



# LIGHTGUARD ADVANCED UV PROTECTION FOR CLEAR PET PACKAGING

Many packaged products are exposed to UV and visible light long before they are consumed. Because standard PET offers limited UV protection, this exposure can gradually affect product quality and shelf life.

LightGuard protects UV-sensitive products while keeping PET packaging clear and transparent up to approximately 400 nm. When protection is required beyond this range in the visible-light spectrum, functional color solutions can be applied to achieve the necessary light barrier.

# WHY PET NEEDS PROTECTION

Natural PET transmits UV and visible light from 320nm onwards. For UV-sensitive products, this means PET alone may not always provide sufficient protection during the product's shelf life. Exposure to UV can initiate degradation reactions, affecting:

flavor and fragrance

color stability

active ingredients

overall product performance

This exposure occurs during storage, transport and retail display, gradually impacting product quality—even when the packaging itself appears unchanged.



## BENEFITS



### Protecting Brand Integrity

Shields products from UV, keeps PET packaging clear and maintains quality and brand appeal across beverages, detergents, and cosmetics applications.



### Extending Shelf Life

Preserves taste, color, fragrance, and active ingredients which results in extended shelf life and minimizes complaints and waste.



### Low-Dose Efficiency

Delivers effective UV protection with minimal impact on formulation, processing and overall cost.



### Production Flexibility

Available in wax- and polymer-based solids and liquid formats. Usable alone or in combination with colorants.



### Tunable protection levels

Available in multiple LightGuard grades to match different product sensitivities and protection needs.



### Implementation support

Supported worldwide by application and dosing experts to assist with setup and optimization.

## APPLICATIONS

LightGuard is used in clear PET bottles, containers and sheets for UV-sensitive products such as:



✓ Juices & iced teas



✓ Functional drinks / energy drinks



✓ Cosmetics & personal care



✓ Liquid detergents / household cleaners



✓ Nutraceuticals

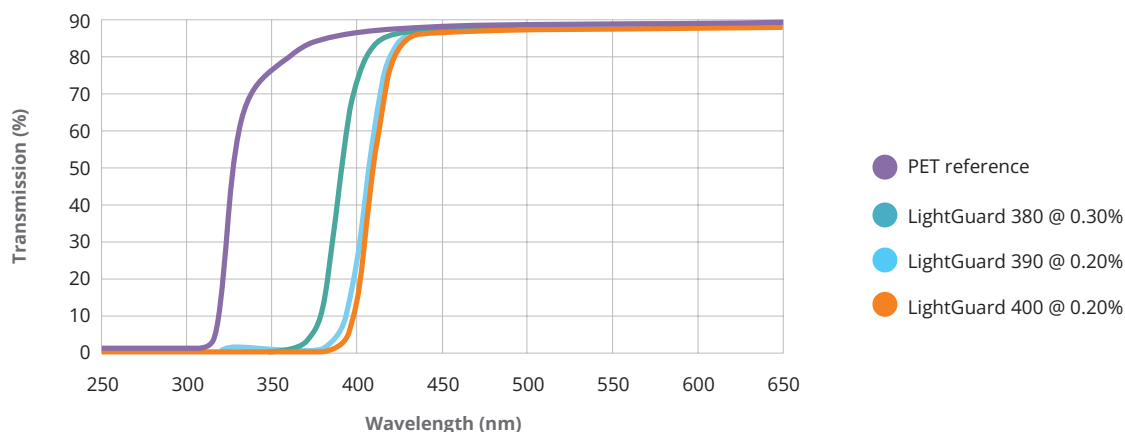
And more

## WHICH LIGHTGUARD BEST FITS YOUR APPLICATION?

The UV-Vis transmission curves below illustrate the increasing UV-protection range of LightGuard 380, 390 and 400 in PET packaging at a similar wall thickness.

### UV-Vis Spectra of LightGuard 380, LightGuard 390, LightGuard 400

0.3mm / 11.8 mil bottle wall



Consult HCA's experts for exact dosing requirements to meet your UV protection and recycling needs. Protection beyond 400 nm (visible light) requires functional colorants, as used in applications such as pharmaceuticals and wine.

| Selection guide            | LightGuard 380 | LightGuard 390 | LightGuard 400 |
|----------------------------|----------------|----------------|----------------|
| UV protection range        | up to 380 nm   | up to 390nm    | up to 400nm    |
| Suitable for clear PET     | ✓              | ✓              | ✓              |
| Available in Solid format  | ✓              | —              | ✓              |
| Available in Liquid format | —              | ✓              | —              |
| Recycling recognition *    | —              | —              | ✓              |
| Benzotriazole free         | ✓              | ✓              | ✓              |



\* LightGuard® 400 has received RecyClass Technology Approval and is recognized within EPBP as compatible with PET bottle recycling.



RecyClass

# FUTURE-READY PET PACKAGING

## Reducing waste through product protection

By limiting UV-induced degradation, LightGuard supports longer shelf life and helps reduce food and product waste.

## Supporting circular PET packaging

LightGuard 400 is a recycling-friendly UV blocker for clear PET, fully compatible with rPET and designed to deliver maximum UV protection without compromising recycled material quality.

## Lower impact through low-dose use

Effective performance at low addition levels supports lower material use and carbon-footprint reduction.

## Aligned with mono-material strategies

Designed to work within monomaterial PET packaging concepts supporting recyclability focused design choices.

## REGULATORY & CERTIFICATIONS



### Compliances

LightGuard 380 ✓

EU

FDA (USA)

GB

HALAL (ASIA)

LightGuard 390 ✓

EU

FDA (USA)

GB

LightGuard 400 ✓

EU

FDA (USA)

HALAL (ASIA)



## FIND OUT MORE

Contact our sales people about purchasing quantities and deliveries or our technical experts for questions about our technology and its implementation:

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