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PACKAGING & HYGIENE SOLUTIONS
KEMIRA

High-performance barrier coatings for recyclable and safe fiber-based packaging

KCL BIOHUB WEBINAR
JUNE 17, 2025

kemira

OUR BUSINESS TODAY – MARKET-FACING BUSINESS UNITS

A global leader in sustainable chemical solutions for water-intensive industries

WATER SOLUTIONS

Sustainable solutions supporting all stages of the water treatment process

kemira

JUNE 17, 2025

PACKAGING & HYGIENE SOLUTIONS

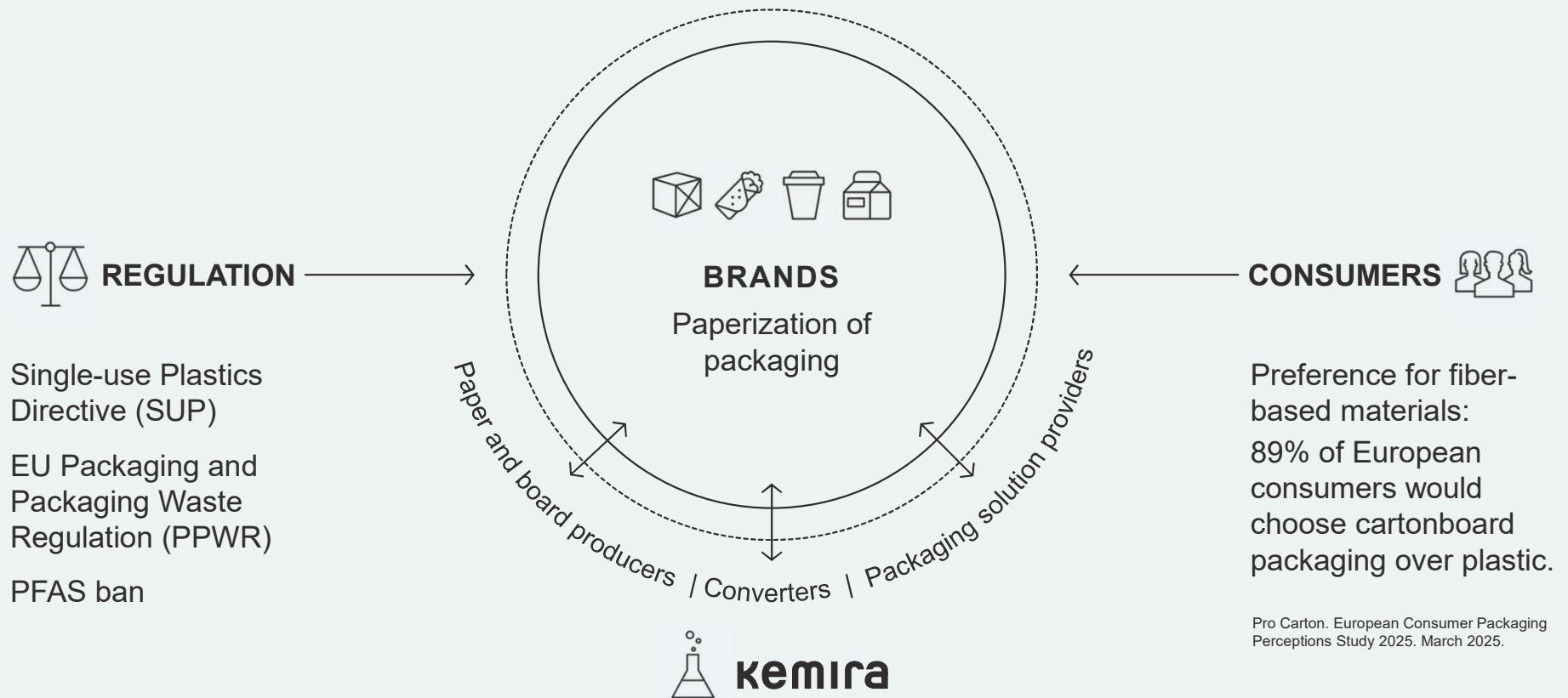
Sustainable solutions enabling fiber-based products for a circular economy

FIBER ESSENTIALS

Leading products and services supporting pulp producers improve operational efficiency and end-product performance and quality

EXTERNAL / HIGH-PERFORMANCE BARRIER COATINGS FOR RECYCLABLE AND SAFE FIBER-BASED PACKAGING / JOONAS HOKKA, KEMIRA

Drivers for market transformation



Essential chemistry expertise for functional fiber-based packaging

HYDROPHOBATION

Broad portfolio of internal and surface sizing agents providing resistance against moisture and liquid and improving other physical product properties.

