

IIBCC 2024

COLOMBO | SRI LANKA

NICE TO MEET YOU, WE ARE

SUZANO



SUZANO

Manoel Silvestre Faez



A Century-old Company With the Energy of a Startup

In our 100-year history, we have never lost focus on being a pioneer and on combining innovation with sustainability.

HIGHLIGHTS

Through our customers, our products are part of the lives of more than

2 BILLION

PEOPLE AROUND THE WORLD



Products supplied to over **100** countries



US\$

8.2 BILLION in net sales in 2023



More than **40K** employees and contractors



1.2 MILLION eucalyptus seedlings planted every day



13.4 MILLION tons of market pulp capacity per year



1.5 MILLION tons of paper and other products capacity per year

1.6 MILLION hectares (3.9 mi acres) dedicated to production

1.1 MILLION hectares (2.5 mi acres) set aside for conservation

Our products

Largest pulp manufacturer in the world, one of the largest paper producers in Latin America and the leader in the toilet paper segment in Brazil.

Suzano is the world's largest market pulp producer. Made from eucalyptus, which is planted and harvested by us for this purpose.



Market pulp

Suzano's eucalyptus fluff – Eucafluff - is produced from pulp and is a renewable raw material for hygiene products, such as **diapers, sanitary napkins and pet mats.**



Fluff pulp

We develop and produce papers for diverse uses, such as **packaging, bags, straws and cups**, among others. We also have papers for **printing, writing and books.**

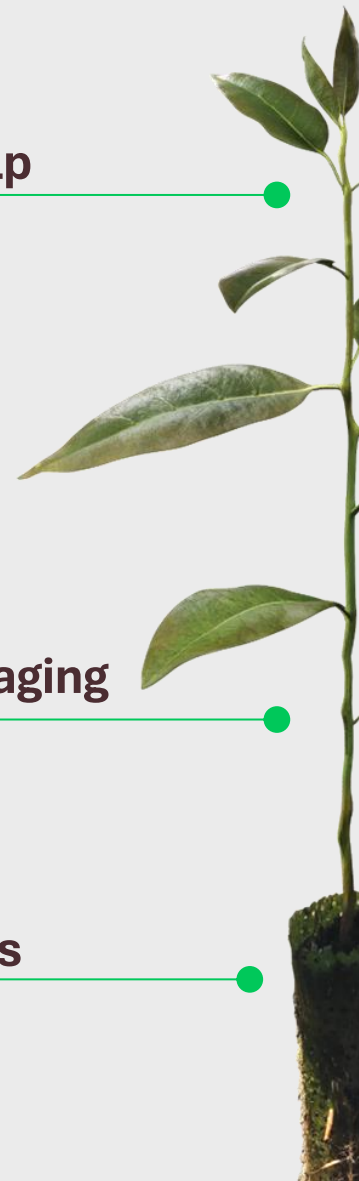


Paper & packaging

Tissue products, such as **toilet paper, paper towels, napkins, diapers and wet wipes.**



Consumer goods





Bio-oil



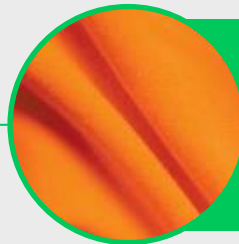
Produced from eucalyptus biomass, it is a sustainable alternative for **partially replacing fossil products**, such as fuels and chemical compounds.

Lignin



Together with cellulose, lignin makes up most of the wood in trees. It is a **renewable option to replace fossil** materials in products such as rubbers, heat-resistant plastics and even makeup.

Microfibrillated cellulose



Known as **MFC, our BioFiber**, it is a renewable solution that can be used as a raw material to produce **sustainable fabrics**, such as the Spinnova[®] **textile fiber**, as well as for **fibercement and cosmetics** (such as shampoo, moisturizer and sunscreen).

A constantly growing global presence

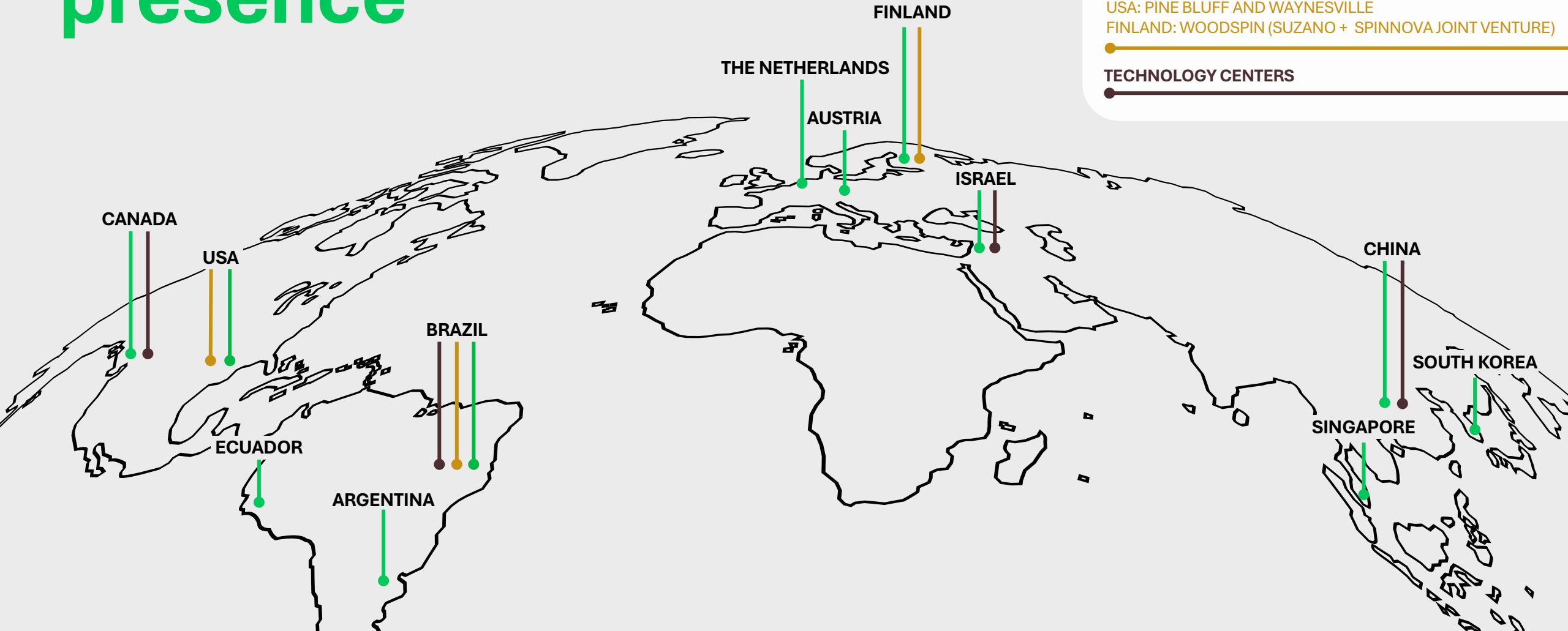
OFFICES

INDUSTRIAL SITES

USA: PINE BLUFF AND WAYNESVILLE

FINLAND: WOODSPIN (SUZANO + SPINNOVA JOINT VENTURE)

