

New possibilities for the Corrugated industry to reduce starch and energy consumption while improving speed, quality, and productivity using a sustainable, bio-based starch additive.

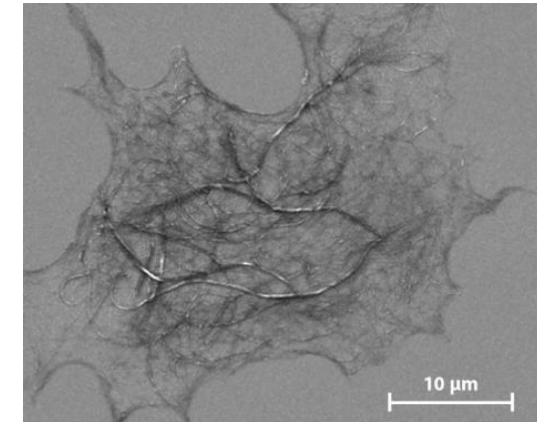
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09/21/2022

Scott A Mouw

# WHAT IS EXILVA?

- Exilva is Microfibrillated cellulose, a biodegradable natural polymer
- Cellulose fibers are defibrillated into millions of tiny fibrils
- Exilva is a sustainable, biobased material with multifunctional properties
- Enables customers to innovate, improve existing products, and develop more sustainable products

