

# TopScreen™

## Water Repellent Barrier Coatings

Plastic-free and sustainable alternatives for paper packaging with excellent water repellency



- PE-free coating for sustainable packaging
- Coated products are recyclable and repulpable
- No specialized equipment needed for application

## Technology Overview

TopScreen™ water repellent barrier coatings enable papermakers to provide high-quality and sustainable packaging by replacing polyethylene (PE) and other laminated plastic barriers with a more easily recyclable, repulpable and compostable water-based coating. TopScreen coatings are:



**Sustainable** — Paper coated with TopScreen barriers physically disintegrates under industrial compostability conditions and is repulpable and recyclable.



**Versatile** — Our formulas can be engineered to deliver varying degrees of oil and grease resistance (OGR), water vapor transmission rate (WVTR), or heat-sealable properties.



**Easy to Apply** — Our product is user-friendly and doesn't require installation of specialized equipment. Coatings can be applied using a variety of methods on standard equipment.

## Technology Description

TopScreen is a water-based dispersion coating system. These coating systems can be both single, double, and multi-layer applications, which contain a precoating and a top coating. Current formulas contain up to 50 percent renewable content with the potential to go even higher. Our portfolio consists of many barrier grades but we've highlighted a few that have exceptional performance and numerous benefits:

Product Name	Water Repellency	Moisture Barrier	Blocking Resistance	Printability	Heat Sealability	OGR Barrier	Recyclability vs. PE	Bio-content <sup>1</sup>
<b>TopScreen HB 73</b> Anionic SBR emulsion with high binder content and bio-based wax. Excellent long term water barrier, with good-to-moderate recyclability.	●		○				○	30%
<b>TopScreen HB 50</b> Anionic SBR emulsion with medium binder content and bio-based wax. Increased bio-content compared to HB 73, medium water barrier but better recyclability.	●		◐				◐	50%
<b>TopScreen SP 200-F</b> Anionic polyacrylate emulsion with high binder content and bio-based wax. Good water barrier and KIT-values, but lower recyclability.	◐		○	◐		●	○	30%
<b>TopScreen TW 30</b> Anionic acrylic emulsion with pigments and waxes. Short-term overall barrier (moisture/water/OGR) designed for take-away packaging.	◐	◐	◐			◐	◐	10%
<b>TopScreen DS 20I-F</b> Anionic SBR (styrene-butadiene) emulsion with high binder content and wax. Excellent long-term moisture barrier, with good-to-moderate recyclability.	◐	●	○		◐		○	0%
<b>TopScreen DS 3V</b> Anionic SBR emulsion with high pigment loading. Good long-term moisture barrier and applicable in multiple layers. Good recyclability.		●	●	●			○	0%

● very good | ◐ good | ○ sufficient

## Application

The TopScreen water repellent barrier coatings perform well in both food service and paper-based flexible packaging. Our coatings can transform uncoated board into hydrophobic paper, along with its associated applications. The technology can be applied using conventional coating application processes, including pond and metered size press, film, rod, air knife, and curtain coaters, as well as gravure and flexographic presses.

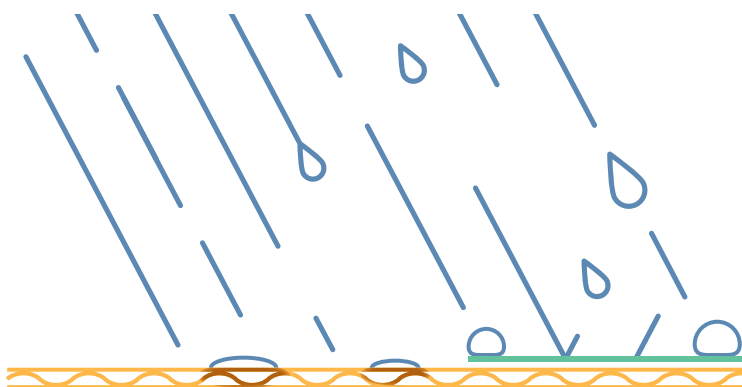
Many factors contribute to barrier performance. The most important are:

- Base paper quality: A higher-quality and smoother base paper leads to better barrier performances.
- Sizing of the paper: Sizing is directly proportional to the amount of coating present on the surface. Therefore, coatings proportional to the size of the product lead to improved barrier performance of the final coated paper.
- Coating layers: Applying a minimum of two barrier layers will minimize coating defects, resulting in pinhole-free barriers.
- Application system: For defect-free coating layers with homogeneous coating weights, use appropriate coating systems, such as curtain, air knife, film press, rod, and/or blade coaters. Lower viscosities during application will help achieve good wetting and better coverage of the substrate surface.
- Coating weight: For sufficient barrier performance, full surface coverage is necessary, and the higher the coating weight, the better the barrier performances. However, higher coating weights also lead to higher costs and higher risk for blocking issues. Therefore, it's critical to determine the optimal balance between blocking, barrier performance, and cost.



## Sustainability<sup>2</sup>

- TopScreen is recyclable and repulpable vs. conventional PE technology.
- Most of our product grades are paraffin-free, which makes the technology safe for use in food packaging.
- Water repellent coatings are not compostable as a standalone product; however, our chemistry can be used in the development of compostable packaging solutions. In most applications, the final packaging utilizing TopScreen water repellent coatings complies with the compostability criteria as defined by EN 13432.



TopScreen Water Repellent Barrier

## Regulatory Compliance

TopScreen barrier coatings comply with global food contact standards, including BfR XXXVI, FDA 21 CFR § 176.170, and capable for GB9685-2016.

## More Information

For more information about TopScreen water repellent barrier coatings, please contact your local Solenis sales representative or visit us online.

<sup>1</sup>According to the definition established by the international standard EN 16575:2014. The percentage is expressed on solids and not on trade products.

<sup>2</sup>Our technology is sustainable when tested with the final paper product.





## Advanced solutions for your toughest challenges.

Solenis is a global leader in specialty chemicals for water-intensive industries. With an average of 20 years expertise, our team is the industry's most knowledgeable. That's how we solve your toughest operational and sustainability challenges—whether you're in the pulp, paper, oil and gas, petroleum refining, chemical processing, mining, biorefining, power or municipal market. Combining the right people, the right experience and the right technology, we're built to deliver value.



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