TECHNOLOGY CENTERS





ASIA INNOVABILITY HUB - SHANGHAI

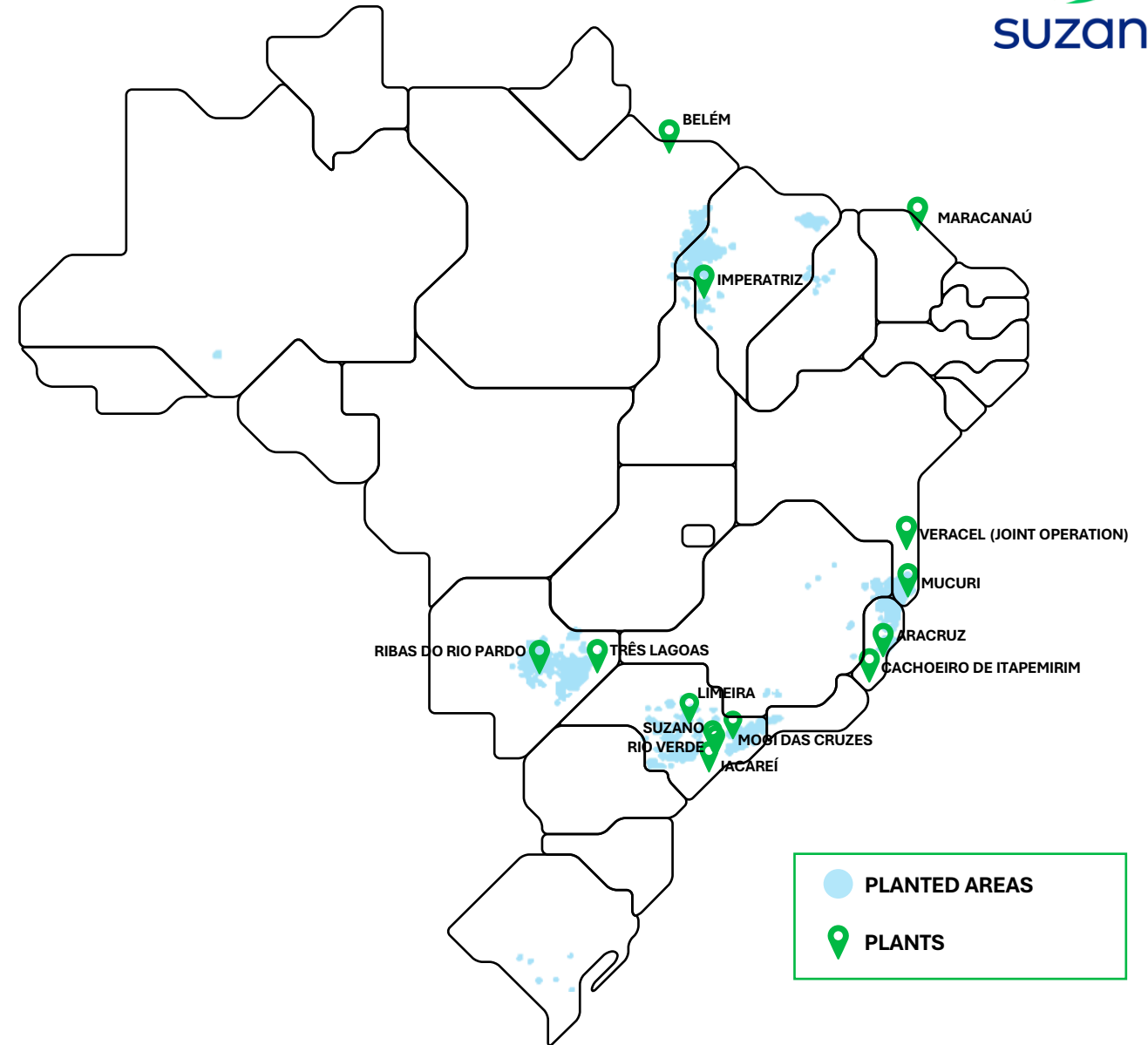
Co-create new business opportunities via the usage of bio-based materials

Open to develop applications together customers



Brazilian Operations

- 13 production sites
- 1 joint operation (Veracel)
- 30 distribution centers
- 4 technology centers
- 5 port terminals
- 10 dedicated vessels
- 1,7 million hectares dedicated to eucalyptus farming
- 1,1 million hectares dedicated to conservation areas



Fiber Development

Our Fiber Development Team is ready to support you globally on:

- New products development
- Projects and studies
- Deep dive troubleshooting tests
- Full R&D lab capability available for:
 - Pilot Plants:
 - Disc and Conical refining
 - Microfibrillated Cellulose (MFC)
 - Pulp Process
 - PFI Refining and Physical tests
 - Morphology and Physical-Chemistry
 - Chemical and Instrumental analysis
 - SEM microscopy



MFC & REFINING
PILOT PLANT



BLEACHING
REACTORS



PFI REFINER



EVO 500 ZEISS



VALMET FS5



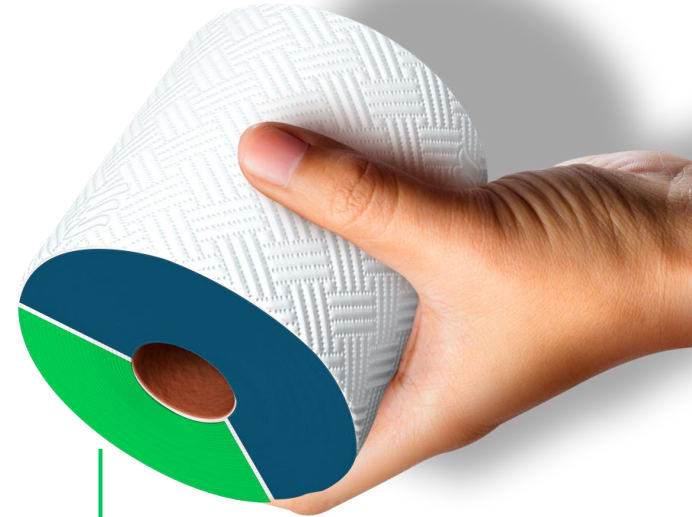
FT NIR

Let's unlock Eucalyptus Biopower, Together



SUZANP BIOPULP SALES BY END-USE

Source: Suzano Corporate Presentation FY 2022



TISSUE
63%

OTHERS
37%

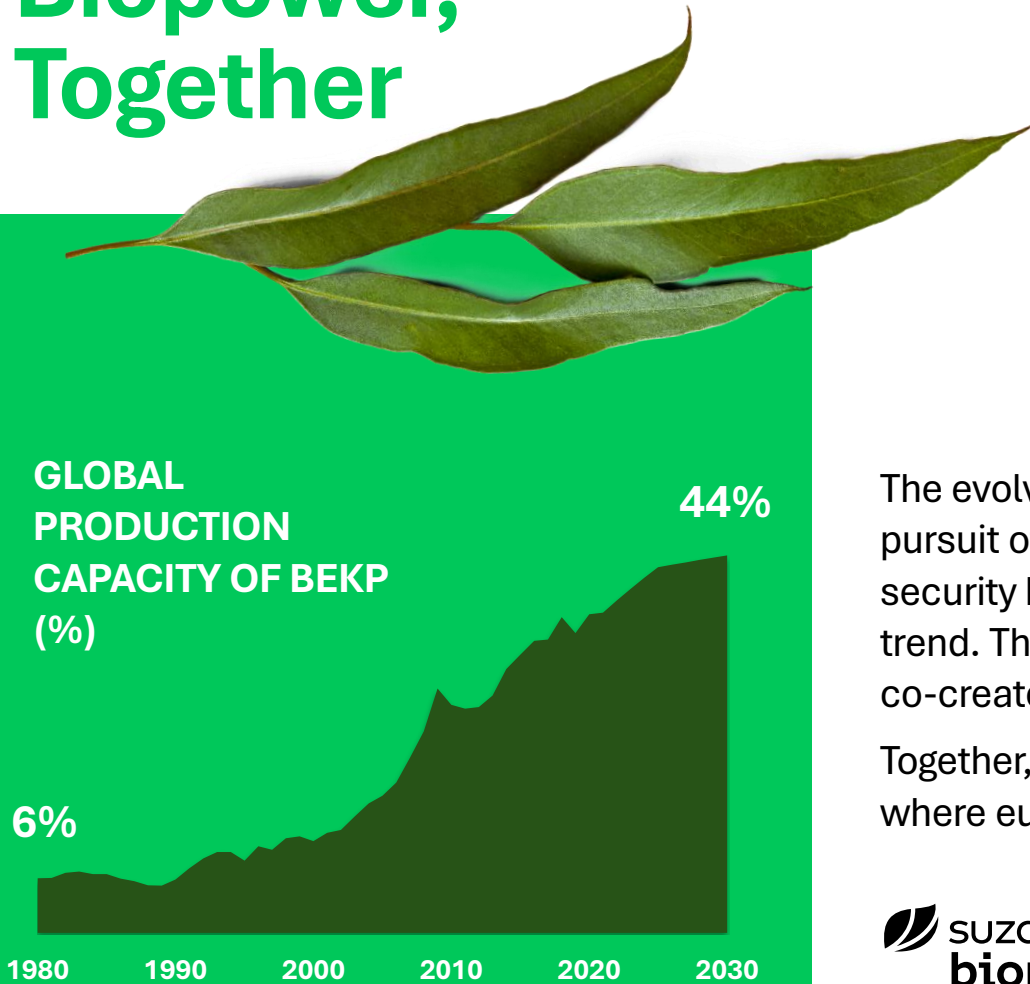
- GLASSINE
- DÉCOR
- FLEXIBLE
- CARTONBOARD
- KRAFTLINER
- FIBERCEMENT**
- PRINTING & WRITING...

The evolving dynamics of the paper market's pursuit of higher competitiveness and supply security has been driving the fiber-to-fiber trend. This presents us with an opportunity to co-create and innovate.

Together, we can forge a sustainable biofuture where eucalyptus pulp plays a pivotal role.