FennoSize™ S

FennoSize™ AS

FennoSize™ KD

FennoSize™ MO

FennoSize™ RS

OIL AND GREASE RESISTANCE

Aqueous dispersion barrier coatings for creating resistance against oil, grease, and water and providing functional barrier against mineral oil migration.

FennoGuard™ GO

FennoGuard™ GWR

FennoGuard™ 3D

PAPER & BOARD PACKAGING

MOLDED FIBER PACKAGING

EXCELLENT OIL AND GREASE BARRIER

Kemira FennoGuard™ GO

PRODUCT FORM

Aqueous polymer dispersion with renewable content in 50% solids

KEY HIGHLIGHTS

Excellent oil and grease barrier properties, moderate water vapor resistance and good heat-sealing properties

RUNNABILITY & APPLICATION

Mixed typically with mineral pigments being applicable with a wide range of online & offline coating methods

FOOD CONTACT

EU Framework regulation, FDA§176.170 / 176.180, BfR XXXVI, GB9685

FOOD PACKAGING EXAMPLES

BOARD

Fresh and dry food containers, take-away & bakery products, pet food

PAPER

Wrapping for fast food, bakery pouches, butter wraps

FENNOGUARD™ GO

Designed barrier solutions for excellent grease-proofing

Cost-effective alternative for PFAS-treated and PE extrusion coated board and paper

Supports high flexible coating without cracking

Excellent converting properties

Disintegrates upon repulping, ensures high fiber recovery

Endorses circularity by aligning with the EU PPWR's "95/5" design-for-recycling criteria

INDICATIVE PERFORMANCE

> 120 h

PKFT – PALM KERNEL
FAT TEST

≥ 10-12

KIT RATING

< 100 g/m²/d

WVTR - WATER VAPOR
TRANSMISSION RATE

(23°C/50%RH)

> 98-99 %

HIGH FIBER
YIELD

(CEPI-METHOD)

SUPERIOR OGR BARRIER WITH EXCELLENT WATER HOLD-OUT

Kemira FennoGuard™ GWR

PRODUCT FORM

Aqueous polymer dispersion in 50% solids

KEY HIGHLIGHTS

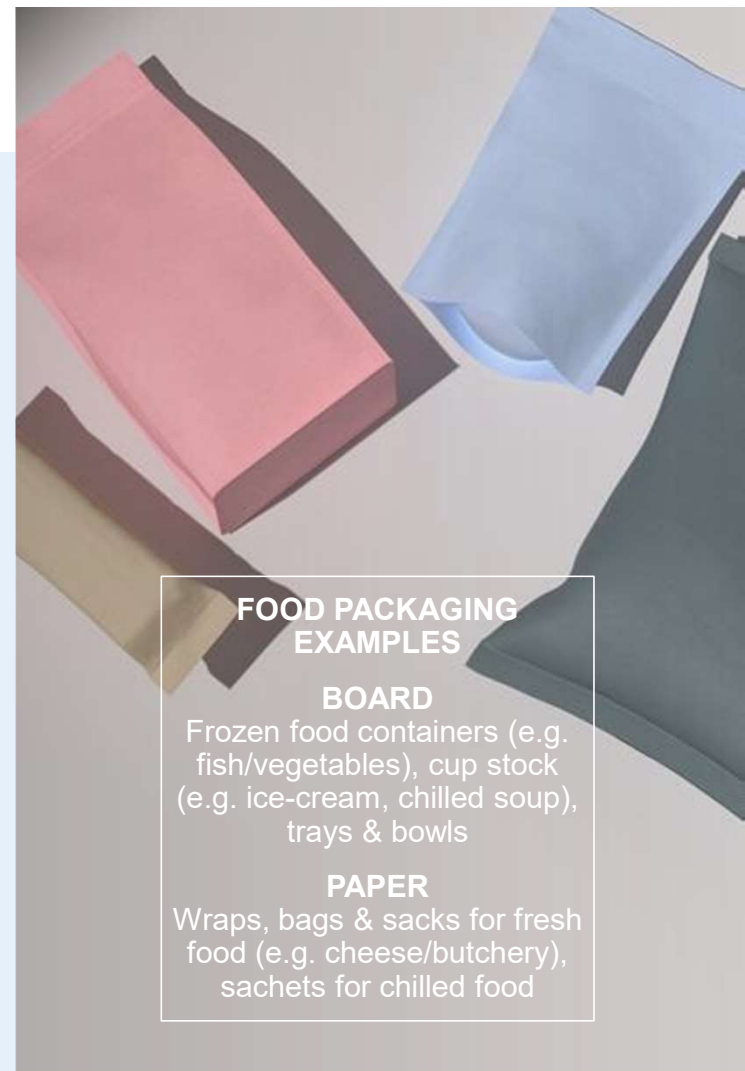
Superior oil and grease barrier properties combined with excellent water hold-out (low Cobb) and heat-sealing properties. Optional to improve water vapour resistance by tailoring formulation.

