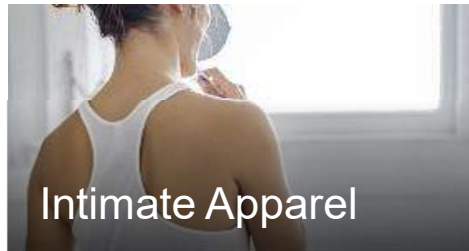
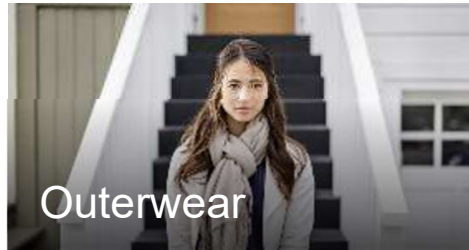
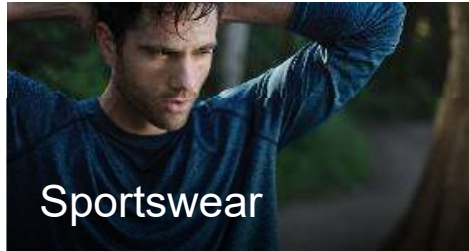
THE  
COMMON  
THREAD

SORONA® FABRIC CERTIFICATION PROGRAM

**We believe in trust, traceability and transparency.  
That's why all Sorona® fabrics and insulation are  
certified through the  
Common Thread Fabric Certification Program—  
ensuring the performance  
and accountability our customers expect and  
deserve.**



# SORONA® IS WIDELY USED IN VARIOUS TEXTILE APPLICATIONS



# THANKS FOR YOUR ATTENTION



Sorona.com



Covation Biomaterials



CovationBio\_Sorona



@soronafiber



@soronafiber



# SORONA® LABELING GUIDELINE

May 25, 2021





**FIBER TYPES MADE  
WITH SORONA® POLYMER**

**SORONA® POLYMER**

**Sorona® Homo fiber**

(Filament and Staple )

Single component fiber made  
with 100% Sorona® PTT  
polymer

**Sorona® Bicomponent  
Stretch fiber**

(Filament and Staple)

Two-component fiber made  
with at least 40% Sorona® PTT  
polymer

**FABRIC made with SORONA® POLYMER**

# SORONA® LABELING GUIDELINE - CARE LABEL

Garment made with

**Sorona® Homo fiber - filament and staple**

Import and sold in

United State of America	Europe	Asia Pacific	Domestic China
% SORONA® TRIEXTA*	% SORONA® POLYESTER	% SORONA® POLYESTER	% 聚酯纤维 (PTT)
or			
% TRIEXTA*	% POLYESTER	% POLYESTER	

\* Triexta has been approved as a new generic subclass name by FTC, USA in March 2009.





# Sorona® Labeling Guideline - Care Label

Garment made with

Sorona® Bicomponent stretch fiber - filament and staple

Import and sold in

## Americas

United State of America	Mexico	Canada
% ELASTERELL-P WITH SORONA® POLYMER or % ELASTERELL-P	% ELASTERELL-P WITH SORONA® POLYMER or % ELASTERELL-P	% POLYESTER WITH SORONA® POLYMER or % POLYESTER
or	or	
% ELASTOMULTIESTER WITH SORONA® POLYMER or % ELASTOMULTIESTER	% ELASTOMULTIESTER WITH SORONA® POLYMER or % ELASTOMULTIESTER	
or		
% POLYESTER WITH SORONA® POLYMER or % POLYESTER		



# SORONA® LABELING GUIDELINE- CARE LABEL

Garment made with

**Sorona® Bicomponent stretch fiber - filament and staple**

Import and sold in

Europe	Domestic China	Japan	Other Asia Pacific Countries
% ELASTOMULTIESTER WITH SORONA® POLYMER	% 聚酯复合弹性纤维	% 複合纖維 (ポリエステル)	% POLYESTER WITH SORONA® POLYMER
or			or
% ELASTOMULTIESTER			% POLYESTER