Empowering customers to embrace eucalyptus pulp



Source: AFRY, 2023



OUR PULP CHARACTERISTICS

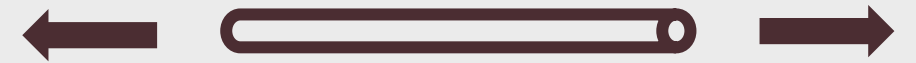
SUZANO

REFINING AND STRENGTH

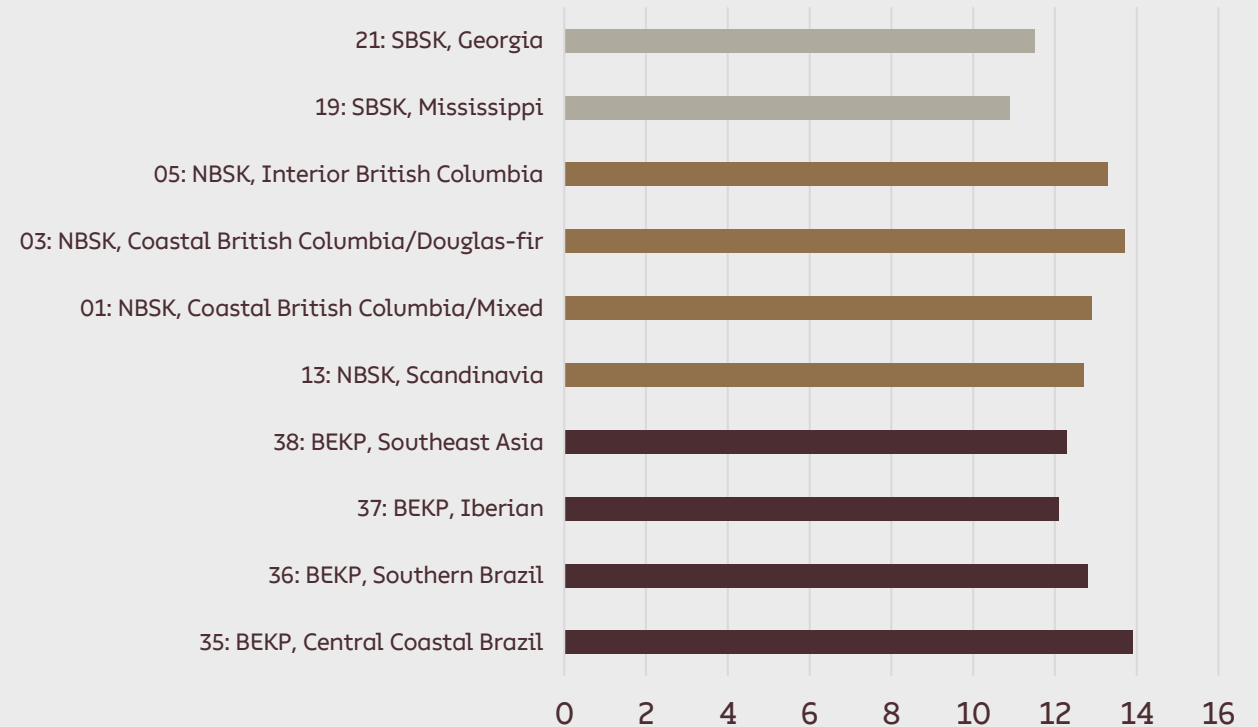
Role of Fibers in Enhancing Strength

Fiber length is commonly associated with strength, but for different reasons than typically assumed.

For example, a softwood or long-fiber like in NBSK pulp from British Columbia, Canada, does not inherently possess greater strength than a hardwood or short-fiber like in BEKP pulp from Brazil.



ZERO-SPAN TENSILE, IN KM

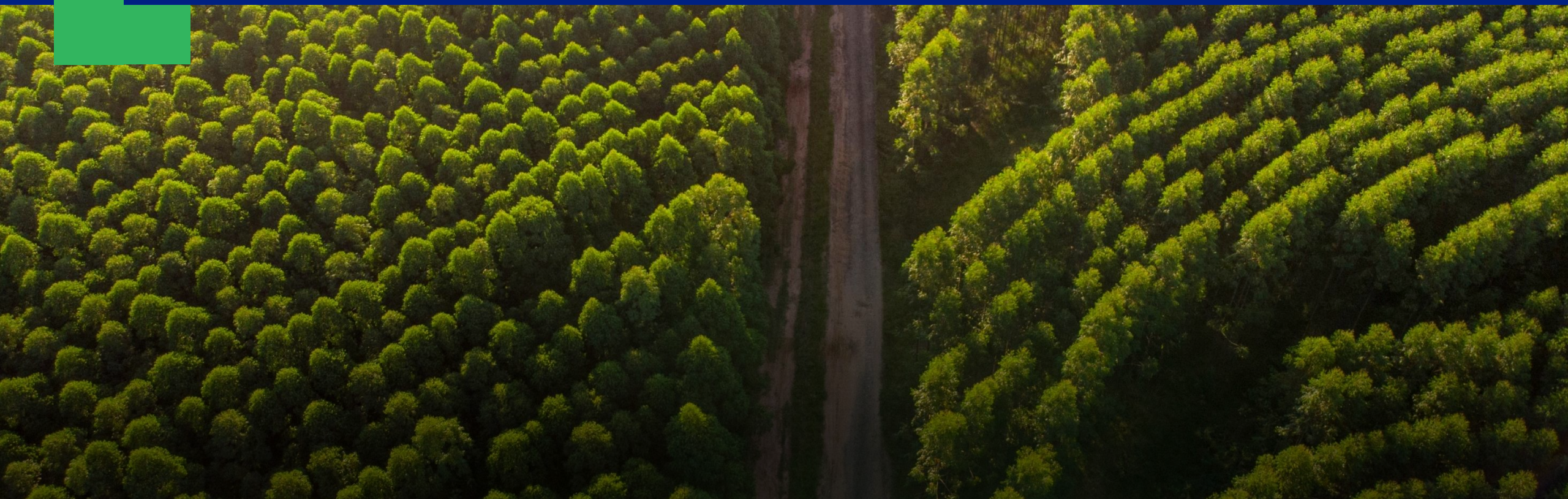


Source: The World of Market Pulp, H. Nanko, A. Button, D. Hillman, 2005

THE POWER OF

EUCALYPTUS

PULP



SUZANO BIOPULP, THE POWER OF EUCALYPTUS

HOMOGENOUS FIBER LENGTH DISTRIBUTION



1. Suzano BioPulp, combine technical advanced development together with R&D works, as
a. Fiber Length development, see figure
2. These allows for precise predictions of refinability and strength development.
3. Enable optimization of fiber furnish on ever industrial environments.

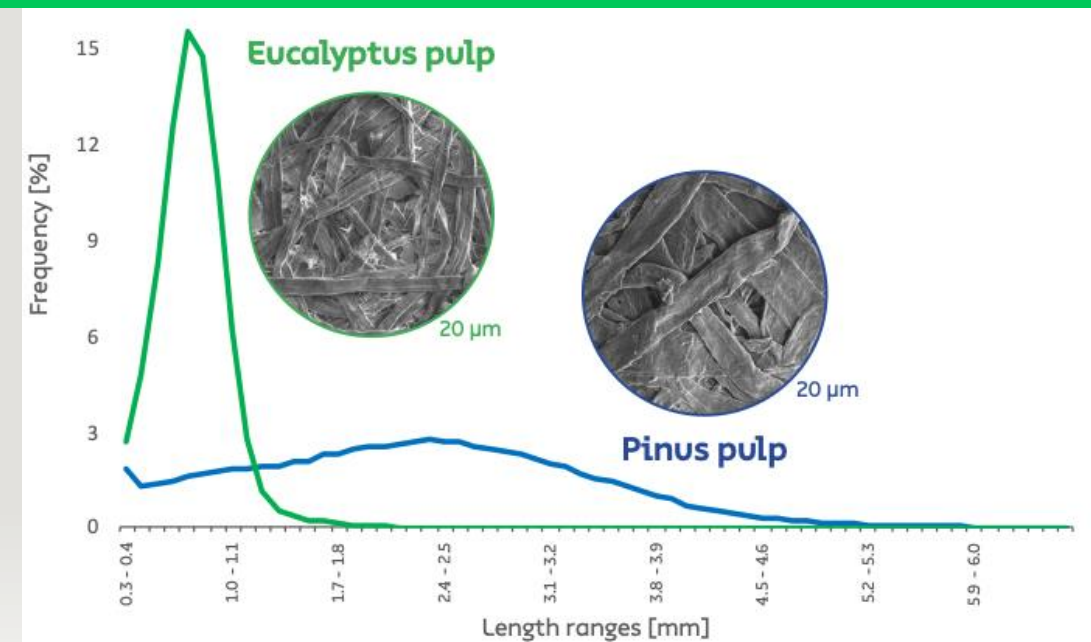


FIGURE1. Fiber length distribution of Eucalyptus and Pinus pulps

Measured with Valmet Fiber Image Analyzer (FS5) – 2024

KEY ADVANTAGES OF THE EUCALYPTUS FIBERS

The Suzano Biopulp enhances the following properties of fiber cement through fiber-fiber interactions:

Population of fibers

Eucalyptus Hardwood	15 to 25 Millions Fibers/gram
Softwood	4 to 6 Millions Fibers/gram

Increased
contact
surface

High fines retention and
adhesion performance

Stronger
composite bond

Cost competitiveness against
Softwood fibers

Significant increase in
mechanical properties
(High volume and stiffness)

More homogeneous
distribution of fibers in the
cement matrix



FIBERCEMENT EXPERIENCE AND MAIN DATA

SUZANO

FIBER CEMENT

Suzano Biopulp

Maximize the Eucalyptus fibers properties by developing very innovative and competitive applications to the global market.

