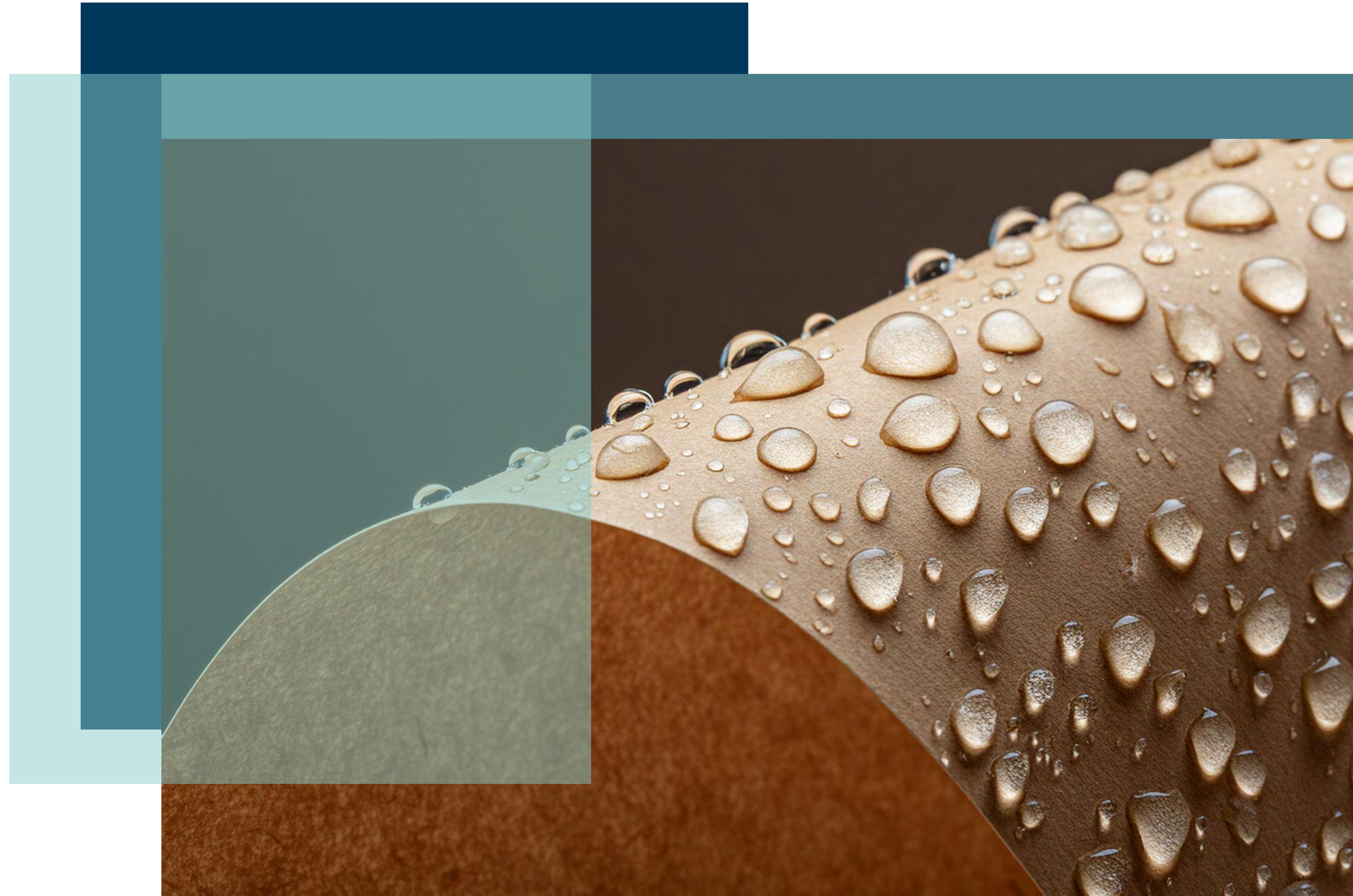




Lamberti holistic approach to food contact paper challenge

Gabriele Costa
Global product Manager Bio Resins and Additives





01

Lamberti expertises
& solutions

02

The technology
behind barrier
coatings

03

Waterborne Biobased
for paper alternative to
plastic



01_Our technological expertise

Natural polymers

Carboxymethyl cellulose and hydrocolloids

Waterborne synthetic polymers

Acrylic and polyurethanes

Oleochemicals and fatty derivatives

Polymer beads

Acrylic and polyurethanes

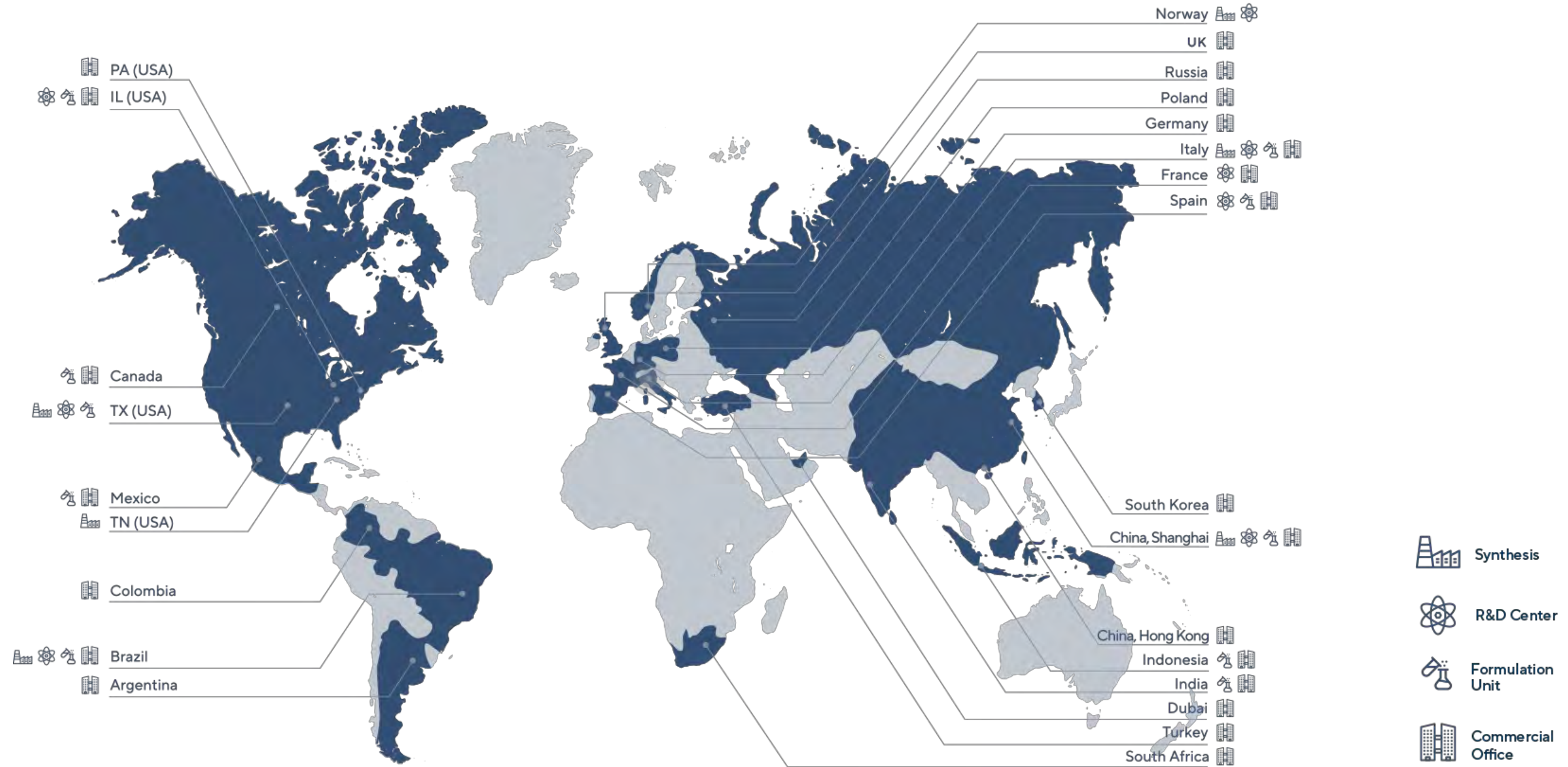
Hydroxyapatite

Active ingredients

For cosmeceuticals



01_Global Presence



01_Surface Treatment markets

Sustainability targets

- Reduce the climate change impact:: CO₂ emissions
- Avoid introduction of fossil Carbon and extend life of treated articles
- Reduce waste and impact on natural resources: water and microplastic
