



» PRODUCT BULLETIN

ColorMatrix™ Lactra™ Four, One & Zero Low Inorganic and TiO₂ Light Blocking Additive Solutions for PET Dairy & Dairy-Alternative Packaging

ColorMatrix™ Lactra™ is a range of high-performance light blocking additive solutions for PET dairy and dairy-alternative packaging. Lactra Four, One and Zero are the latest additions to the portfolio, delivering superior whiteness & contents protection with low inorganic content.

WHY DAIRY PRODUCTS REQUIRE PROTECTION FROM LIGHT

Certain components of dairy and dairy alternative products are susceptible to light-induced oxidation. Important nutrients including vitamins A (retinol), B2 (riboflavin), B12 (cobalamin), C and D are quickly degraded when exposed to visible light, and the oxidative products of dairy proteins and lipids give rise to off-flavors. This photo-oxidation reduces product nutritional value and diminishes sensory properties.

Lactra extends the shelf life of PET packaged products, such as ultra-high temperature (UHT) milk, by providing protection from visible-light induced degradation under commercially relevant storage conditions.

DAIRY PACKAGING OPTIONS

Dairy brands have employed various packaging materials and formats to protect dairy products from visible light including colored glass, laminated paperboard cartons, and multilayer plastics. With a focus upon sustainability Avient has focused its additive technology development on mono-layer PET.

Monolayer PET expands design freedom, allowing designers to create unique packaging shapes with the same visible light blocking as paperboard and multilayer HDPE packaging. PET is also a more user-friendly material; it can enable better shape, handling, storage, opening, pouring and resealing. Monolayer PET is one of the lightest weight packaging options reducing raw material requirements and carbon emissions during transportation. PET is one of the most widely recycled packaging materials and Avient is committed to working with the market to ensure Lactra is recyclable and recycled.

By utilizing PET, light-induced oxidation is minimized, and properties and taste are preserved, even at the lengthy ambient shelf life common with many UHT liquid dairy products.

LEGISLATION & TARIFFS

As the packaging industry seeks to align with global sustainability trends, many new legislative changes surrounding single use plastic packaging can be observed.

Within the food & beverage sector, brand owners are aware of current and potential incoming tariffs which may limit TiO₂ content in packaging. Consequentially many brand owners are already looking to reduce the inorganic content in their packaging to <4%, and are mindful of an expected further reduction to <1%. In order to align with these changes, they require plug-and-go solutions they can utilize within their current operations to be compliant.

HIGH PERFORMANCE & LOW TiO₂ DAIRY LIGHT-BLOCKING

ColorMatrix Lactra Four, ColorMatrix Lactra One and ColorMatrix Lactra Zero are Avient’s next-gen light-blocking solutions for dairy packaging with no compromise on performance.

With total inorganic content <4% and TiO₂ content options between 4% and 0%, the range of high-performance light blocking solutions offers light blocking up to 99.9%, improved performance in thin wall sections, superior whiteness and processability with non-reheat grades of PET and rPET.

TECHNOLOGY BENEFITS

- Improved light blocking performance up to 99.9% at 550nm and 700nm
- Brighter whiteness L* >90 even in thin wall sections (0.21mm)
- Plug & go solution—processes similar to virgin PET
- Process with standard PET grades and rPET
- Reduces equipment wear and tear
- TiO₂ content of <4%, <1% & 0% available in the range
- Fully compatible with higher levels of rPET

TARGET MARKET & APPLICATIONS

- Monolayer PET bottles
- Liquid dairy & dairy-alternative products that require high levels of light blocking (UHT & ESL milk)
- Brand owners requiring product protection, high levels of whiteness, global compliance and recyclability
- Areas where restrictions are being evaluated regarding levels of TiO₂ in consumables packaging and where tariffs may be imposed

REGULATORY

- Full EU food contact approval
- REACH compliant

COLORMATRIX LACTRA LOW-TiO₂ RANGE

PROPERTIES	LACTRA™ FOUR	LACTRA™ ONE	LACTRA™ ZERO
TiO ₂ % in bottles at UHT LDR	3%	1%	0%
Recommended LDR for UHT	10%	7%	10%
Light blocking at 550nm at UHT LDR	>99.9%	>99.8%	>99.9%
Light blocking at 700nm at UHT LDR	>99.9%	>99.8%	>99.9%
Color L*	>90	>88	>90

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