Already adopted
in Brazil,
validated
through
successful cases
in industrial
environments
for Corrugated
Roof



Applications for Euca Pulp

- roof tiles (proved) & potential for:
 - Flat plates
 - External coatings
 - Internal dividers
 - Floors

SUZANO PULP + CEMENT

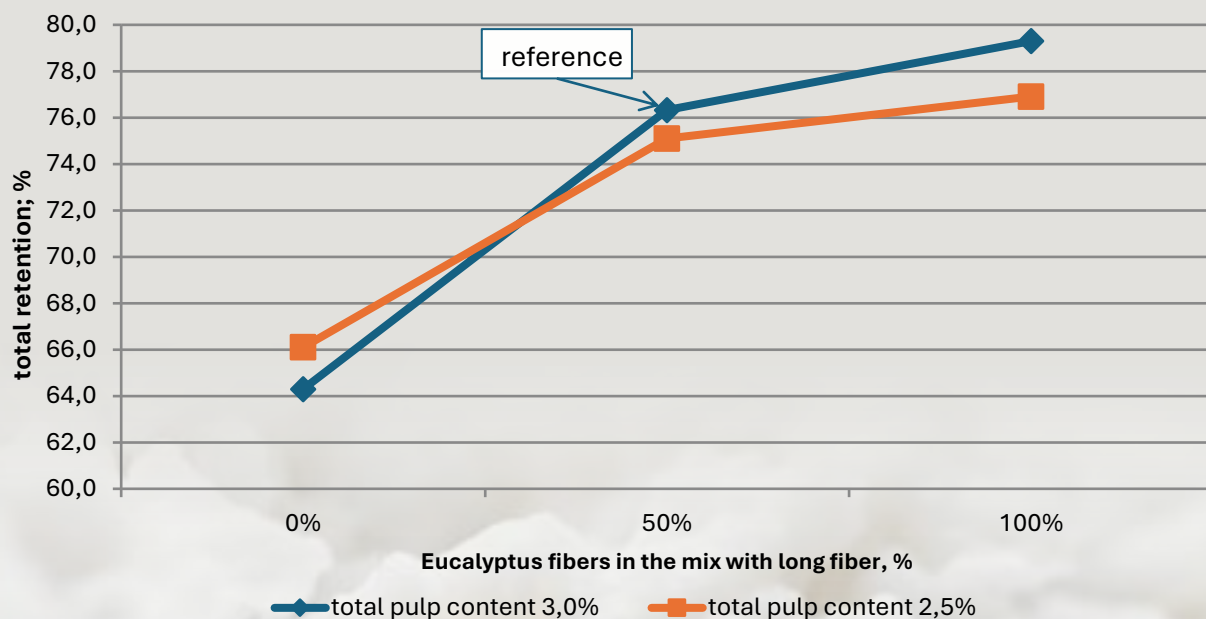
"Perfect match"



1 High performance

Considerable Improvement in the retention of fines and solids during drainage of the suspension.

Hatschek retention - fibercement free trial

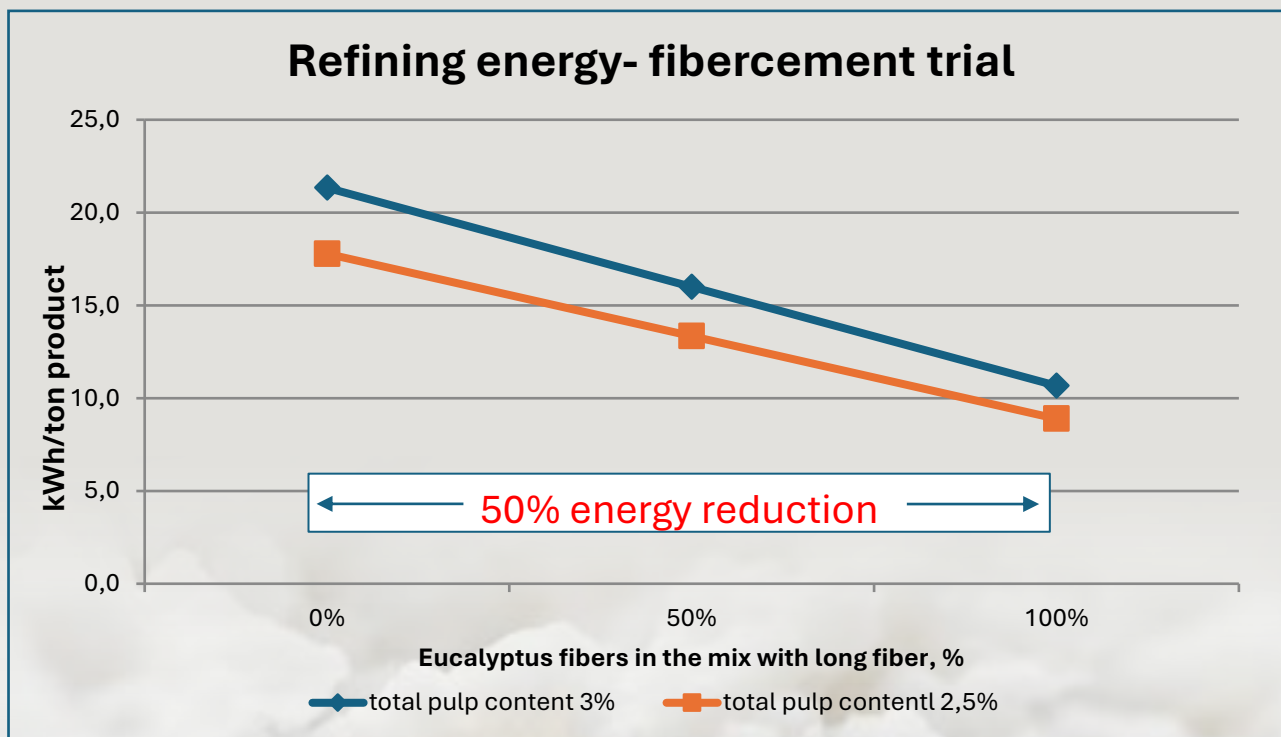


With **adequate refining**, it is possible to **maximize the efficiency** of properties when replacing long fiber with **Suzano Biopulp**. In this example increasing Fines retention with more Eucalyptus Pulp in the mix

Industrial Trials running joint with Infibra Brazil

2 High performance

Considerable refining energy reduction when increase Eucalyptus pulp





NEW SUZANO BIOPULP MORE MATCH

SUZANO – EUCALYPTUS UNBLEACHED PULP
EUCAPACK

EUCAPACK

Suzano **Unbleached Eucalyptus Fiber** with enhanced properties for **packaging** applications