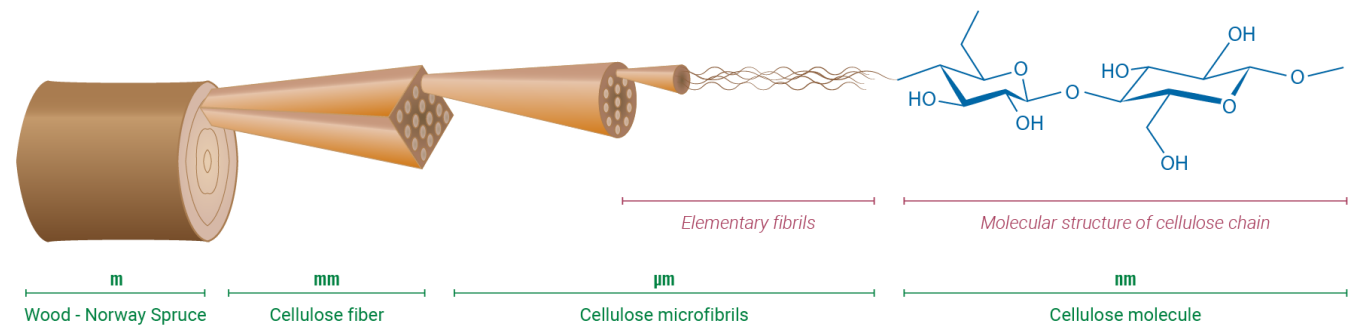


**OXILVA**<sup>®</sup>

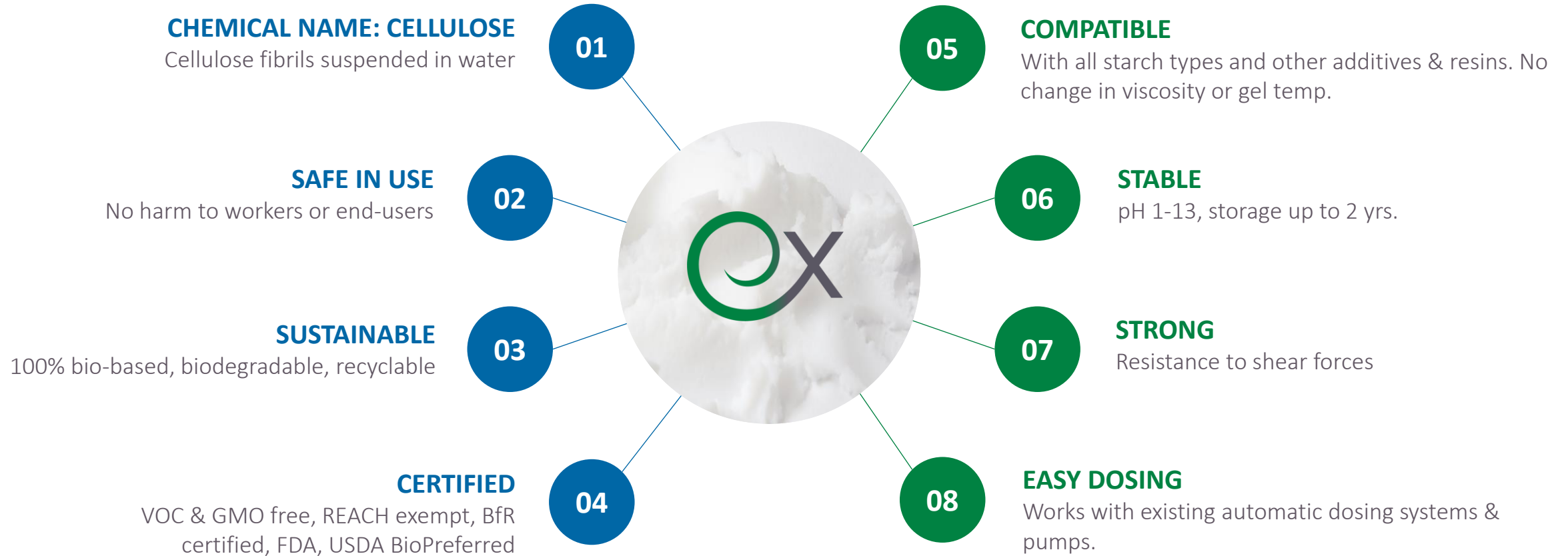


10% paste

2% dispersion



# EXILVA - A RADICAL INNOVATION FROM BORREGAARD



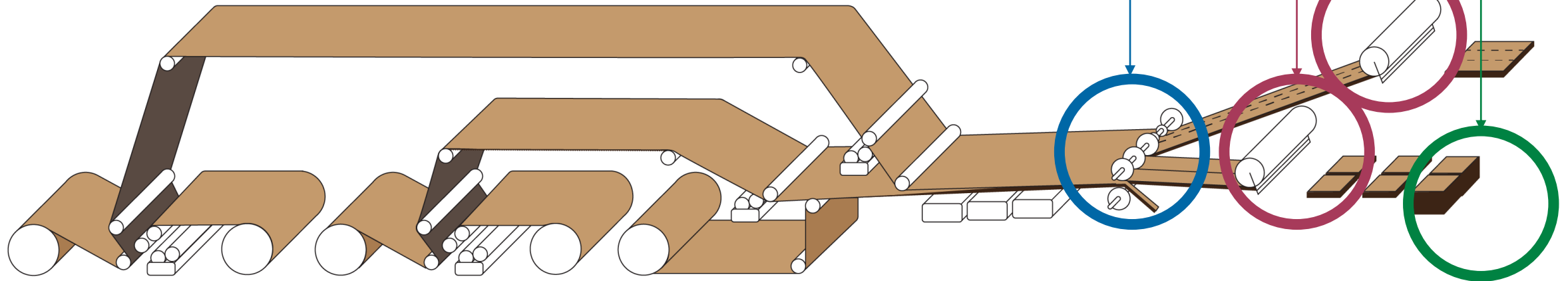
# WHAT PROBLEMS CAN EXILVA SOLVE ON THE CORRUGATOR?

