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Midlands Packaging Society

Pioneering Sustainable Packaging with Natural Materials

2M LAURICHEM · 2M Equest · 2M Manufacturing · 2M Services · Banner Chemicals Group · BREGAGLIO Personal Care · Chemir · C2 TROCKENEIS

CRAFTED · Ingretech · MP Storage & Blending · PRADY FRAGRANCES&COSMETICS · SampleRite · Stowlin · Surfachem

Agenda

- The modern materials landscape
- What does ‘plastic free’ mean
- An introduction to Xampla
- Packaging Innovation with natural materials
- How will EPR and PPWR affect cost in use?
- BBIA – supporting the UK bioeconomy
- Q&A

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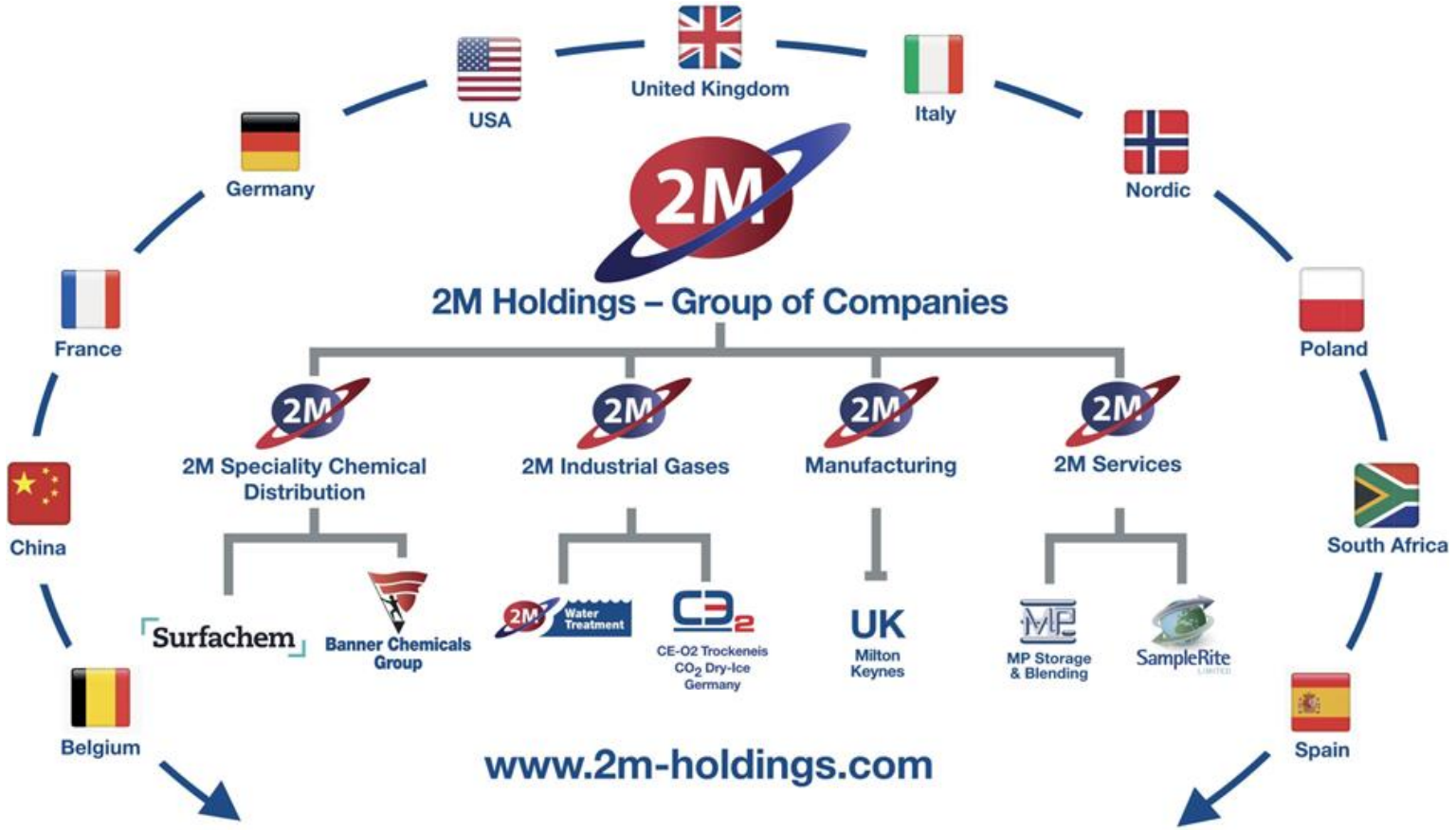
The 2M Group of Companies



