



PROTEAN®

PROTEAN® represents a platform coating technology for paper and paper packaging which can be applied to give various performance properties to paper, including, but not limited to, improving wet strength, water resistance and OGR resistance. The PROTEAN platform comprises aqueous barrier coatings that are plant-based alternatives to legacy technologies such as petroleum-based plastics, bio-plastic, polylactic acid, wax, fluorocarbons and silicone for paper-based products.

Paper-based products are known for their high thermal stability, good oxygen barrier function, chemical and mechanical resilience, ability to fully biodegrade and non-toxic nature. PROTEAN coatings complement those properties without the premium costs often associated with sustainable solutions. Initially created to reduce the global reliance on petroleum-based plastics, PROTEAN barrier coatings offer benefits for paper and paperboard products by providing superior fiber strength enhancing qualities to the base paper. The technology is unique as it can be recycled without segregation, and it can biodegrade and compost under standard conditions.

**When compared to legacy technologies, PROTEAN coatings offer the following benefits:**

**SUSTAINABILITY:**

- Made from natural, renewable resources
- Sustainable from creation to disposal
- Paper is repulpable and recyclable
- Fluorochemical and silicone free
- 100% biodegradable and 100% compostable
- Does not require special conditions for end of life disposal
- Helps manufacturers reduce carbon footprint

**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
- Runs up to 20% faster and dries quickly

**VERSATILITY:**

- Available in a water-resistant and OGR-resistant formula
- Can be used as a barrier coating or as an additive
- Customizable for each application
- Performance without premium pricing
- Can be used as an emulsifier for binders
- Platform technology for new applications

**SAFETY:**

- FDA approved for food contact
- BPI Certified 10528940
- BFR XXXVI
- No fluorocarbons
- Zero plasticizers
- No BPA

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



**AGRICULTURAL – 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.



**FOOD SERVICE – DISPOSABLE COFFEE CUPS**

Plastic-free paper cups with a plant-based coating provide high water-resistance instead of plastic-film.



**FOOD SERVICE – HOT & COLD FOOD CONTAINERS**

Fluorine-free alternative that covers a full spectrum of the 3M kit range. It can be easily converted, offers superior performance and high-quality printing.



**FOOD SERVICE – OIL- & OGR-RESISTANT WRAPS**

Fluorine-free alternative that covers a full spectrum of the 3M kit range. It maintains flexibility for converting and provides a smooth surface for impressive aesthetics.



**OIL ABSORBENTS – SPILL MANAGEMENT**

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®