- Avoid toxic and polluting impurities releases (VOC, RSL, SVHC)

PATENTED
PROCESS



Architectural
Coatings



Leather Materials




Digital Inks



Paper & Packaging

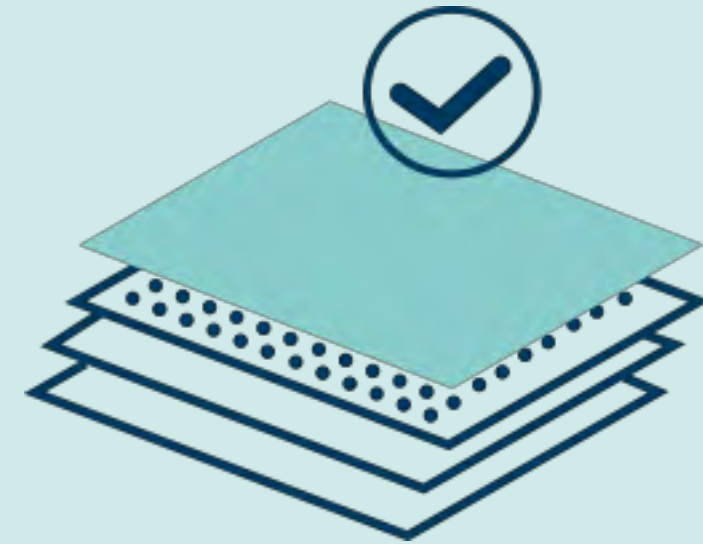


Wood and
Industrial
Coatings



Automotive
Interior Materials

02_Packaging materials challenges



Materials characteristics:

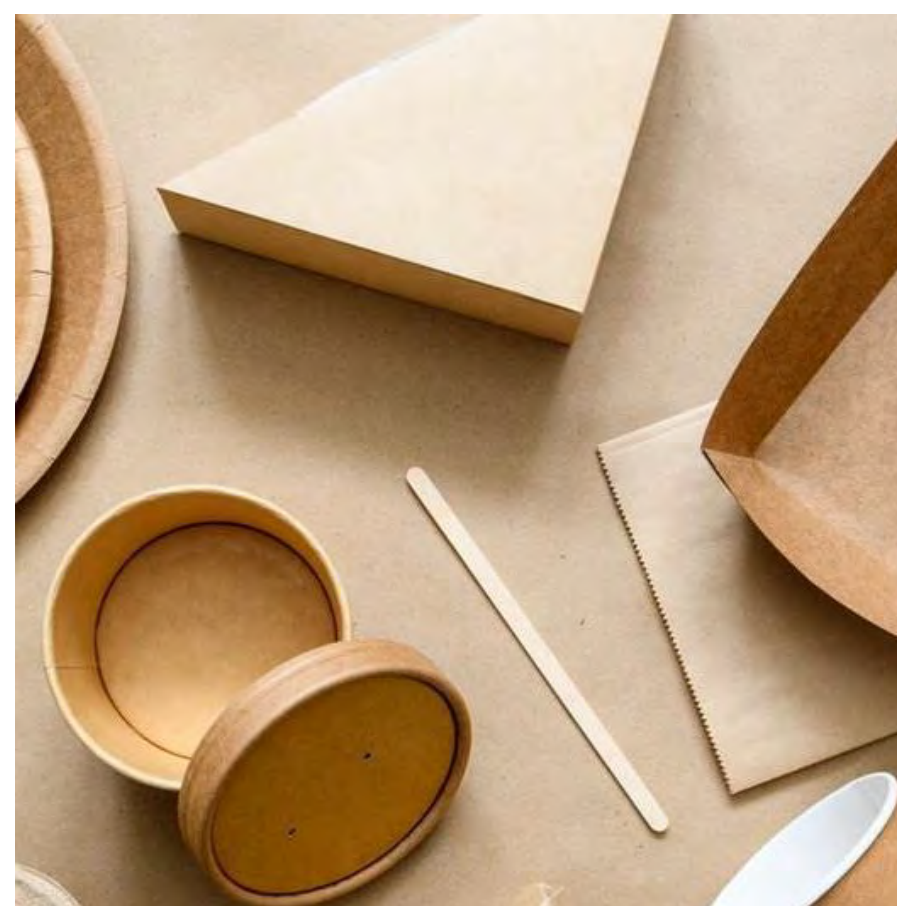
- Diverse material structures and performance: Cellulosic vs Plastics
- Diverse manufacturing processes: laminations, thermosealings, coatings, printing
- Shelf life and durability of goods, barrier performance to water, vapour, Mineral Oil, oxygen



Environmental challenges:

- Persistence in the environments: PFAS free, Microplastics
- Reduction of impact on climate change, LCA and Product Environmental Footprint
- EcoDesign: reuse, recycle, biodegradability or compostability as ultimate option