Standard Bleached Pulp



Eucapack



Unbleached pulp derived
100% from **eucalyptus**



Ideal for containerboard,
cartonboard, specialties
paper **and fibercement**



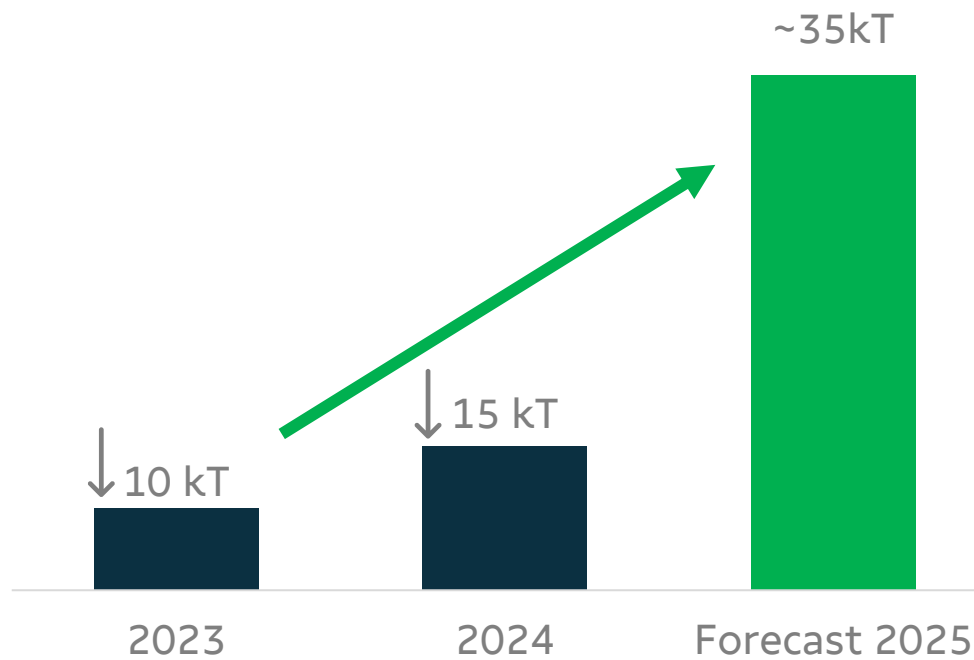
FSC or PEFC certification available

EUCAPEACK



EUCAPEACK PRODUCTION

- **INDUSTRIAL TRIALS** performed in 2023 and 2024



EUCAPACK TECHNICAL SPECIFICATION OVERVIEW

Eucapack

Unbleached cellulose designed for packaging and specialty papers

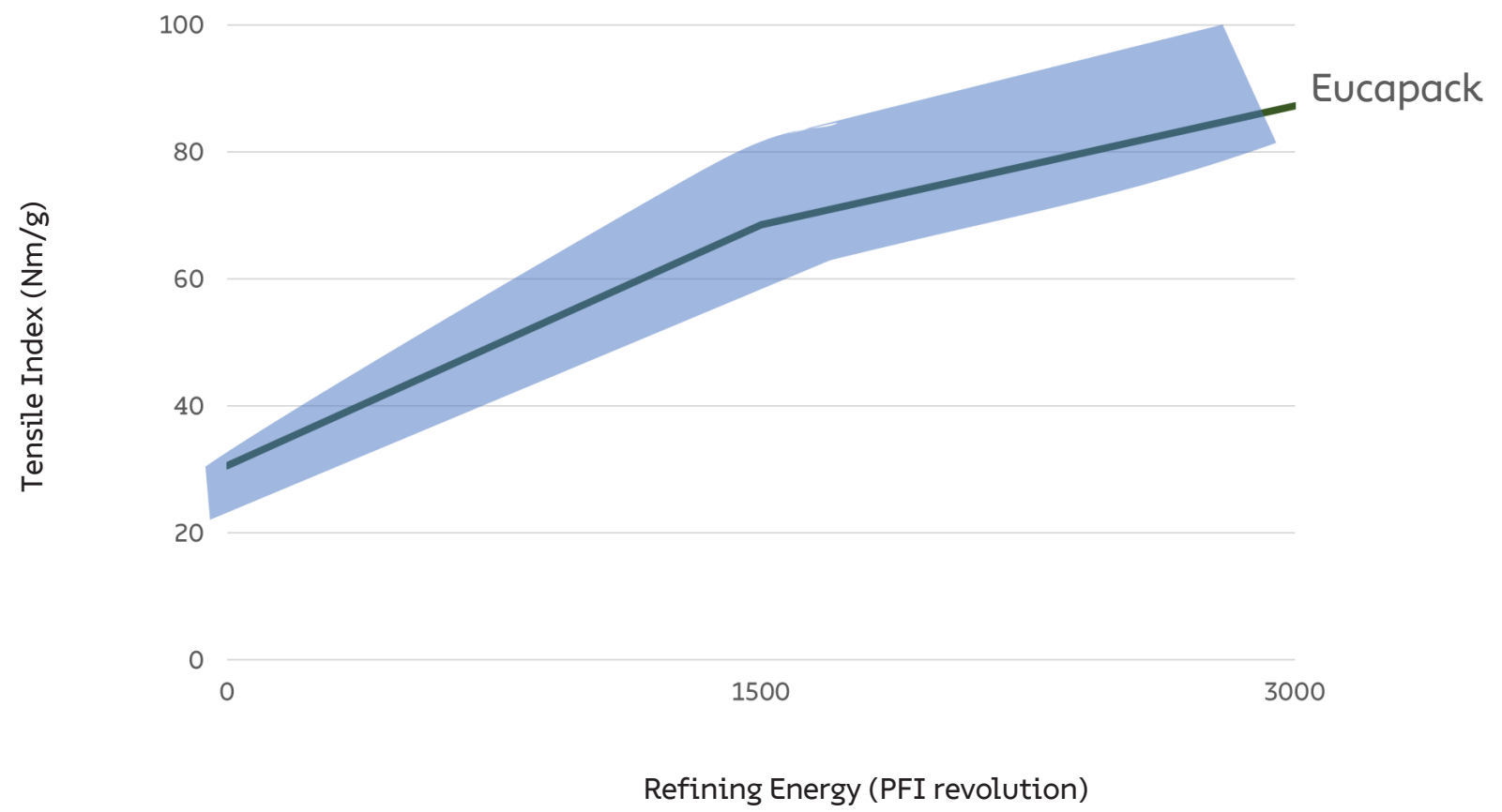
Suzano pulp is made in Brazil from 100% planted eucalyptus spp. wood. Pulp can be certified FSC® or PEFC™ upon agreement. All our mills* own ISO 9001:2015 certificate. ISO 14001:2015 certificate and OHSAS 18001:2007 certificate. Moreover, the pulp is regularly inspected by ISEGA GmbH to ensure our product conformity against the most popular regulations, among others FDA 21 CFR part 176. (EC) No 1935/2004 and BfR XXXVI.

Specifications (1)	Unit	Min. spec.		Max. spec.	Based on
ISO Brightness	%	34		42	ISO 2470-1
Shives Content	%	-		1	

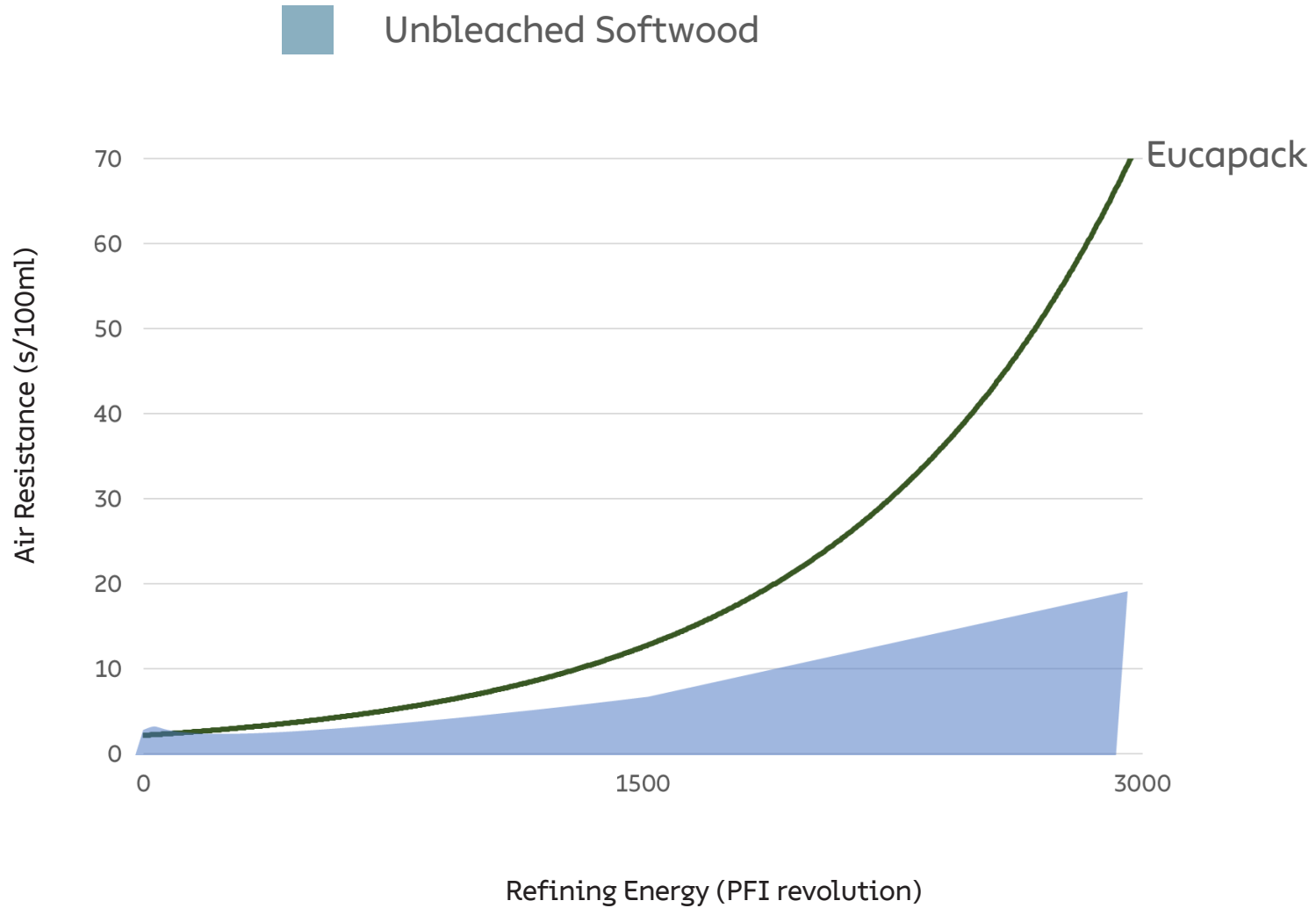
Typical properties (2)	Unit	0	1500	3000	Based on
Opacity	%	97	96	95	ISO 2472
Gurlev air resistance	s/100ml	2.0	13.0	64.0	ISO 5636-6

