



Plastic-free food packaging with a fibre-based barrier coating

Powered by Fibenol Woodcell™ crystalline cellulose



Plastic-free approach

The barrier coating must protect against moisture, grease, and other environmental factors in a way that preserves and reinforces the package's structural integrity.

Today, most barrier solutions still depend on conventional plastic barrier coatings. Resulating multilayer structures are difficult to recycle and increasingly constrained by EU regulations.

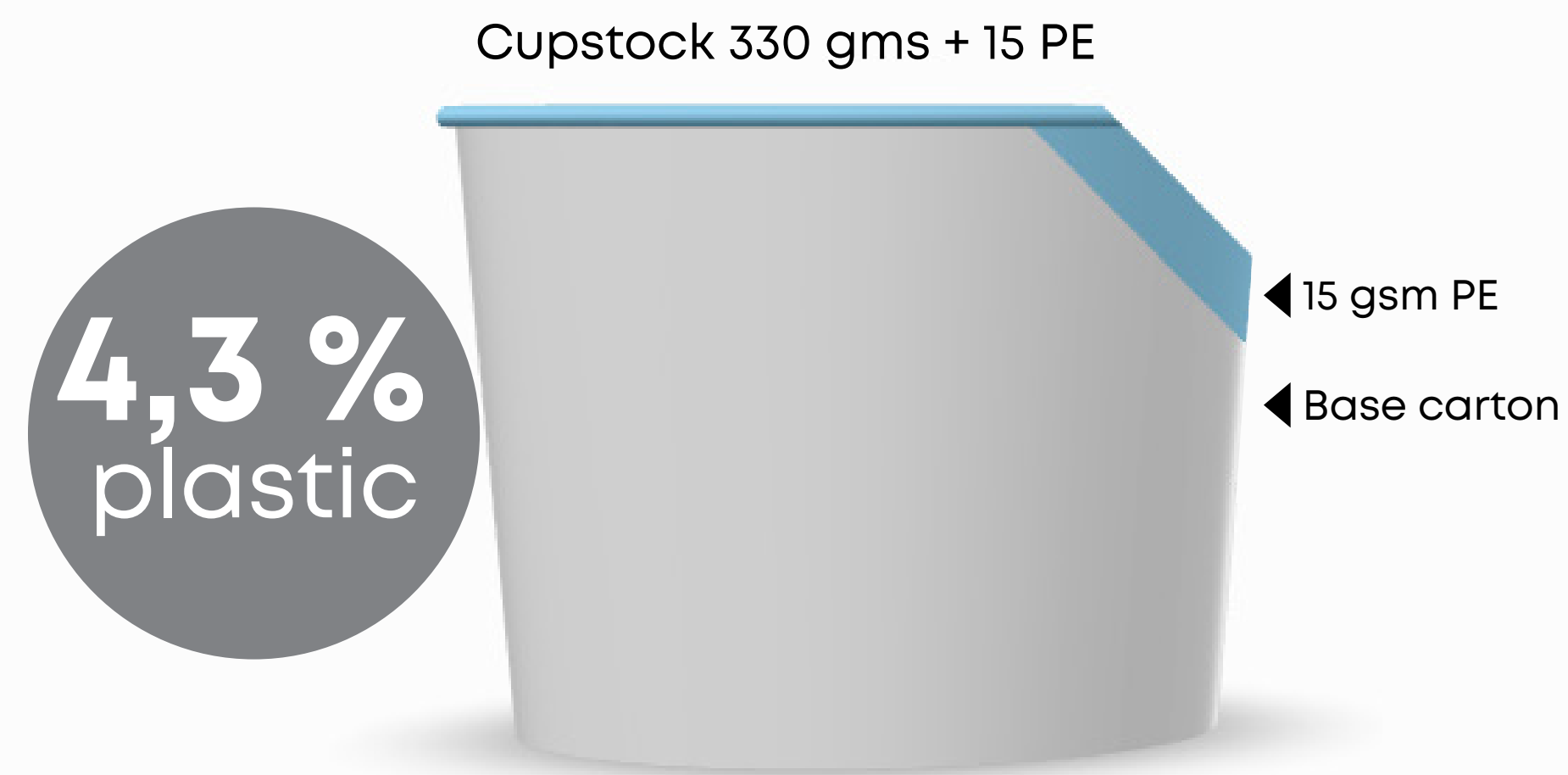
Woodcell™ crystalline cellulose enables a different approach: **a plastic-free, fibre-on-fibre barrier** coating that keeps packaging recyclable while delivering functional performance.