02_Paper as alternative to plastic



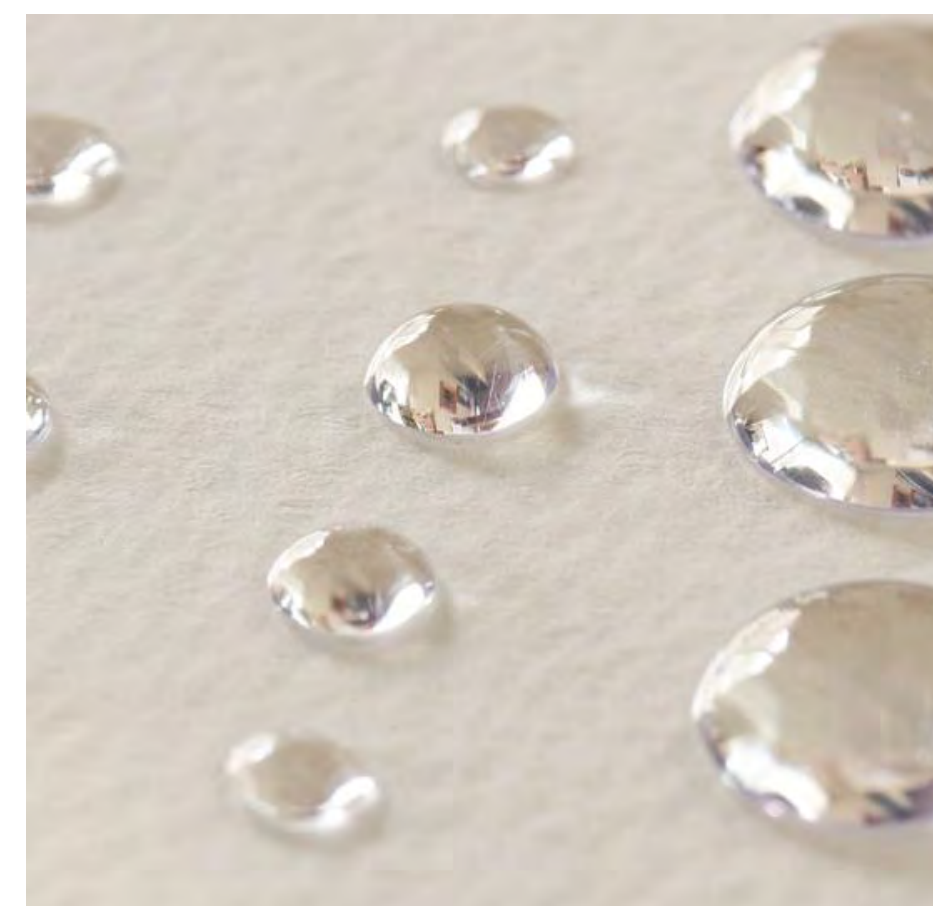
Biodegradability

Paper-based materials are considered eco-friendlier because they can be biodegradable, compostable and rely on a consolidated recycling stream



From Plastic to Paper

The transition from plastic to paper packaging needs innovative surface treatment solutions in order to improve their barrier properties



Barrier Coating

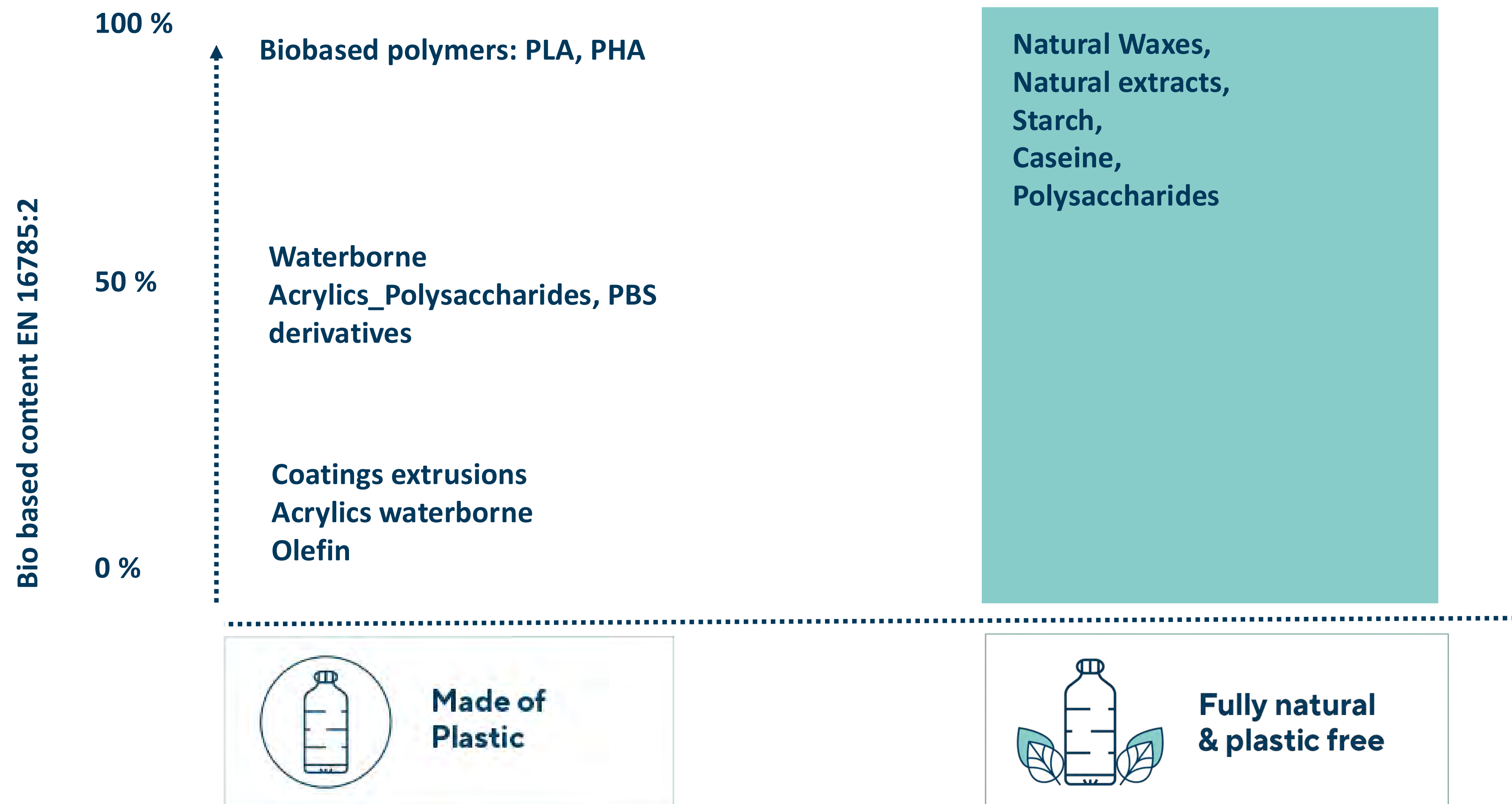
Paper based materials must be treated with coating technologies to perform durability and integrity of the goods contained



When paper is the solution, it cannot become plastic again!