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Our core market sectors

Materials Science

- Automotive & Car Care
- Coatings & Construction
- Energy & Renewables
- Metal Treatment & Aerospace
- Oil & Gas
- Technology & Electronics

Life Science

- Agrochemicals
- Food & Nutrition
- Home, Industrial & Institutional
- Personal Care & Cosmetics
- Pharmaceuticals & Medical Devices
- Water Treatment

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Sustainable Packaging Technologies

Our mission is to help the industry and supply chain bring to market future-proof sustainable packaging, for a better life today and a better world tomorrow.

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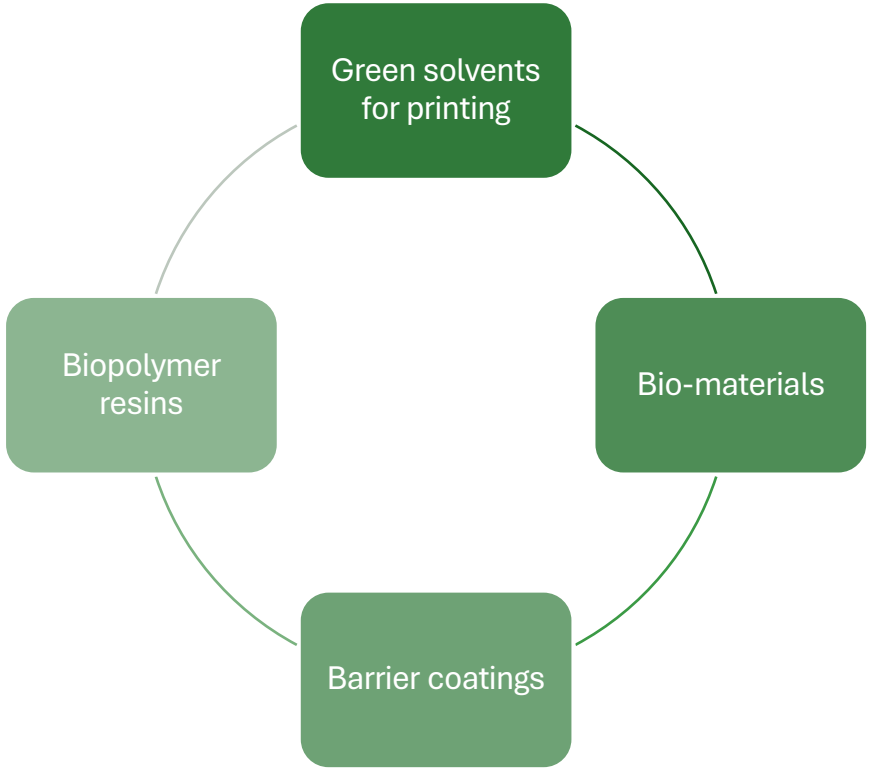
Innovation focused toolbox for Sustainable Packaging