EUCAPACK vs SW

■ Unbleached Softwood



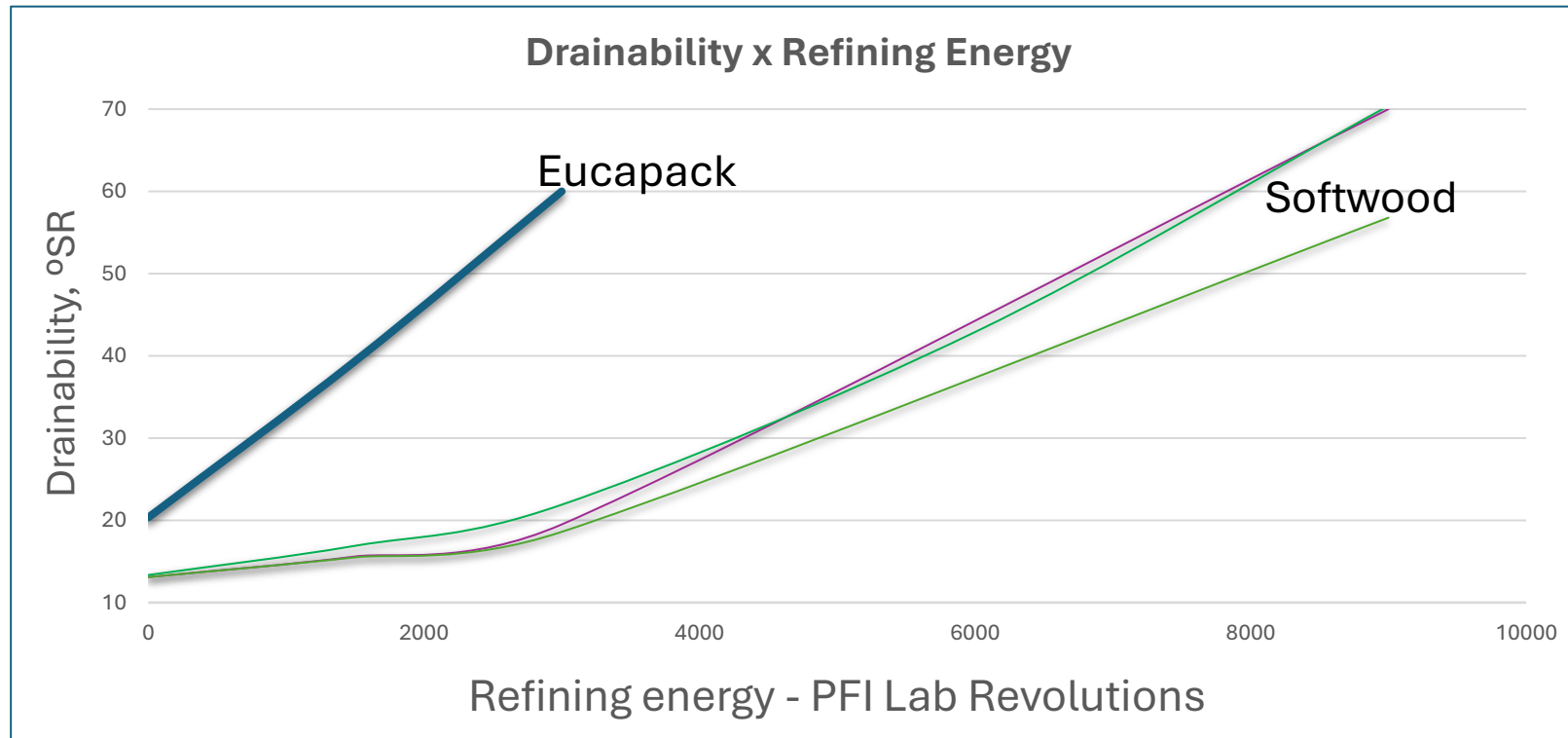
EUCAPACK vs SW



POTENTIAL POSITIVE IMPACT ON RETENTOIN FINES CAPACITY

EUCAPACK vs SW

■ Unbleached Softwood



POTENTIAL REDUCTION ON REFINING ENERGY

LAB STUDIES WITH EUCAPACK
POTENTIAL REPLACEMENT OF UNBLEACHED SOFTWOOD

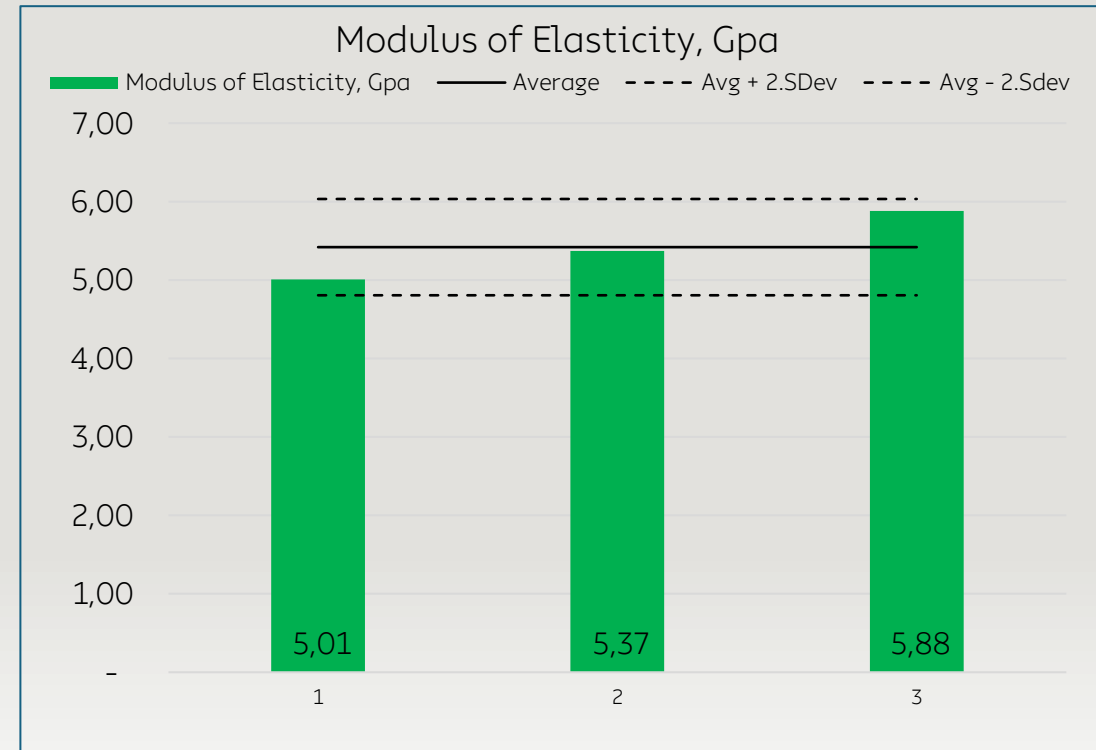
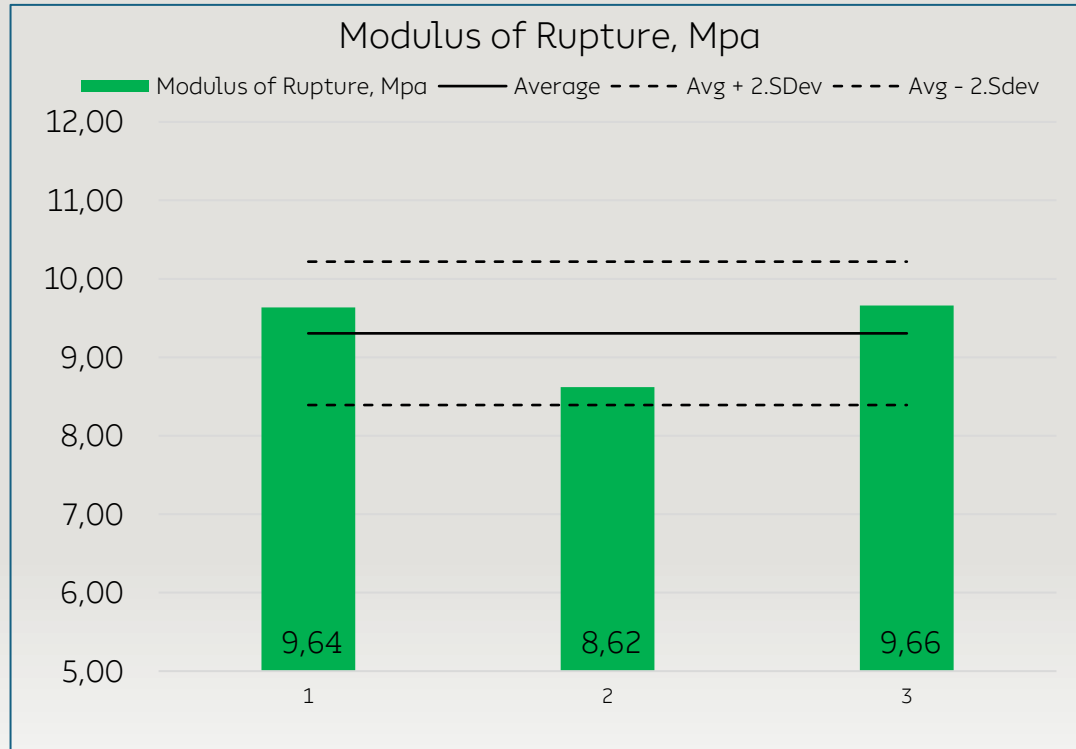