02_Barrier Coating Technologies

Biobased and Plastic Definition



02_Target requirements for Barrier Coatings Products

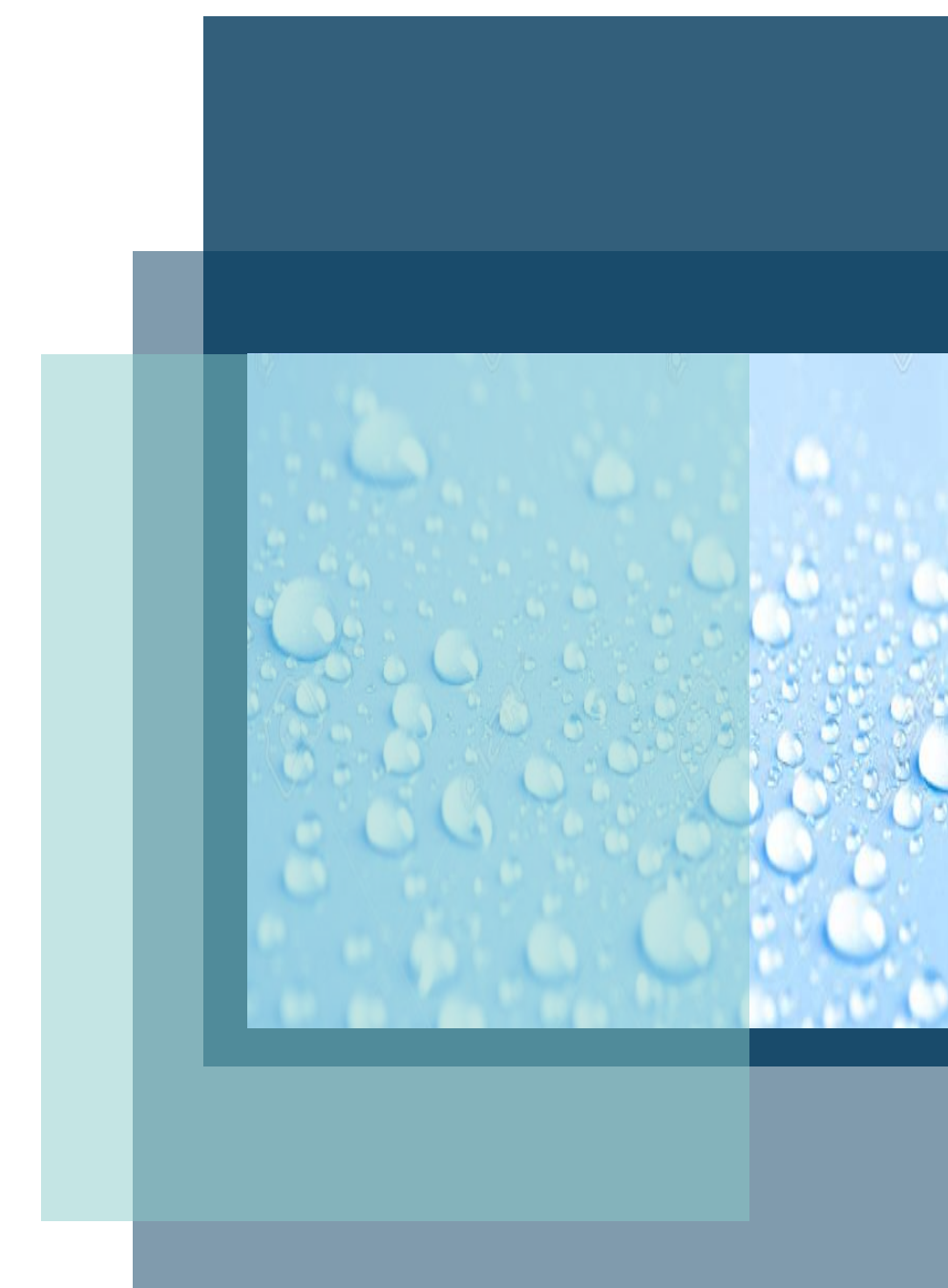
- Free of PFAS
- Food Contact Compliant
- Don't influence Biodegradability or Compostability and Recyclability of paper materials
- Barrier to:
 - Water,
 - Oil & Grease,
 - Hexane, MOSH, MOAH
- Heat Thermosealable
- No Blocking
- Plastic free



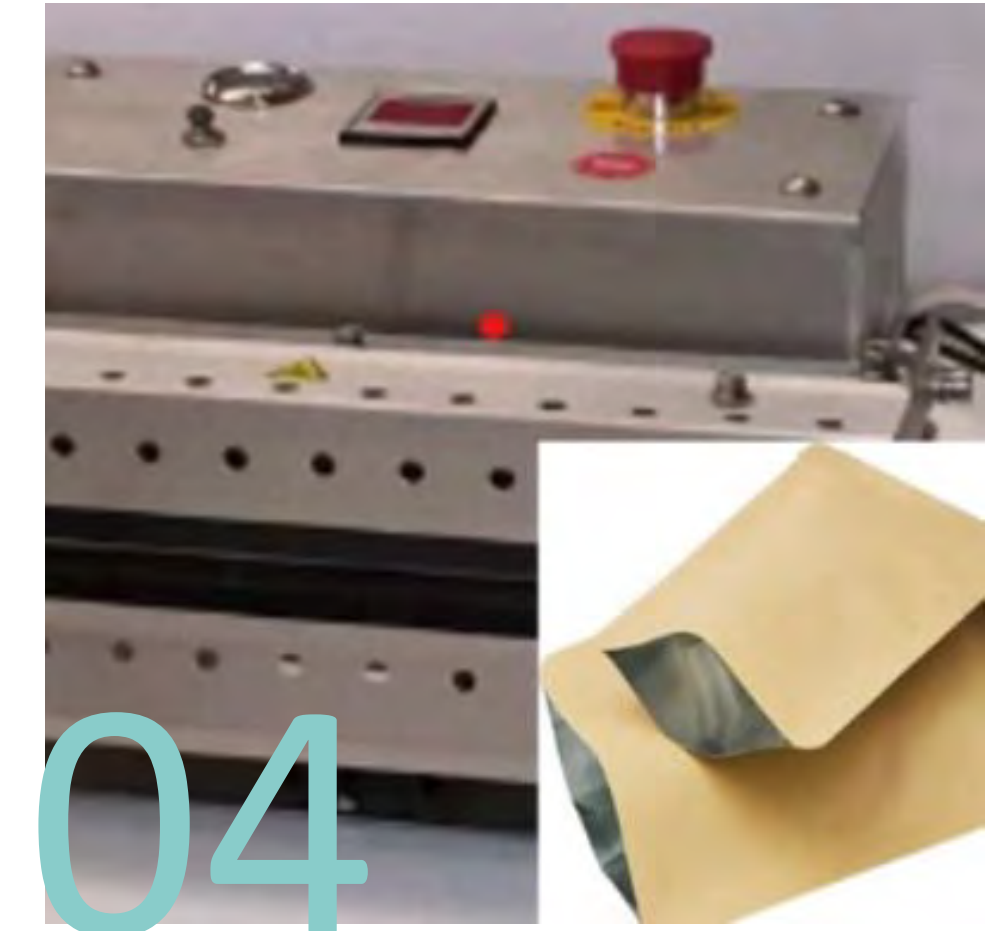
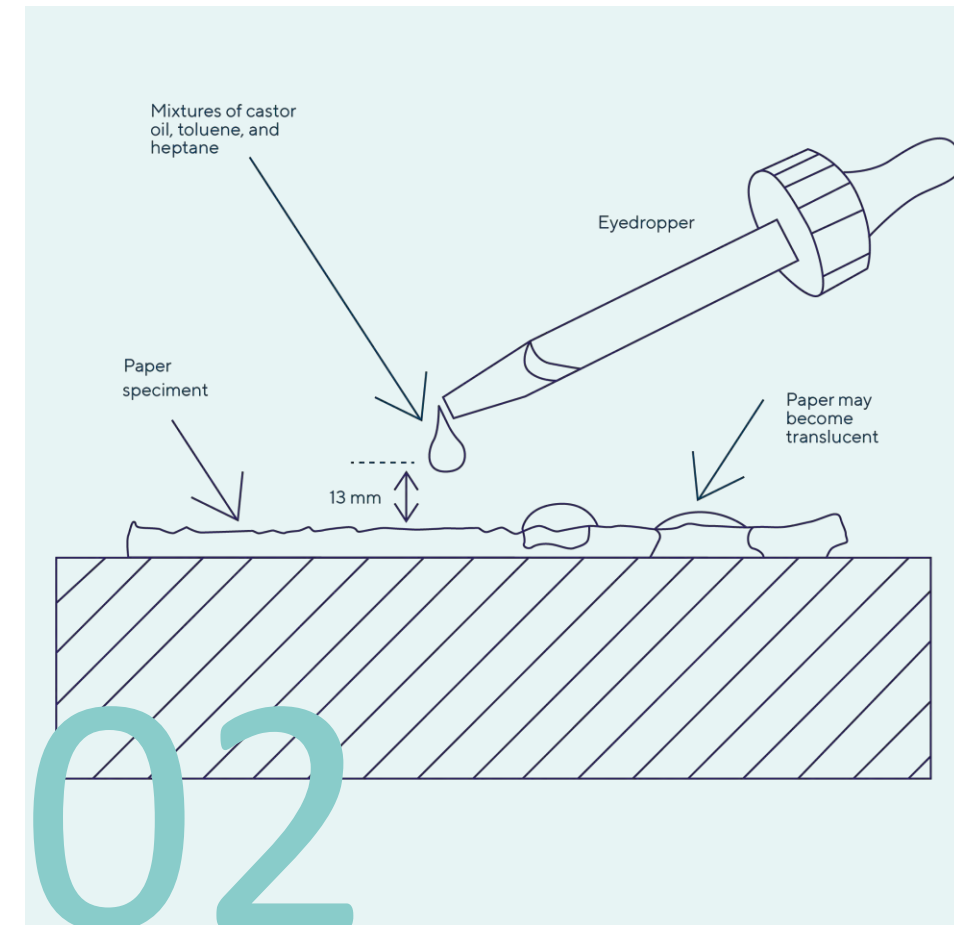
03_Water based technologies Evaluated