Manufacturing and Operational capability

Extensive customer and supply network

Expertise in chemical manufacturing, supply & distribution

Expert knowledge of Packaging industry



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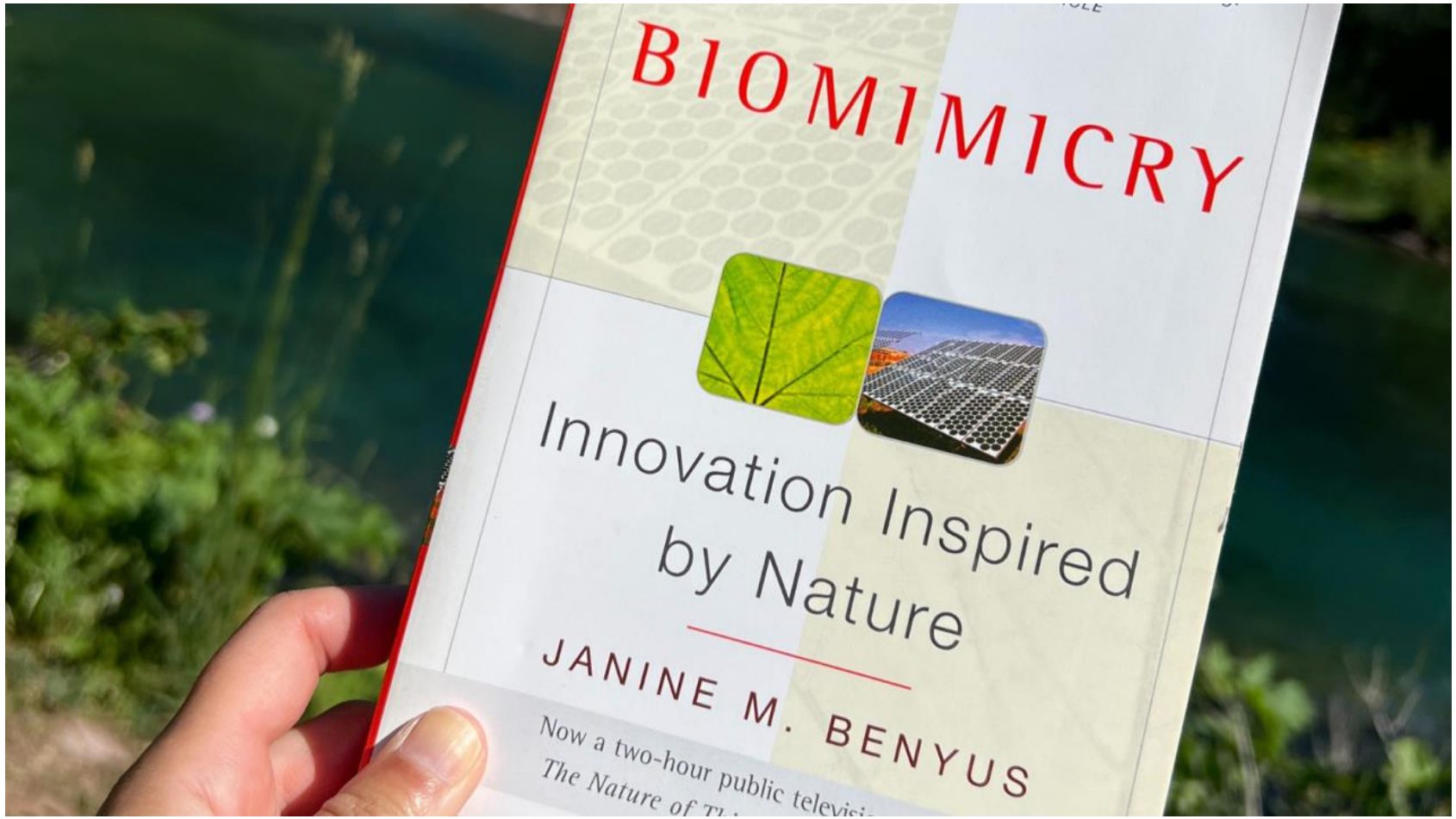
Nature can show us the way.....



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Polymer landscape in brief...

Natural Polymers	Biopolymers	Recycled polymers	Bio-carbon derived polymers	Fossil based polymers
• Proteins • Polysaccharides • Cellulose • Rubber • DNA	• Poly Lactic Acid (PLA) • PHA	• PP • HDPE • LDPE • PET	• Bio-PP • Bio-PE • Bio-PU • Bio-PU	• Polyethylene (PE) • PET • PP • PVC • ABS • etc

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What is a plastic?

(Directive (EU) 2019/904).

"Plastic means a material consisting of a polymer as defined in Article 3(5) of Regulation (EC) No 1907/2006 (REACH), to which additives or other substances may have been added, and which can function as a main structural component of final products, except for natural polymers that have not been chemically modified.“

Naturally occurring polymers **are not considered plastics if they have not been chemically modified**.....