Fibre on fibre

Woodcell™ crystalline cellulose is used as part of a functional barrier coating on paperboard.

The result is a **monomaterial structure**: paperboard coated with cellulose based barrier coating, without fossil-based plastic polymers functioning as main structural component.

This differs fundamentally from conventional polymer dispersion coatings or PE extrusion coatings, which introduce foreign polymer layers into the fibre matrix.



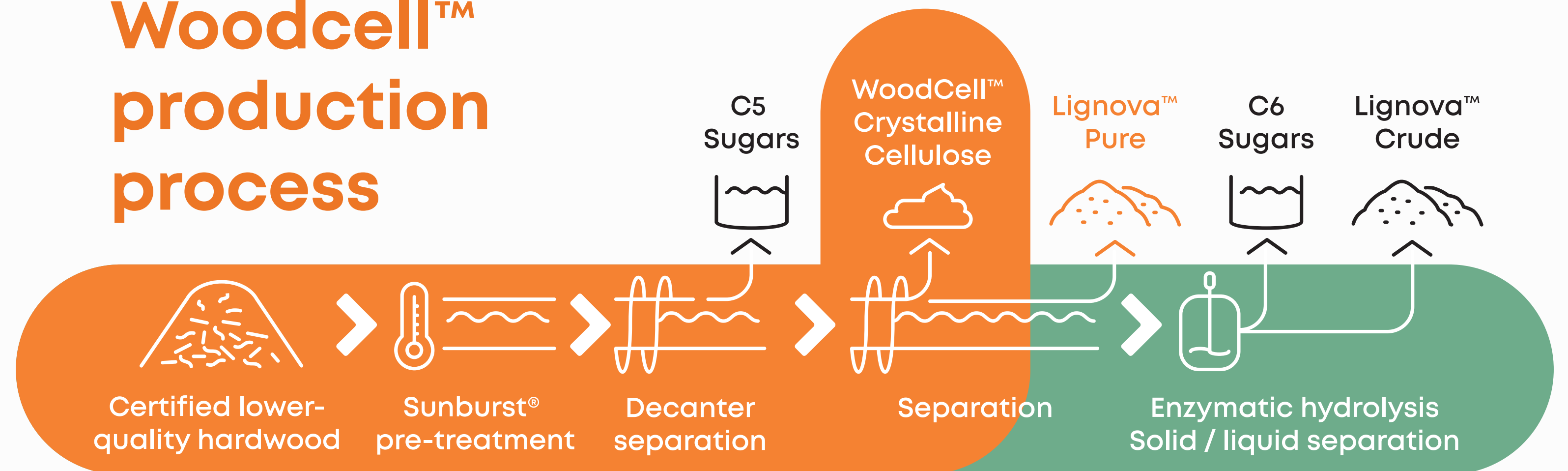
What is Woodcell™ crystalline cellulose?

Woodcell™ is a natural, cellulose-based barrier material developed here in EU by Fibenol and industrially scaled up via Woodcell project.

- ▶ Made from hardwood and plywood industry residues. (Sourced via suppliers operating under certified forest management schemes in Estonia.)
- ▶ Produced using Fibenol's proprietary Sunburst® technology.
- ▶ Converted into a functional crystalline cellulose based barrier coating.



Woodcell™ production process





Barrier performance

WoodCell™ crystalline cellulose provides:

Resistance
to grease
and oils

Protection
against light
moisture

Barrier
to air and
oxygen

Barrier
to mineral
oil

This performance meets the needs of many food service and takeaway applications without compromising recyclability. And enables further use of recycled substrates, which require effective mineral oil barrier.

Why this packaging is different

Compared to conventional barrier solutions, Woodcell™ coatings are chemically almost identical to the fibre network of the carton substrate.