Technology	Ref. Name	Biobased %	Main Features
Ethylene copolymer	WB Olef	0%	Water repellency & Heat sealable
Acrylic	WB AC_1	0%	Good Water repellency
Acrylic_Polysaccharide	WB AC BIO 1	25%	Medium water repellency, High Oil barrier
Acrylic_Polysaccharide	WB AC BIO 2	50%	Medium water repellency, High Oil barrier
Polysaccharide in water	WB BIO 3	65%	Good Oil barrier easy to be used in coatings
Bioplastic (Confidential) in water	WB BIO 4	65+%	Biobased Plastic with good biodegradability/Compostability
Polysaccharide	Natural 1	100%	Good Oil barrier

Bio based content according to EN 16785:2 Biobased content calculated on anhydrous product



03_Test Methodology



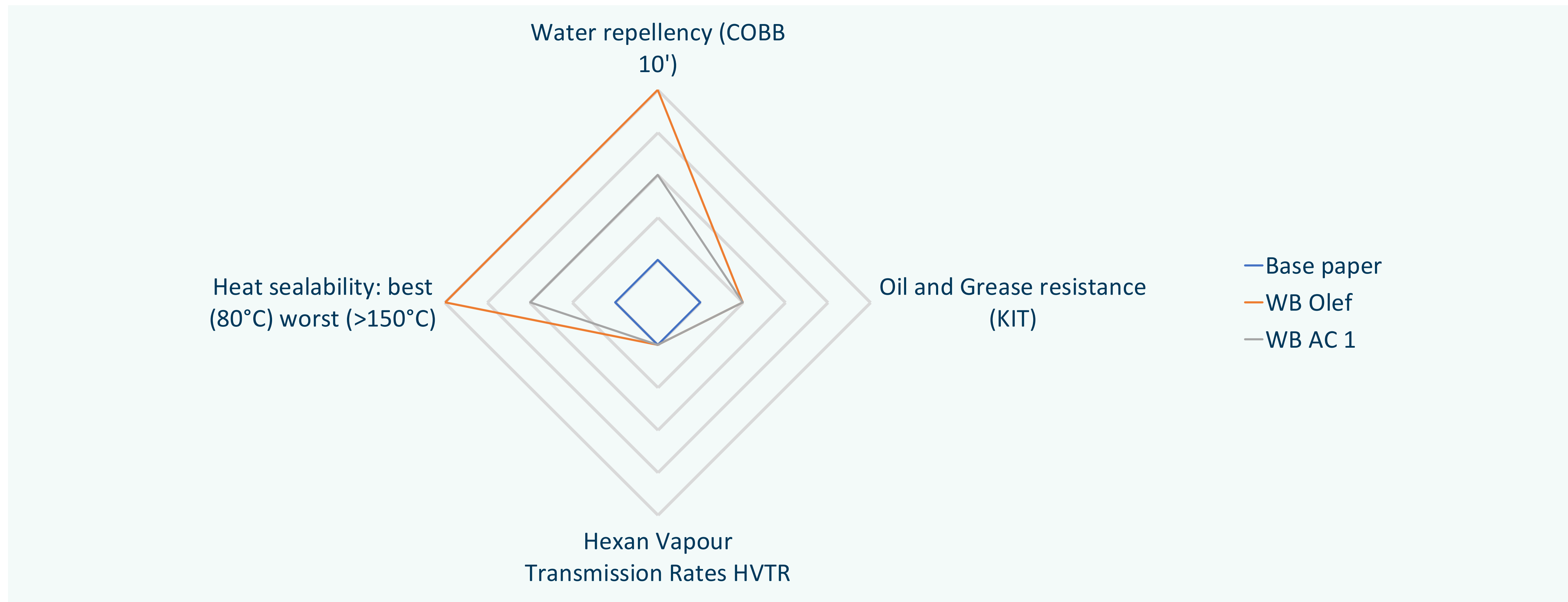
Methodology

Standard base paper of 80 g/m² coated add-on 5-6 g/m² by wire wound rod
 Drying condition 85 °C for 1 minutes.

Test name	Target
(1) Cobb method 10' TAPPI T 441	Water resistance
(2) Kit test TAPPI T 559	Oil & Grease resistance
(3) HVTR	MOSH/MOAH* permeability using hexane vapour
(4) Heat sealing initial Temperature	Sealability after 1'' contact time.