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Xampla

Xampla is a materials innovation company that unlocks the power of plant polymers

Xampla

Experts in technology and scale-up

World class science

15 years of research at the University of Cambridge to create Xampla's patented technology

World class team

Scientific and commercial leaders recruited from industry to work in partnership with you

World class facilities

Laboratory and pilot plant facilities in the UK to support technology development and customer partnerships

New materials, new possibilities

Morro™ materials eliminating the most polluting plastics

Morro™ Coating

Morro™ Edible Film

Morro™ Soluble Film

Morro™ Micro

Innovative applications using Xampla's plant protein technology

Nutrient encapsulation

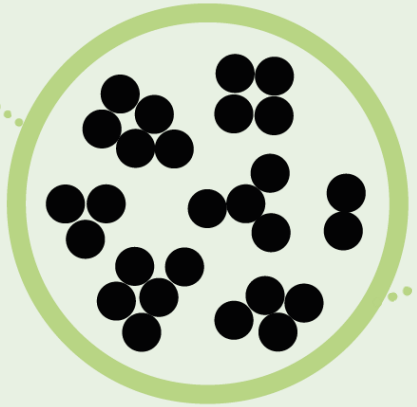
Specialty encapsulation

Emulsifiers

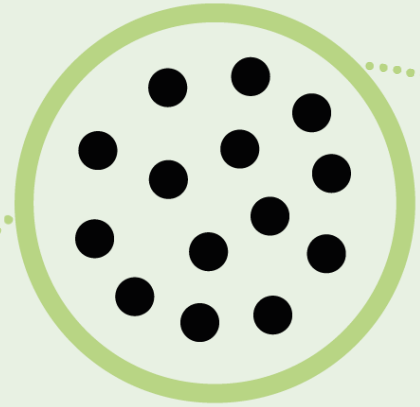
Xampla's world-first patented technology

Creating novel natural polymer materials from plant protein without chemical modification.

