



PROTEAN® Water Barrier is an aqueous, water-resistant barrier coating that is a plant-based alternative to petroleum-based plastics, bio-plastics, polylactic acid, waxes and silicone. This unique formula becomes interlaced in the paper matrix, lending impressive strength properties to the base paper. The properties also deliver superior water-resistance to paper-based products that is comparable to bio-plastics with a lower overall product coat weight.

This novel formula is a recyclable, efficient and cost-effective alternative for manufacturers looking to replace their plastic-coatings as an environmentally-responsible decision for future generations. PROTEAN is a versatile and flexible technology that can be easily adjusted for different applications without compromising performance.

When compared to legacy technologies, PROTEAN Water Barrier can offer the following benefits:

SUSTAINABILITY:

- Made from natural, renewable resources
- Paper is repulpable and recyclable
- 100% biodegradable and 100% compostable
- Free of wax and silicone
- Does not require special conditions for end of life disposal

MANUFACTURING EFFICIENCY:

- Scalable and adaptable using existing mill equipment
- Can be applied using curtain coating, size press, rod or blade coating equipment
- Offers an excellent surface for printability
- Maintains fiber flexibility for converting
- Can run up to 20% faster and dries quickly

VERSATILITY:

- Can be used as an additive or a barrier coating
- Suitable for hot or cold products
- Compatible with bleached or unbleached papers
- Can be applied on one or both sides of paper
- Coating can be applied before or after printing
- Available as a full or a spot application
- Is used as a platform technology for new applications

SAFETY:

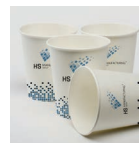
- FDA approved under 21 CFR 172.867
- Meets specifications described in Generally Recognized as Safe (GRAS) notices GRN 227 and 325
- BPI Certified 10528940
- BFR XXXVI
- Non-toxic

PROTEAN Water Barrier can be used for several paper and paperboard applications including:



PAPER-MULCH

Low cost coating to provide superior water-resistance and paper strength. This is a new generation of paper-mulch that won't degrade as quickly.



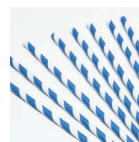
DISPOSABLE COFFEE CUPS

These are plastic-free paper cups using PROTEAN™ Water Barrier coating to provide high water-resistance instead of plastic-film and can be recycled without segregation.



GROCERY BAGS

A perfect solution to replace plastic bags with stronger, more durable paper bags enhanced by our coating. They are reusable and tough enough to handle blustery weather conditions.



PAPER STRAWS

Improves the consumer experience as straws will withstand being submerged in liquid for a longer period with enhanced water-resistance qualities. Also allows manufacturers to use less raw materials, without compromising performance.



OIL ABSORBENTS

Safe, efficient oil-loving technology that is an economical alternative to existing oil-spill management solutions. The oil can be quickly recovered, and the oil sponge can easily be reused several times.

Contact HSMG® to learn more about PROTEAN® Water Barrier