03_Overall Performance

Waterborne Synthetics



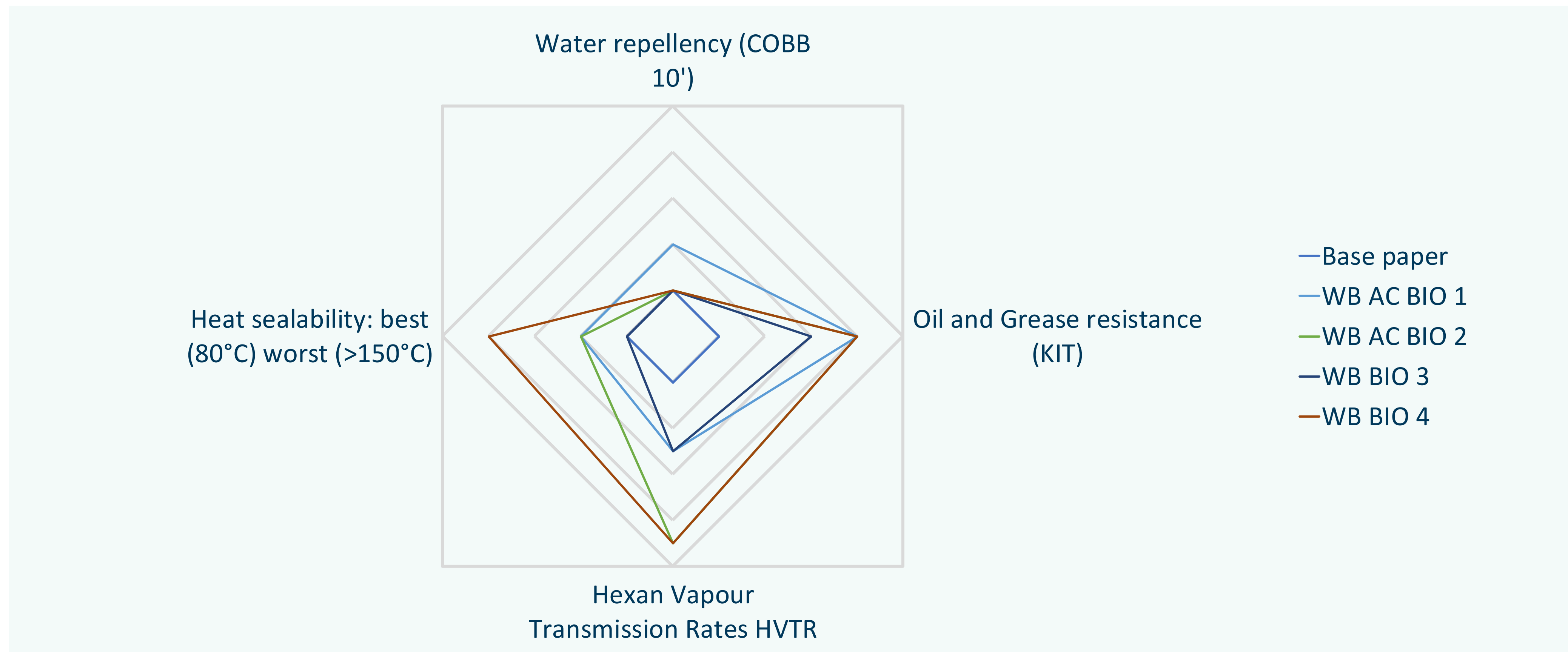
- Base paper
- WB Olef
- WB AC 1



Fully Synthetic

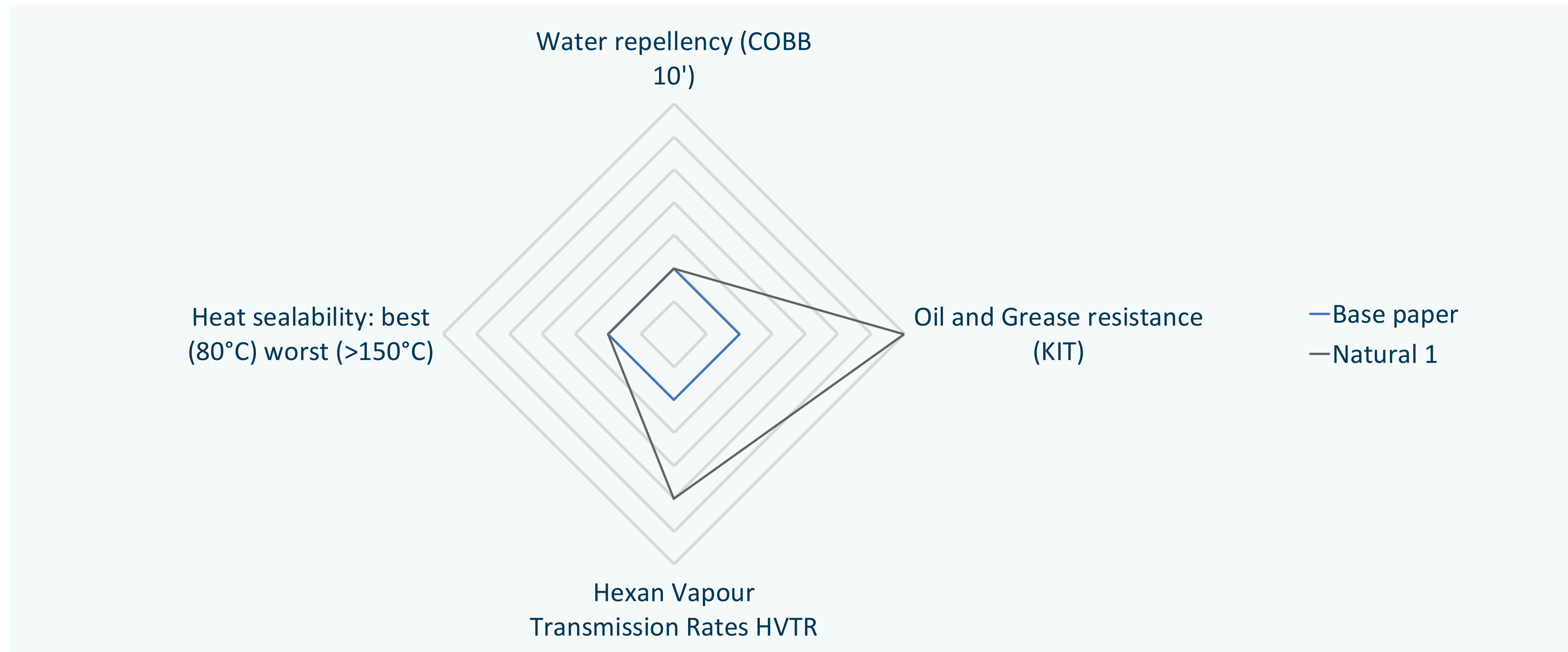
03_Overall Performance

Waterborne Biobased



03_Overall Performance

Waterborne coating plastic free





03_Our Waterborne Portfolio for Barrier Coatings

Product Class	Product Name	OGR	Water hold out	Water vapour	Mineral oil	Sealability
Synthetic	Esacote BC 46 HP	●				●
	Esacote BC 57	●	●			●
	Esacote SF 82	●	●			●
	Esacote BC 298		●			
	Esacote LP 11		●	●		●
Hybrid Bio & Synthetic	Esacote BIO BC 25	●			●	●
	Esacote BIO BC 50	●			●	
	Esacote BIO BC 5025	●			●	
Natural Material chemically modified	Esacote NT	●				
	Carbocel DP 100 N	●				
Plastic Free	Esacote BIO BC 100	●	●	●	●	●

03_Inspired by Nature

Fruit skins or cuticles, are already performing to extend life of all organic matters and are primarily composed by cutin substance

Cutin can be extracted from fruits, vegetable, especially from tomato peels.