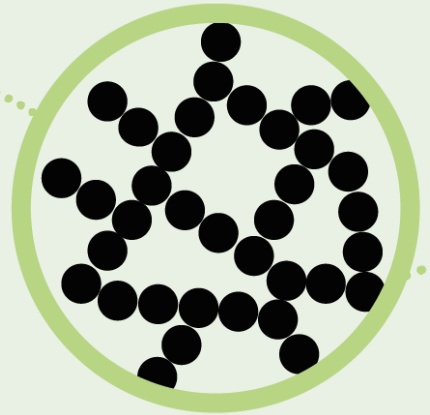
Abundant Feedstocks



Step 01
We untangle the plant protein structure to unlock its potential



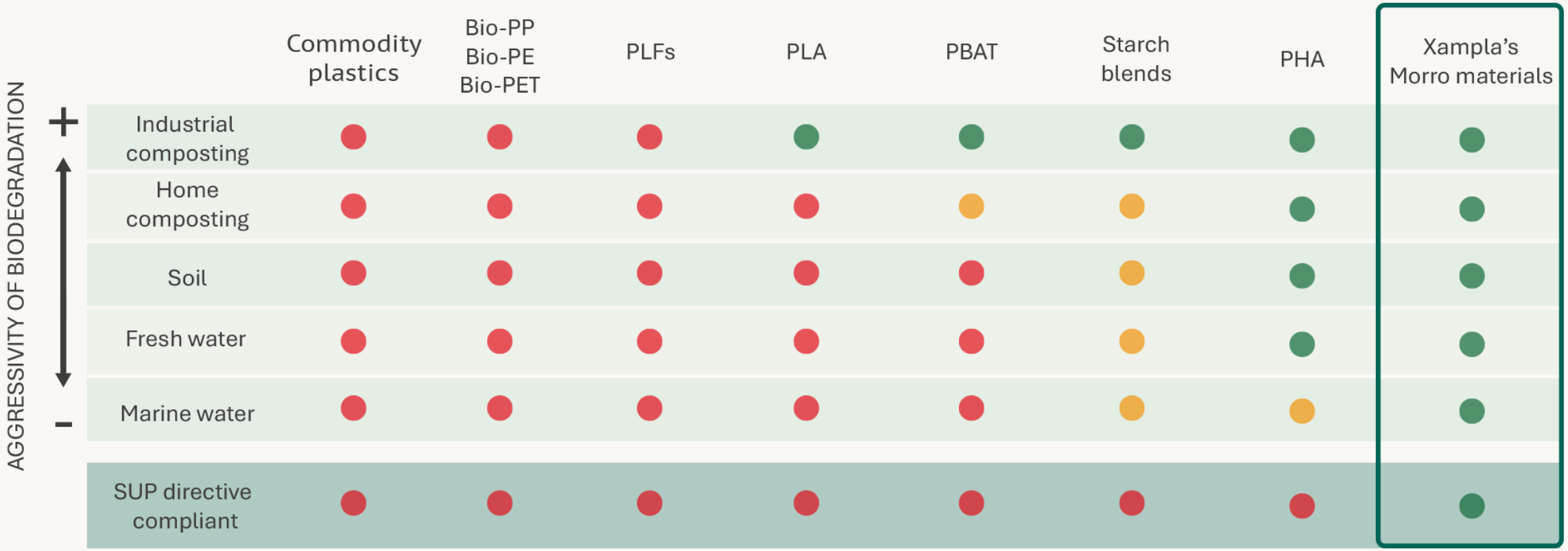
Step 02
We reassemble without altering the chemical structure of the molecules



Step 03
We use protein's ability to self-assemble to create high functioning materials

Multiple Applications

Superior biodegradability in all environments



morro
Choose the planet

Morro™ Coating

Morro Coating Mono

Essential grease protection

- Grease barrier

Suitable for:

- Takeaway foodservice
- Greasy products
- Greaseproof paper

Morro Coating Duo

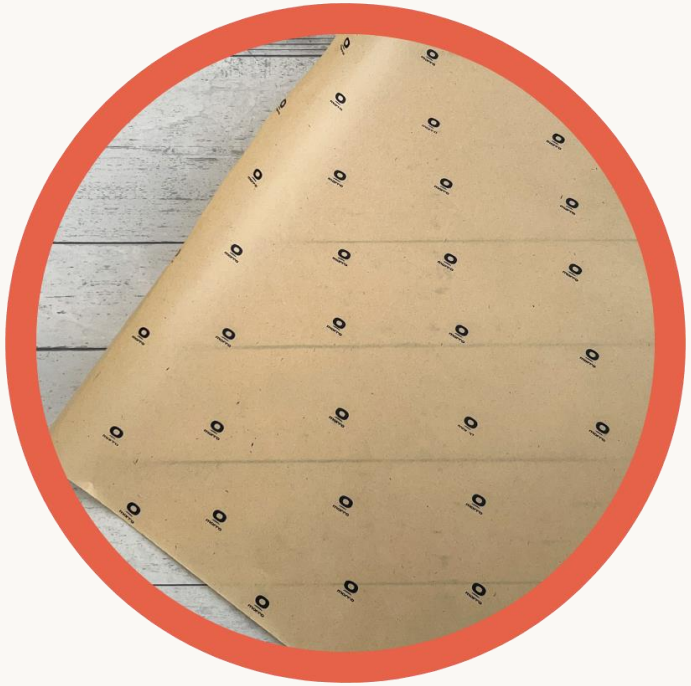
Multi-layered protection

- Grease & water barrier
- Heat sealing

Suitable for:

- Takeaway foodservice
- Greasy & saucy foods
- Cups
- FMCG packaging & tubs
- Paper sachets
- Greaseproof paper

Morro™ Coating for other applications



Greaseproof paper

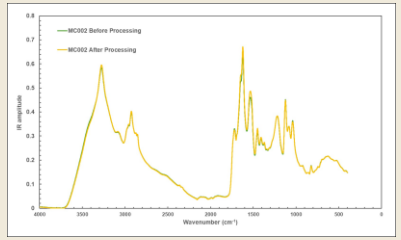
Personal and homecare packaging

Moulded fibre

Plastic-free claims

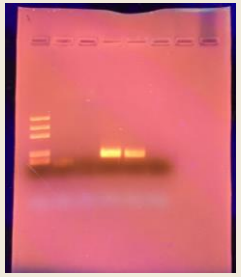
- In the absence of an industry standard for plastic free claims, we have three columns of evidence to base our claims on for Morro Coatings.
- Keep in mind, most of the current coatings on the market are making claims without clear substantiation.
- Morro coating’s plastic free claims are supported by three pillars of evidence.