**EXILVA**<sup>®</sup> – a solution to bottlenecks related to:

**BACKSTOP AT THE STACKER**

**CROSS KNIVES**

**SLITTER/SCORE**



**EXILVA PREVENTS RE-OPENING OF THE BOARD**

# EXILVA IN STARCH ADHESIVES FOR CORRUGATING

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## 1. Improved quality

- a) Better bonding and reduce delamination on challenging boards (closed paper, coated paper, double wall, triple wall)
- b) Less crack board
- c) Flatter boards → better printability

## 2. Higher productivity

- a) Higher corrugator speeds on challenging boards where gluing is the bottleneck
- b) Higher converting speeds due to improved board quality

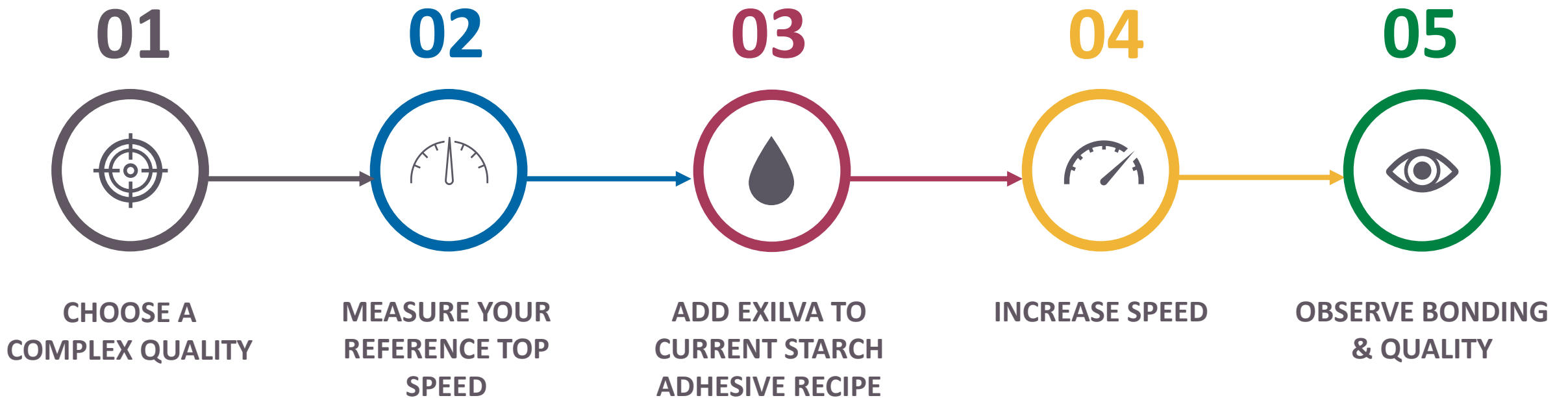
## 3. Improved sustainability

- a) Exilva is Natural, Sustainable, Bio-based, Biodegradable, Safe in use, Non-Toxic
- b) VOC free, GMO free, REACH exempt, EPA inert, Microplastic Free
- c) Using Exilva in starch adhesives can reduce CO<sub>2</sub> emissions by more than 14%
- d) Provides the possibility to produce boron free starch adhesives