The tomato processing industry use 40 mil ton* of Tomato yearly, which makes tomatoes the world's leading vegetable for processing, and generates significant amount of tomato peels by-product.

*World Processing Tomato Council 2023





03_Tomato's Skin Barrier Coatings

Lamberti patented an innovative solution to convert extracted cutin in **Esacote® BIO BC 100**, a waterbased fluid easy to be applied for all flexible packaging materials.

*Tested by Beta Analytics: ASTM D6866 C14/Ctotal

Esacote
BIO BC
100

-  **100% biobased**
-  **Fully natural & plastic free**
-  **Patented**
-  **KM Ø**
-  **Based on cutin from tomato peels**



03_Esacote[®] BIO BC 100

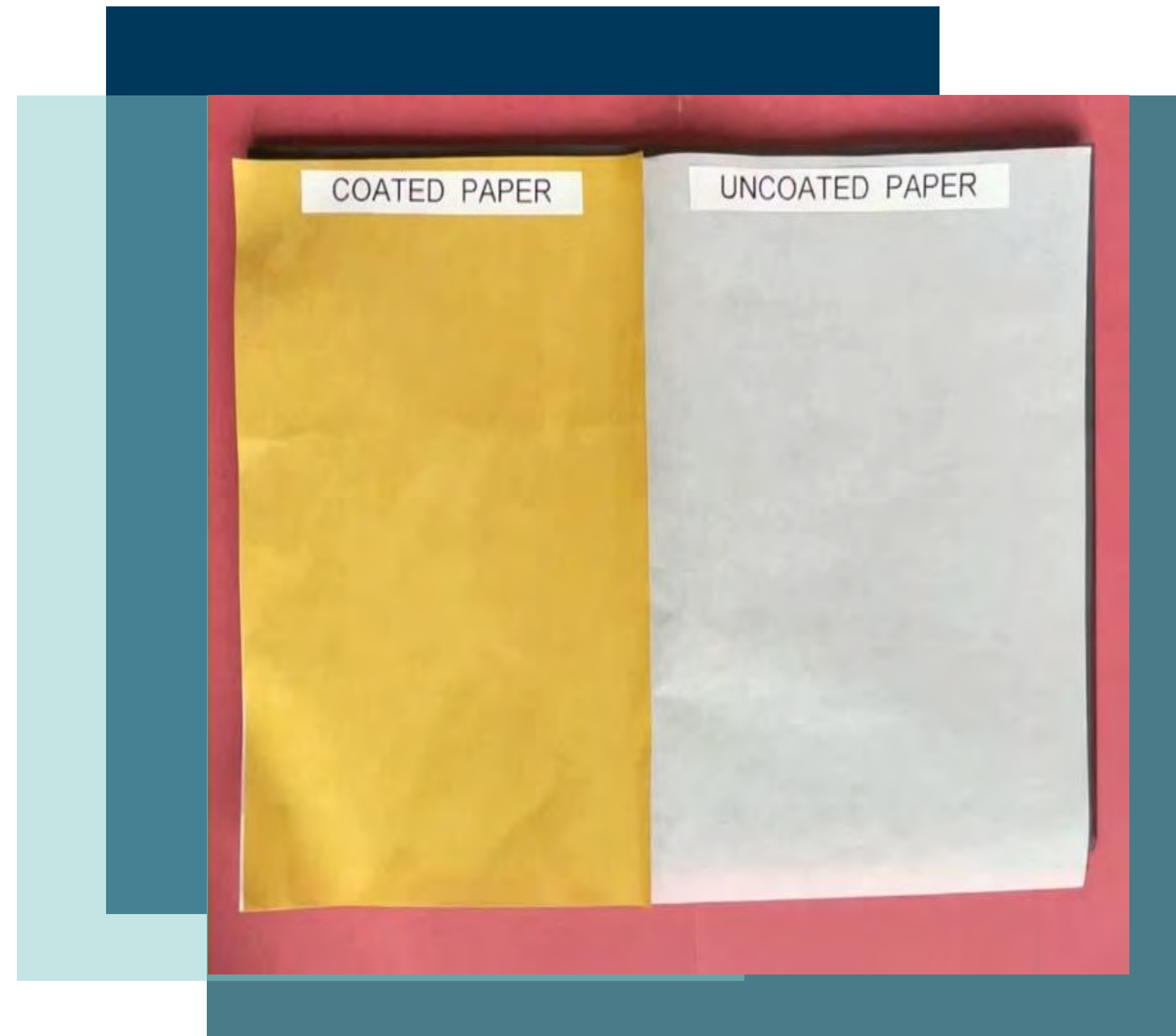
Superior Performance

Water resistance

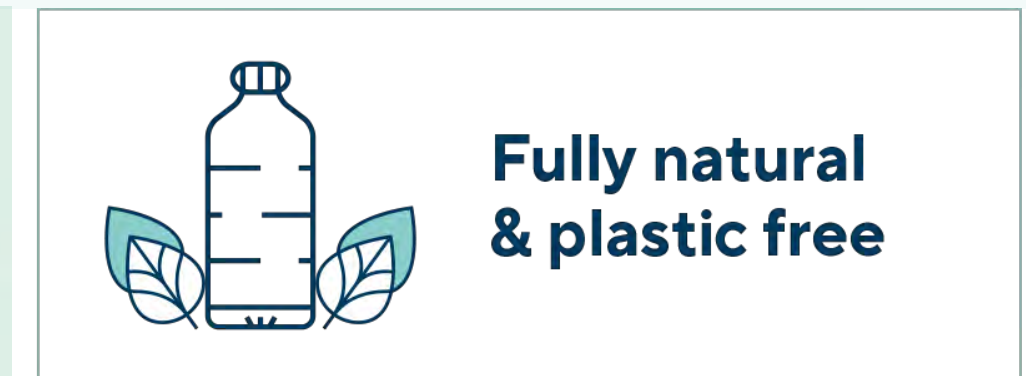
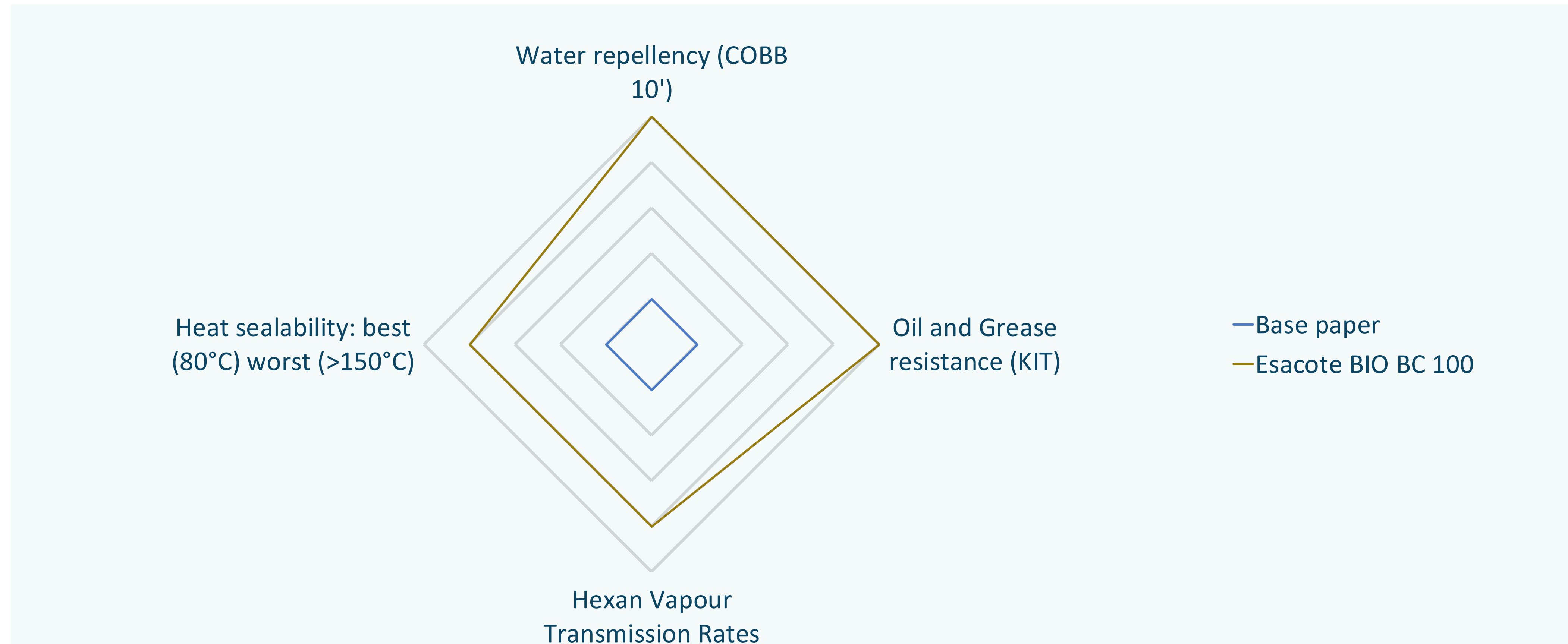
*Pellikan Blue Royal Ink watersoluble



Grease and Oil Test



03_Esacote[®] BIO BC 100