RUNNABILITY & APPLICATION

Mixed typically with mineral pigments being applicable with a wide range of online & offline coating methods

FOOD CONTACT

EU Framework regulation, FDA§176.170 / 176.180, BfR XXXVI



FOOD PACKAGING EXAMPLES

BOARD

Frozen food containers (e.g. fish/vegetables), cup stock (e.g. ice-cream, chilled soup), trays & bowls

PAPER

Wraps, bags & sacks for fresh food (e.g. cheese/butchery), sachets for chilled food

Barrier performance in board packaging

- › Virgin fiber-based board grades: FBB, SBB, SUB, cupstock
- › Replacement for PFAS-treated and PE extrusion coated board
- › Excellent foldability and flexibility on end-product
- › Enabling multilayer coating applications
- › Maintaining good converting properties (e.g. glueing, sealing, cup forming)

INDICATIVE PERFORMANCE		
→ Formula with ~40-50% mineral pigments → Double coated 12-15 g/m ² in total		
> 72h > 6h OIL RESISTANCE FLAT FOLDED (@40°C)	> 120 h PKFT – PALM KERNEL FAT TEST	< 20 g/m² COBB 1800S
< 20 g/m²/d *WVTR - AMBIENT (23°C/50%RH)		< 150 g/m²/d *WVTR - TROPICAL (38°C/90%RH)

*) the coating formulation is customized on Kemira's recommendation to meet demanding water vapor targets