## 4. Cost saving

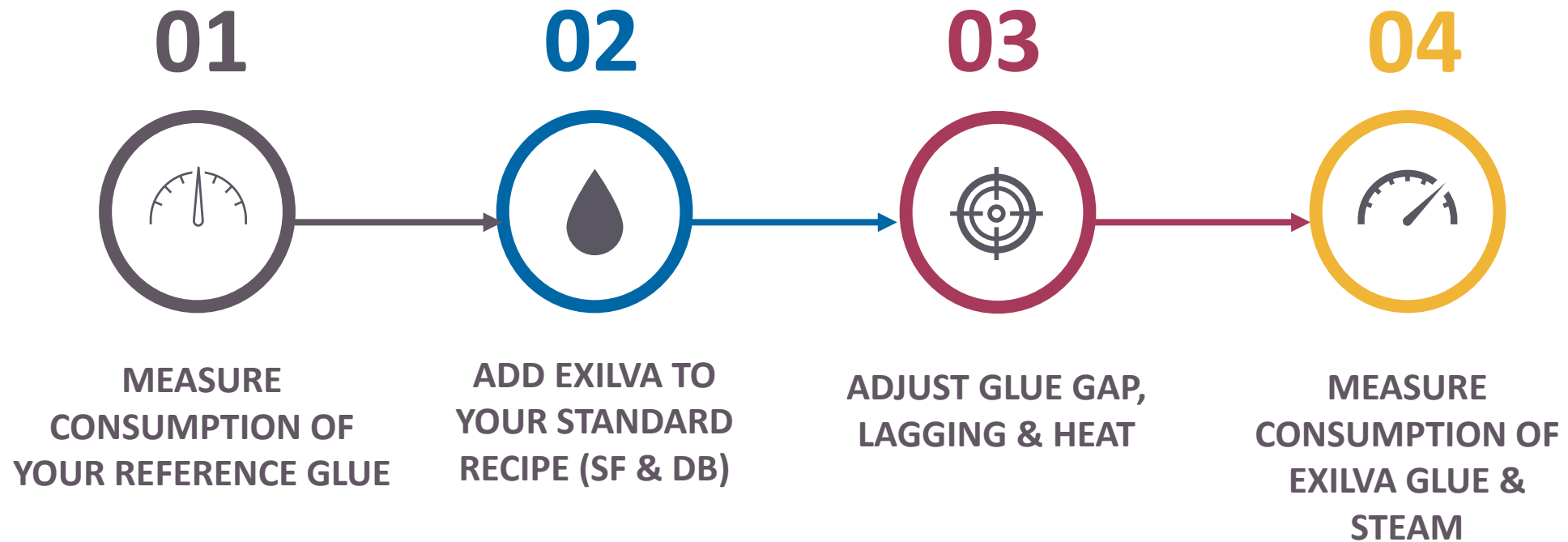
- a) Starch savings (15-20% on average)
- b) Reduced steam consumption (5-8% on average)
- c) Reduced waste

# How to test Exilva PBX (Speed & Quality Enhancement)



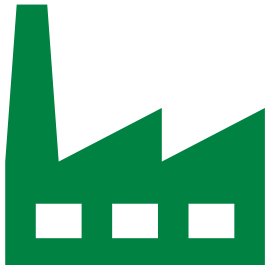
# How to test Exilva PBX (Starch & Steam Savings)

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# Speed Improvement Results

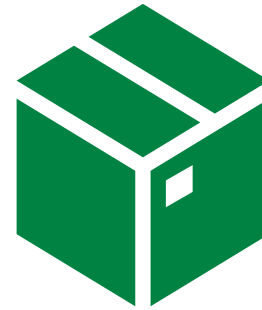
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**> 200  
trials,**  
*no failures*

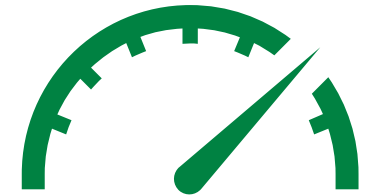


**Native &  
modified  
starch**



**Heavy  
double &  
triple wall**

*Semi chemical,  
Fully bleached,  
High density papers,  
coated papers*



**+ 20–67%  
speed  
increase**

# Typical Results with Exilva PBX

## STARCH/ENERGY CONSUMPTION



**10–20% STARCH REDUCTION**

Measured over multi-week trials



**UP TO 8% STEAM REDUCTION**

Measured over multi-week trials

## BOARD QUALITY



**INCREASED PAT**



**INCREASED ECT**



**DELAMINATION  
WARP  
CRACKING BOARD**



**CONVERTING COMPLAINTS  
WASTE**

## STORAGE STABILITY

(reduced retrogradation)



**WHEAT**

**>48h**

**CORN**

**>48h**

**PEA**

**>16h**



**OXILVA**<sup>®</sup>

Booth 1123