IR spectra



EU not-novel food assessment and ingredient list

Gel electrophoresis



Compatible with existing recycling waste streams

Using the Recycling Evaluation Protocol developed by 4evergreen, DS Smith tested 275 gsm kraft board with 6 gsm of Morro Coating.

Overall score: 87

Yield evaluation: 92/100 and a ‘best in class’ for repulpability

Visual impurities: Level 2 – acceptable impurities with no compromise on optical quality of the pulp

Sheet adhesion: Level 1 (highest level) with no adhesion issues for coarse and fine accepts.

4evergreen
perfecting circularity together

DS Smith

Manufactured at scale

Morro Coating has been successful applied across a range of traditional dispersion coating lines without adaptation of existing machinery

Demonstrated coating capability

- Rotogravure
- Reverse roller
- Mayer rod
- Wire bar
- Cl Flexoprint

Downstream conversion processes:

- Corrugation
- Flat bed die cutting and creasing
- Slitting
- Sheeting

Naturally good

Plastic, PFAS and fossil fuel free

Vegan and digestible

Classified as a natural polymer

Available at scale

Made from plants

New regulation compliant

Compatible with existing equipment

Fully biodegradable and home compostable

Compatible with standard recycling processes

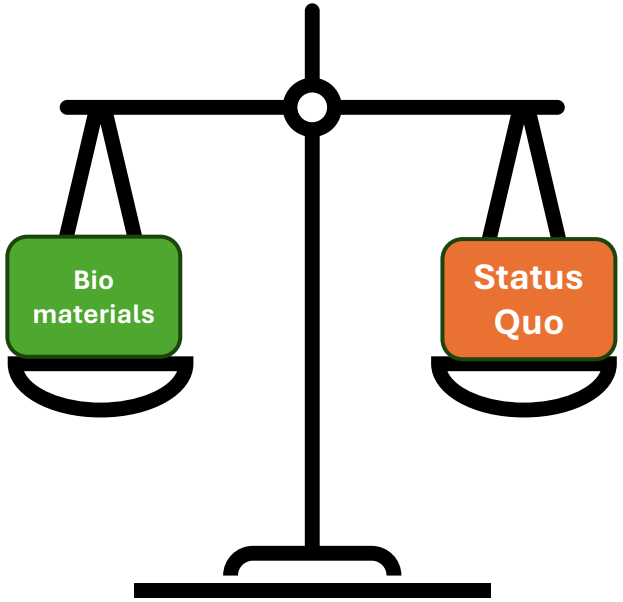

TRUMP

The Packaging material conundrum....

PE lined carton board	+	Non-recycable	+	EPR tax	=	Tier 1 category
PLA based coffee pod	+	Non-recycable	+	EPR tax	=	Tier 1 category
PP based jar	+	Recyclable	+	EPR tax	=	Tier 2 category
Barrier coated paper	+	Recyclable	+	EPR tax	=	Tier 3 category

Net cost to business consideration is key

- Higher unit cost of chemistry
- Reduced EPR taxes
- *No micro plastics*
- Consumer preference
- Innovation and business growth



- Lower unit cost of chemistry
- Mid - High EPR taxes
- Worse for the planet
- Proven and reliable
- Microplastics

How does your business fund innovation?