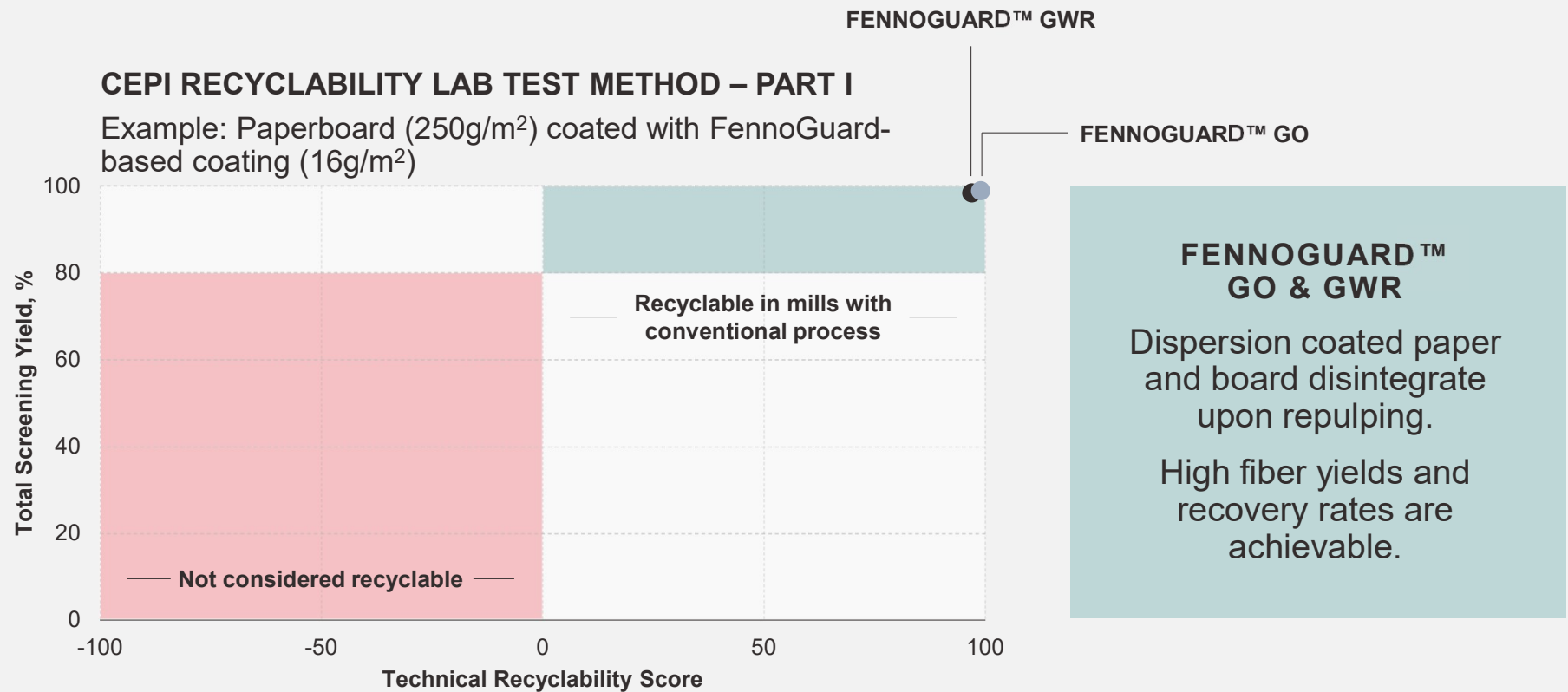
Barrier performance in paper packaging

- › High quality fiber-based flexible packaging paper grades, like MG-, MF- or kraft papers
- › Alternative for paper-film laminates, PFAS- and wax-treated papers
- › Provides flexible barrier coating layer ensuring enhanced converting properties
- › Heat-sealable barrier (full fiber tear) while forming less tacky layer

INDICATIVE PERFORMANCE		
→ Formula with ~25-35% mineral pigments → Double coated 6-8 g/m ² in total		
> 10h OIL RESISTANCE FOLDED (@40°C)	11-12 KIT	< 10 g/m² COBB 1800S
< 20 g/m²/d *WVTR - AMBIENT (23°C/50%RH)		< 150 g/m²/d *WVTR - TROPICAL (38°C/90%RH)

*) the coating formulation is customized on Kemira's recommendation to meet demanding water vapor targets

Excellent recyclability and high fiber recovery



Fibre-Based Packaging Recyclability Evaluation Protocol by 4evergreen (version 1, Jan 2025)