SUZANO



Development of Eucapack for Fiber Cement Board (Air cure)

No significant changes on strength resistance



Eucapck
USKP
Recycled Fiber

Sample	1	2	3
Eucapck	-	2.50 %	5.00 %
USKP	2.50 %	-	-
Recycled Fiber	2.50 %	2.50 %	-

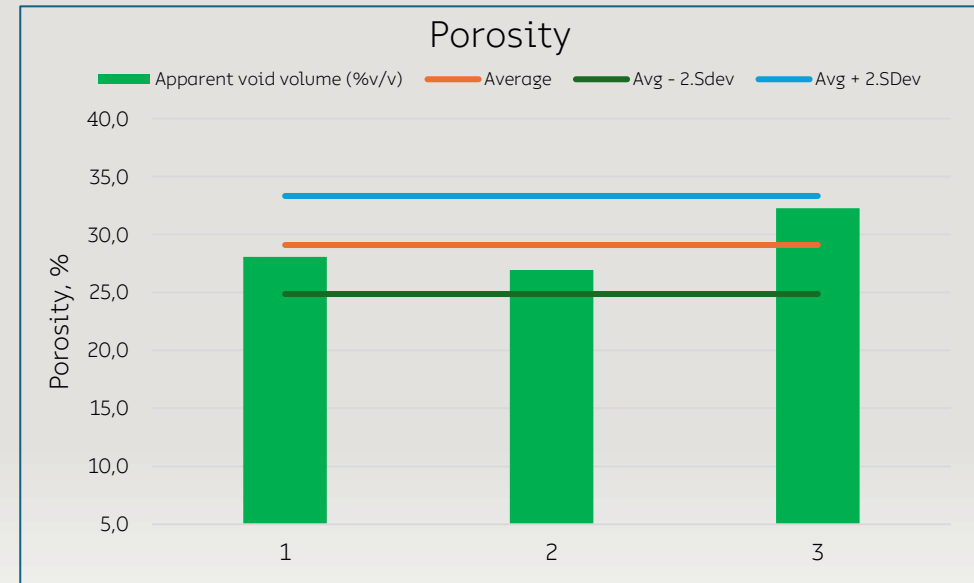
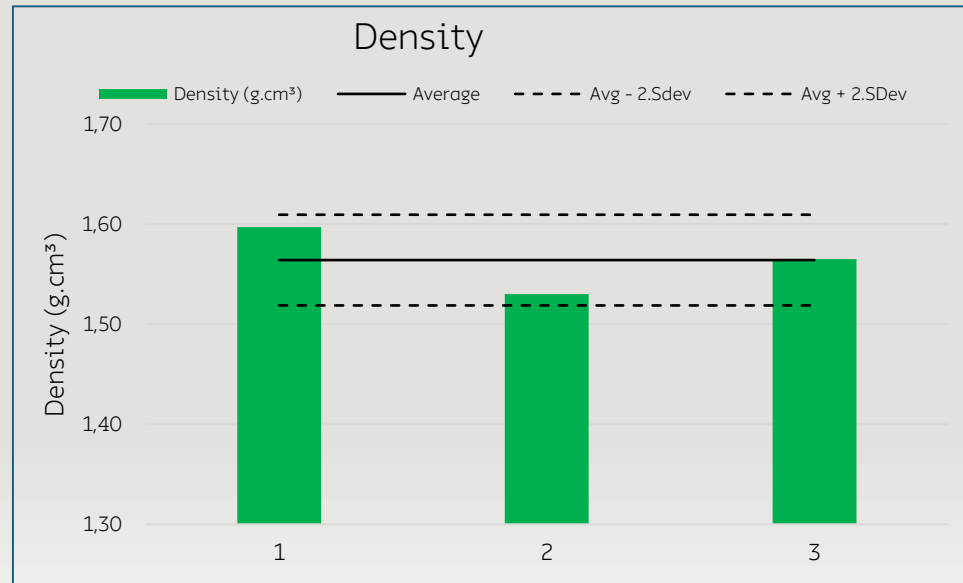
Sample	1	2	3
Eucapck	-	2.50 %	5.00 %
USKP	2.50 %	-	-
Recycled Fiber	2.50 %	2.50 %	-

Recipe: Portland cement (70.0%) + Calcite limestone (24.0%) + Synthetic fiber PP (1.0%) + Fibers (5.0%)

Development of Eucapack for Fiber Cement Board (Air cure)

Lightweight material

On average, it was observed higher porosity – lower density – by replacing 100% of long fibers of the fiber cement composition, with no compromising the strength resistance.