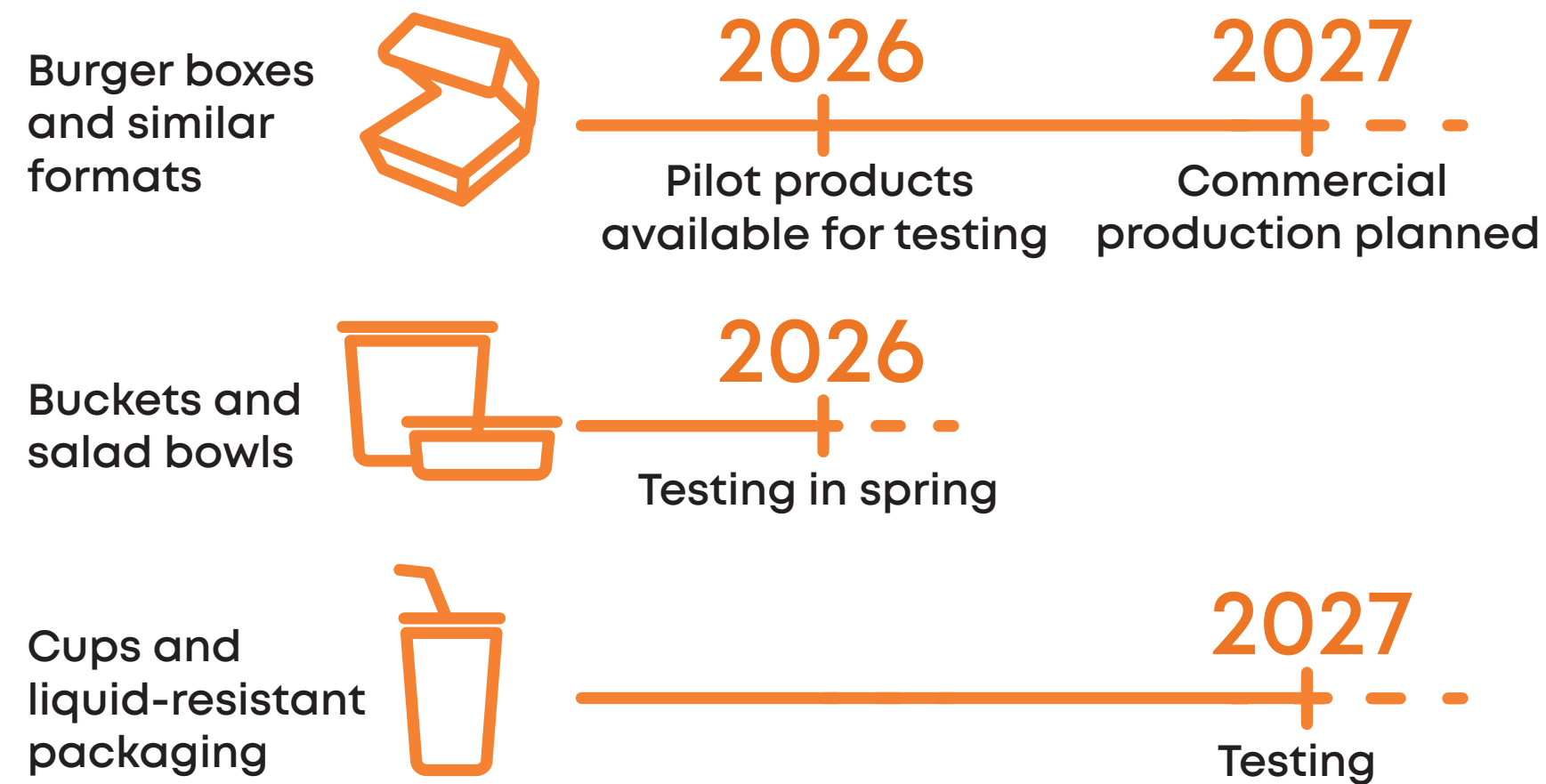
Because Woodcell™ is cellulose, it integrates naturally with the paper matrix instead of forming a foreign polymer layer. Unlike conventional plastic barrier coatings, it does not introduce incompatible materials into the recycling stream.

This makes the packaging:

- ▶ Monomaterial
- ▶ Repulpable within existing paper recycling streams
- ▶ Free from fossil-based plastic barrier coatings
- ▶ Bio-based, and food-contact safe

It also offers a more sustainable and cost-effective alternative to polymer dispersion coatings and PE extrusion coatings in selected applications.

From pilot to scale: product roadmap



Proven in collaboration

The solution has been validated in collaboration with packaging manufacturers, including burger boxes and cartong buckets developed with Kroonpak, demonstrating real-world applicability in food service packaging.



Learn more

Developed by Fibenol under Woodcell project



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