

## BREAKING FREE FROM ETERNAL CHEMICALS

### The rise of fiber-based packaging solutions



- ENABLES TOTAL REMOVAL OF FLUOROPOLYMERS (PFAS)
- GOOD EFFICIENCY FOR MEDIUM TO HIGH GREASE BARRIER
- EFFICIENT ON VARIOUS BASE MATERIALS
- IMPROVED FLEXIBILITY TO RESIST FOLDING AND CREASING

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### MACROPLASTICS AND SINGLE-USE PLASTICS IN EUROPE

Half of the use of plastics go to single use packaging. Single-use items represent 50% of marine litter. In response to this situation and mounting consumer pressure, a task group led by the European Commission was created to address the issue at a global level. The European Commission believes that it is necessary to adopt better alternatives to plastic wherever possible. This is because there are more sustainable materials available that can be used instead. Additionally, it is important to ensure that the plastics we use retain their economic value for as long as possible, rather than being discarded in landfills. By doing so, we can reduce waste and promote a more circular economy.<sup>1</sup>

### PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are a large class of thousands of synthetic chemicals that are used throughout society. However, they are increasingly detected as environmental pollutants, and some are linked to negative effects on human health.

They all contain carbon-fluorine bonds, which are one of the strongest chemical bonds in organic chemistry. This means that they resist degradation when used and in the environment. Most PFAS are also easily transported in the environment covering long distances away from the source of their release.

PFAS have been frequently observed to contaminate groundwater, surface water and soil. Cleaning up polluted sites is technically difficult and costly. If releases continue, PFAS will continue to accumulate in the environment, drinking water and food. Current peer-reviewed scientific studies have shown that exposure to certain levels of PFAS may lead to public health issues.

### A SUSTAINABLE ALTERNATIVE | STABILYS® BA 25 MODIFIED STARCH

Roquette focuses on sustainable projects for a healthier environment. Supporting the paper and board industry's goal of sustainable packaging, The company has developed an innovative starch solution, STABILYS® BA 25, to eliminate harmful compounds like PFAS. This was made possible through their strong expertise in starch and continuous collaboration with customers.

Besides being readily biodegradable and compliant with food contact agreements (including BfR XXXVI/2), STABILYS® BA 25 allows full substitution of these pollutants while guaranteeing the same level of barrier to grease.

STABILYS® BA 25 is a starch-based solution at the storefront of sustainability. This product is readily biodegradable and reach the restriction on microplastics as it is biodegradable at more than 60% in 28 days (OECD 301B).

#### STABILYS® BA 25:

- Allows the removal of hazardous chemicals like PFAS
- Permits the replacement of potential polluting components such as plastic layers
- Enables the paper to match the barrier performance of some plastic packaging

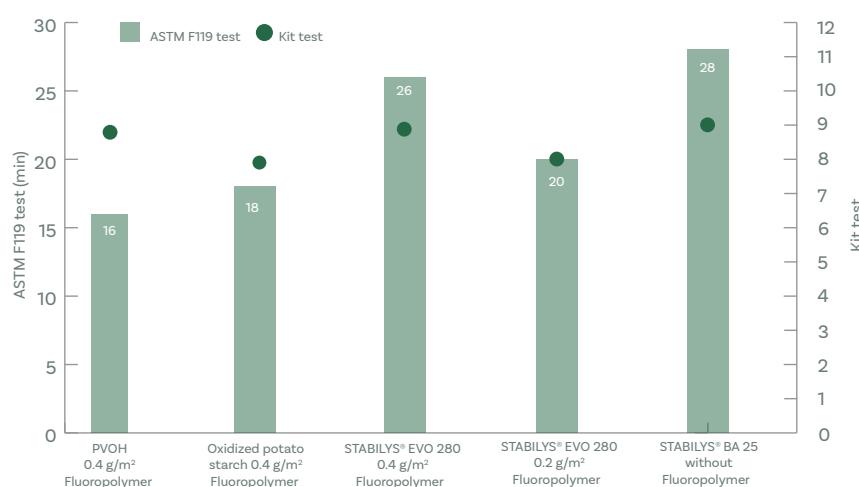
STABILYS® BA 25 meets the food contact certifications, including FDA, BfR XXXVI, BfR XXXVI/2, kosher, halal.

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### FLUOROPOLYMER SUBSTITUTION

In its quest for a starch-based barrier solution to enhance the sustainability of paper and board, Roquette initially developed STABILYS® EVO 280 modified starch. This innovative solution reduces the usage of hazardous additives, such as PFAS. However, with the increasing demand for higher barrier requirements in recent years, STABILYS® EVO is no longer adequate. Consequently, Roquette has developed STABILYS® BA 25, the only starch-based solution that enables the complete elimination of fluoropolymers for grease-resistant food packaging.



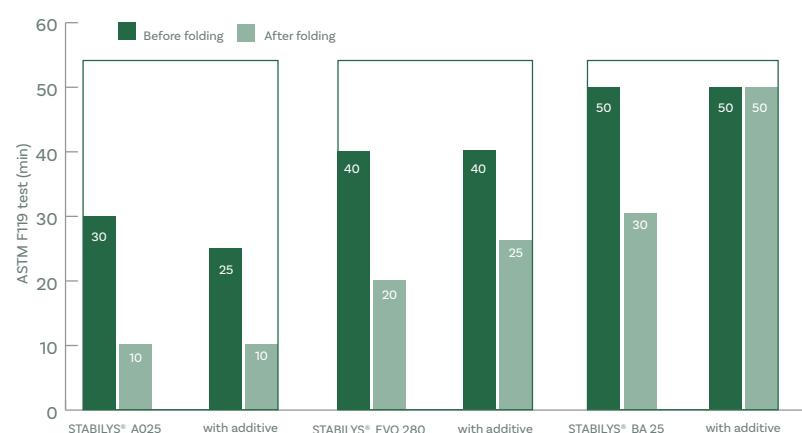
Graph 1: Fluoropolymers substitution with starch-based solutions.  
Base material: thin specialty paper, low porosity and good water resistance, coat weight: ~1g/m.

STABILYS® BA 25 allows an improved oil and grease resistance without any use of fluoropolymer.  
Even at low deposition rates (1-2 g/m), the efficiency remains high.

### FLEXIBILITY OF BARRIER LAYER

In addition to providing good grease resistance, the STABILYS® BA 25 barrier layer must also withstand the mechanical stresses applied to the packaging, such as folding or creasing.

STABILYS® BA 25 is particularly outstanding in this area compared to other starch solutions that are known to be rigid and brittle. By adding a natural plasticizer to STABILYS® BA 25, it is possible to preserve the barrier properties completely at the folds of the packaging.



STABILYS® BA 25 offers a better oil/grease resistance, whether before or after folding.  
Additive enhances flexibility of starch layer.  
STABILYS® BA 25 offers a good synergy with plasticizer; there is no loss of barrier properties after folding.

Graph 2: Flexibility of STABILYS® BA 25 coat.  
Base material: flexible packaging paper, coat weight: 3-4 g/m.

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