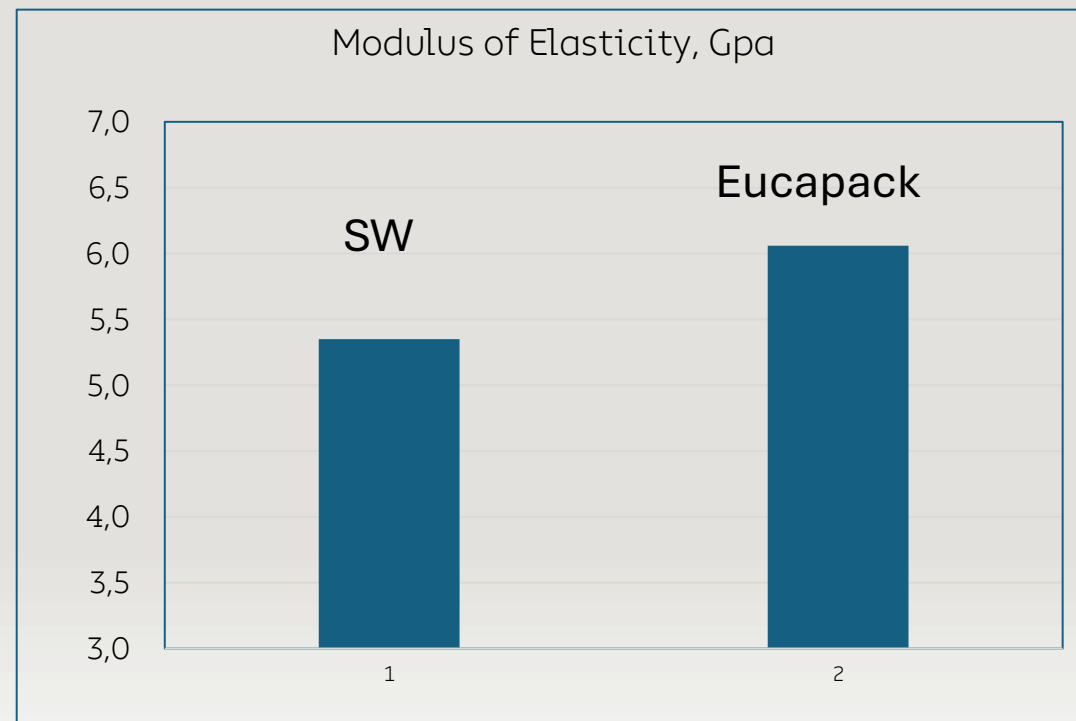
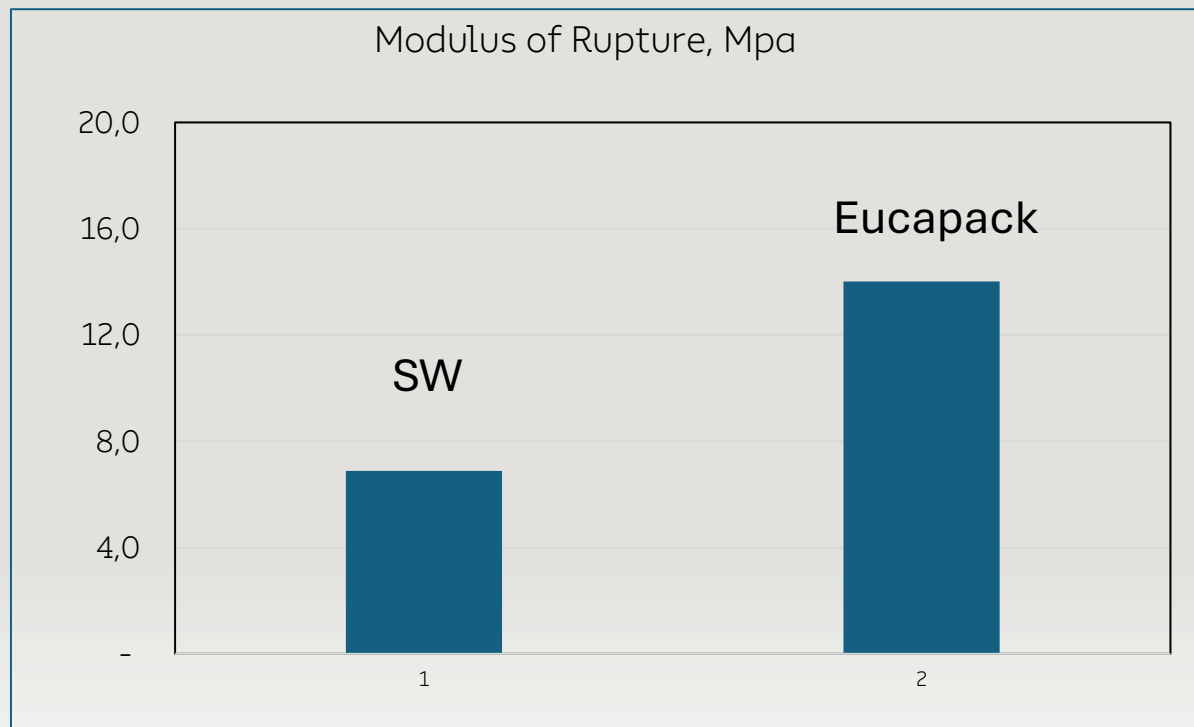
Eucapack
USKP
Recycled Fiber

	1	2	3
Eucapack	-	2.50 %	5.00 %
USKP	2.50 %	-	-
Recycled Fiber	2.50 %	2.50 %	-

	1	2	3
Eucapack	-	2.50 %	5.00 %
USKP	2.50 %	-	-
Recycled Fiber	2.50 %	2.50 %	-

Development of Eucapack for Fiber Cement Board (Autoclaved)

Significant changes on strength resistance



Eucapck
USKP

0,0 %
8,0%

8,0 %
0,0%

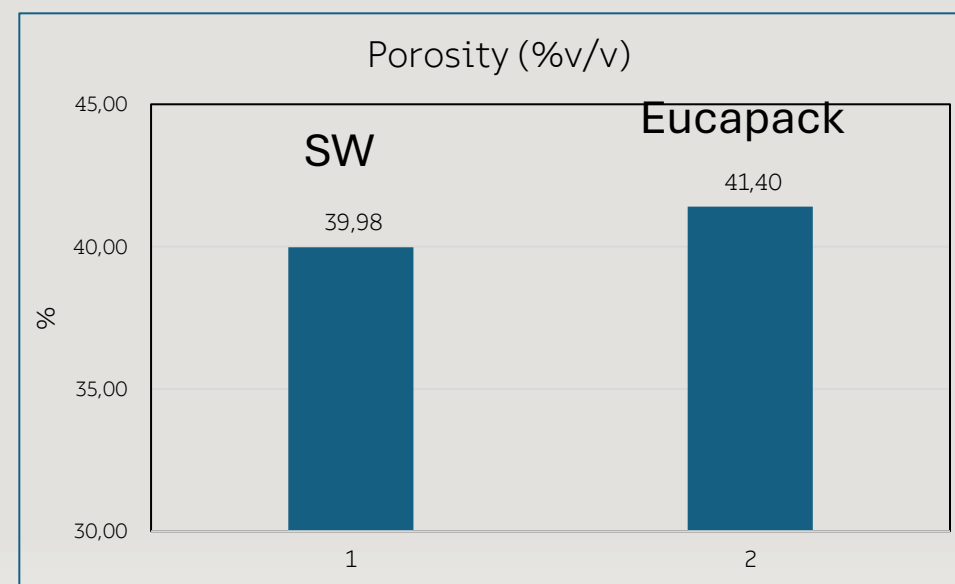
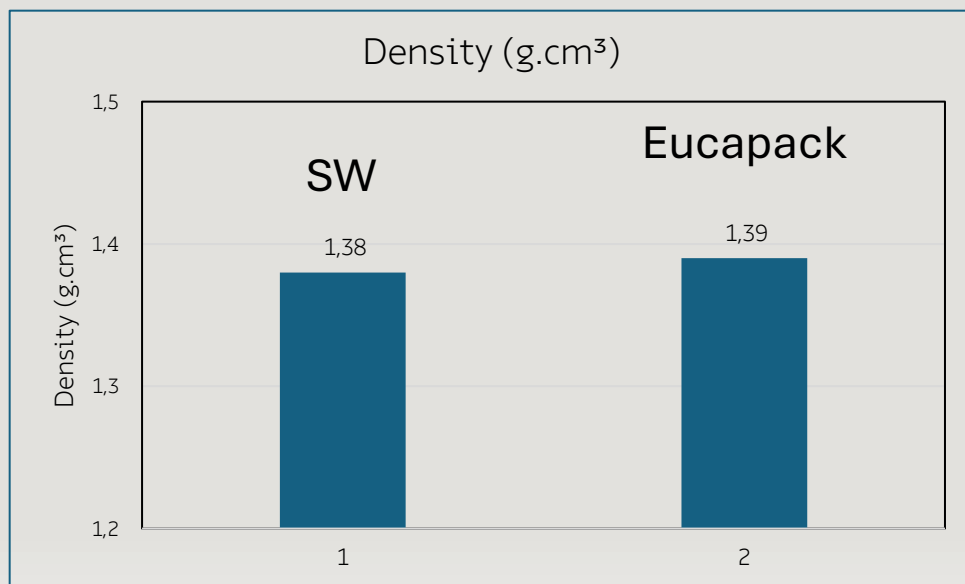
0,0 %
8,0%

8,0 %
0,0%

Recipe: Portland cement (42 %) + Silica (50 %) + Fibers (8 %)

Development of Eucapack for Fiber Cement Board (Autoclave)

No significant changes on Density/Porosity



Eucapck
USKP

0,0 %
8,0%

8,0 %
0,0%

Eucapck
USKP

0,0 %
8,0%

8,0 %
0,0%

Development of Eucapack for Fiber Cement Board

Important consideration

1. These studies were carry out without refining
2. Refining increase the differentiation from Eucapack to Softwood (our data showed here)
3. This confirms the high potential for Eucapack to replace the softwood in the fibercement production

Suzano is completed open to study that behaves with any of you

IIBCC 2024
COLOMBO | SRI LANKA



Thank you

Manoel Silvestre Faez
Mobile: +55 12 99704 3591
manoelfaez@suzano.com.br

**Let's co-create
value together**

Pulp Sales
biopulpsales@suzano.com.br

Eucalyptus Pulp Specialists
biopulpservices@suzano.com.br