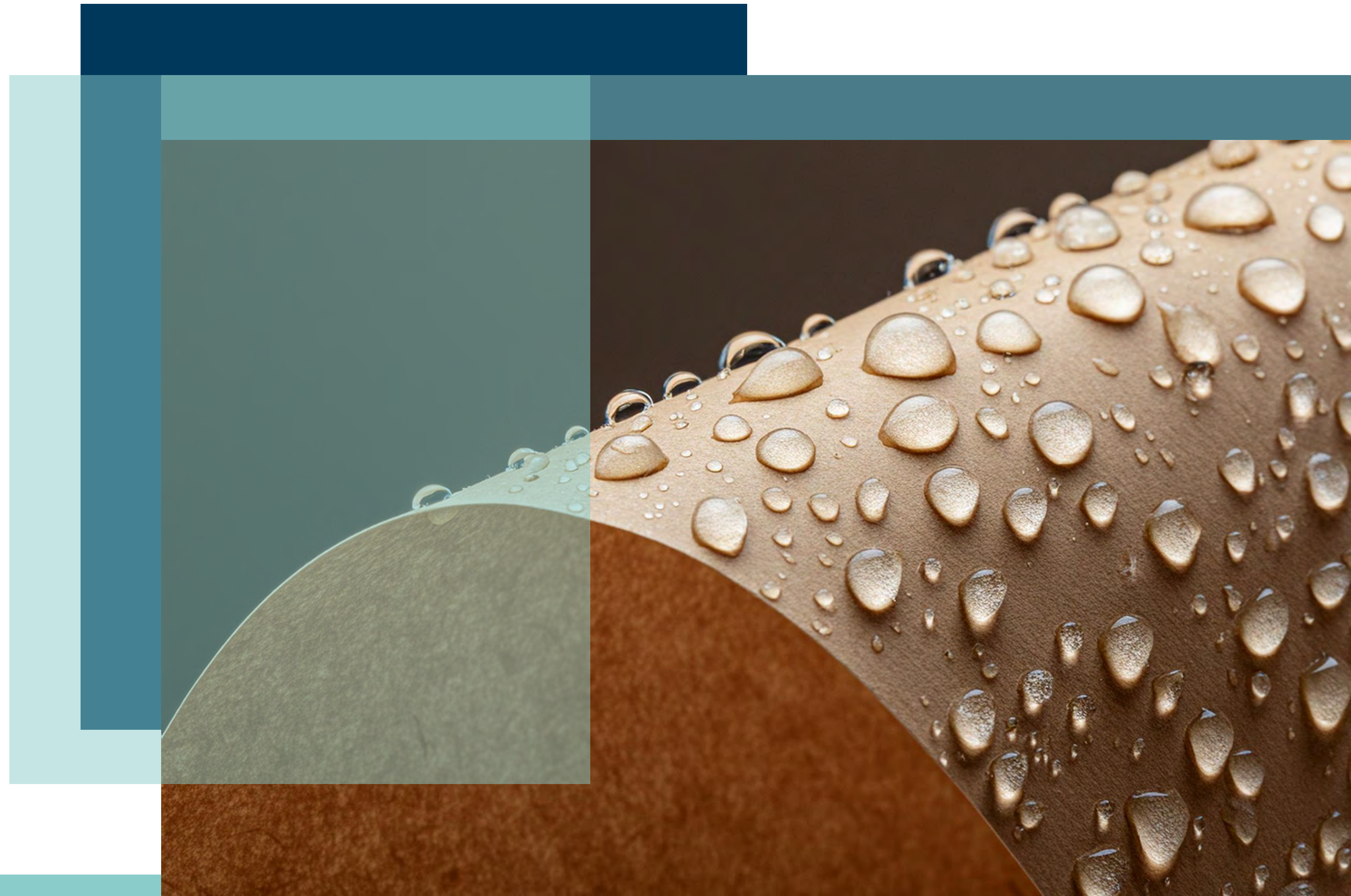
Conclusions

The shift from **Plastic to Paper** as alternative material for barrier coating packaging is challenged by getting overall high performance on **Water, Grease and Oil, Gas and Thermo sealing** performances and sustainable attributes

We show the performance of several **WB Technologies** presenting the complexity of achieving overall performance by coating together with Single Use Plastic compliances

Lamberti offer a **complete product range** of waterborne coating and inks for barrier coating for paper alternative to plastic materials.

The product range manufactured offer a wide performing solutions from synthetic to **100% Biobased and plastic free** easy to be applied on paper for barrier coating applications





Lamberti

Sustainable Coating Makers

[surface-treatment.lamberti.com](https://www.surface-treatment.com)

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