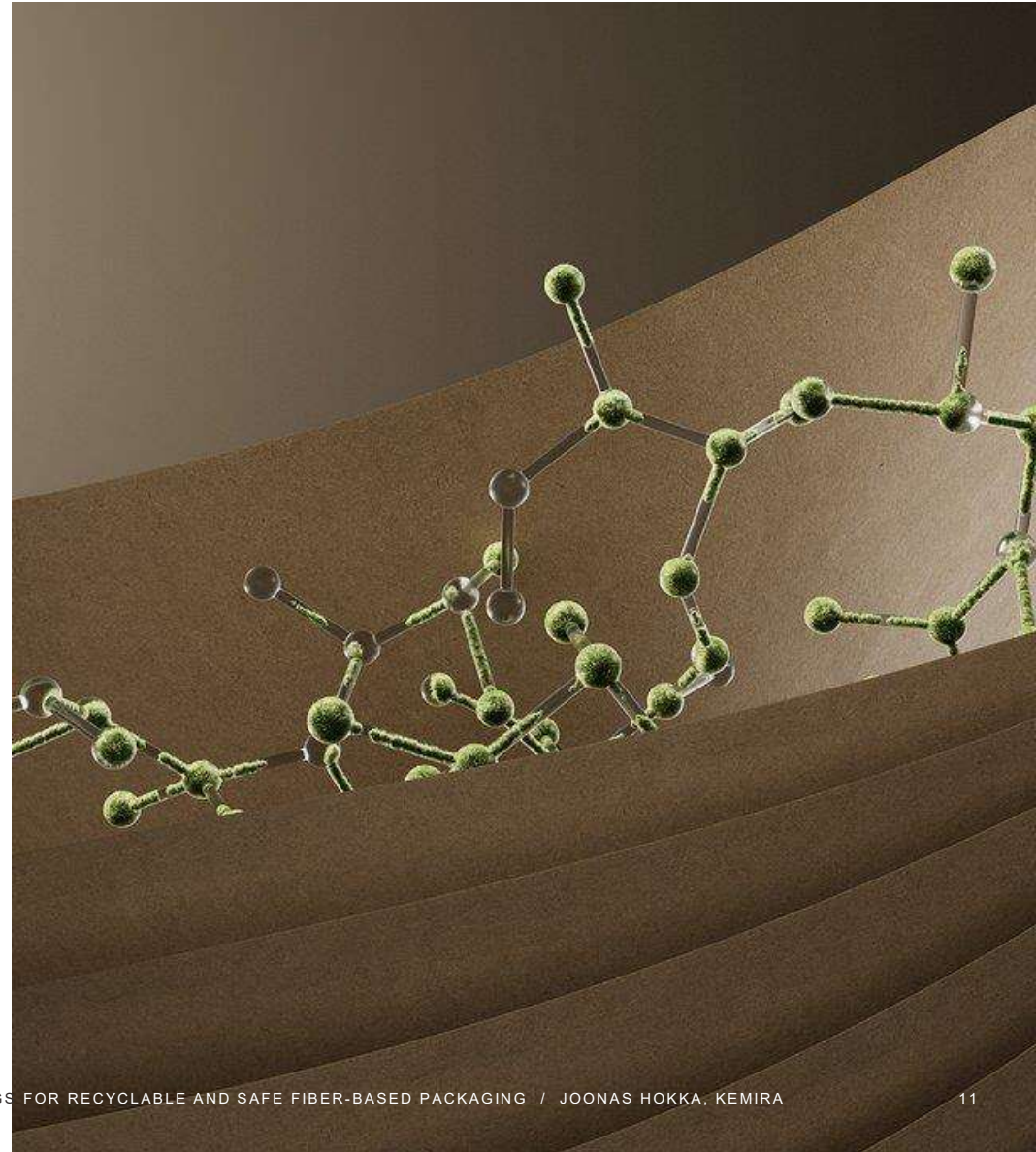
ISCC PLUS CERTIFIED BARRIER COATINGS
FENNOGUARD™ GO BIOMB5
FENNOGUARD™ GWR BIOMB5

Increasing sustainability without compromising performance

Renewable: >50% organic carbon is from renewable sources according to the biomass balance principle

Reduce fossil carbon: Contributing to lower carbon footprint of final packaging product

Drop-in compatibility: Same quality, performance, and regulatory profile as standard products



DRIVING SUSTAINABILITY

Toward fully renewable and biodegradable barrier coatings

PHA* DISPERSION TECHNOLOGY

Biodegradable and compostable barriers based on renewable feedstocks.

Providing water, water vapour, oil, and grease resistance for fiber-based packaging.

* polyhydroxyalkanoate

ALPHA GLUCANS

New-to-the-world biopolymers to replace fossil-based equivalents in various applications, e.g. barrier coatings and strength.

Strategic partnership with IFF: Joint manufacturing company established in 2025 in Kotka, Finland.

COMPREHENSIVE VALUE DELIVERY

Committed partner for packaging solution development

We partner with packaging manufacturers, combining our chemistry and application expertise with comprehensive technical support to enable sustainable, functional, and safe fiber-based packaging.



**IN-HOUSE
RECYCLABILITY
TESTING**



**FOOD SAFETY
EXPERTISE**



**SUSTAINABILITY
ASSESSMENTS**

E.g., Life Cycle
Assessment (LCA),
Product Carbon Footprint
(PCF)



**COATING
FORMULATION
TESTING AND
SUPPORT**



**END-TO-END
CHEMISTRY
EXPERTISE**

From pulping to
coating and water
treatment

Thank you!

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