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Innovation projects with new materials

- Novel seaweed derived polymer
- Fully biodegradable in the home
- Further R&D and testing work to do
- Drop in solution with conventional injection moulding technology
- Many application areas potential
- Functional performance parity with PP

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Barrier coatings fuelling paperisation

- Plastic replacement technology
- Fully recyclable and compostable
- Market launches imminent…
- Drop in solution with conventional converting processes
- Many application areas potential that require grease barrier and heat seal ability


BBIA
CHAMPIONING THE INDUSTRIAL BIOECONOMY

Mission

The BBIA exists to champion the industrial bioeconomy to accelerate the development and adoption of bio-based and biodegradable materials and products through advocacy, collaboration, and education.

Purpose

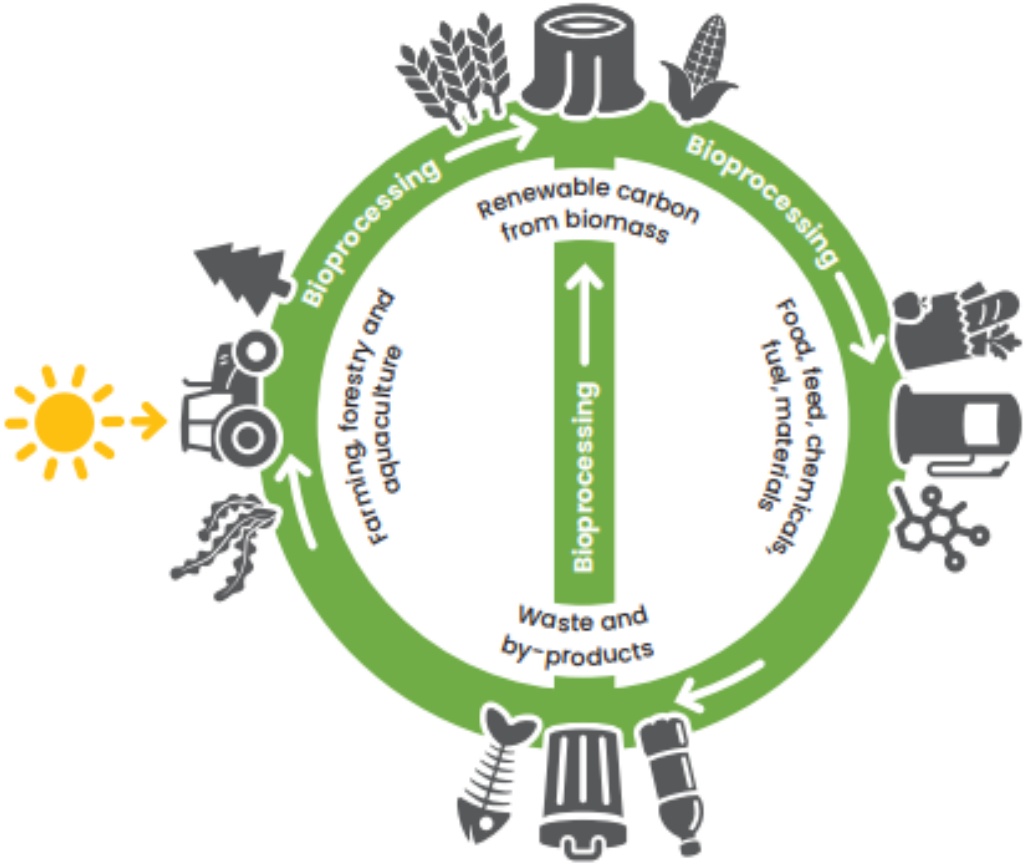
We do this to reduce the impact of human consumption on the planet.

Vision

Our vision is for a more sustainable future, where the UK is a global leader in developing, manufacturing, using and exporting bio-based and biodegradable solutions.

A selection of our members

BBIA working groups



01 Compostable and biodegradable materials

02 Bio-based chemicals

03 Biomaterials of the future

BBIA
CHAMPIONING THE BIOECONOMY

CONTACT

If you have any questions regarding our work, our impact, or our team, please get in touch with us.

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Connecting the building blocks of everyday life,
for a better life today and a better world tomorrow

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BREGAGLIO Personal Care
Chemir
TROCKENEIS
CRAFTED
Ingretech
MP Storage & Blending
PRADY FRAGRANCES&COSMETICS
SampleRite
Stowlin
Surfachem