

DuPont™ Light Stabilizer 210

Product Description

DuPont™ Light Stabilizer 210 is an ultrafine titanium dioxide (TiO₂) product, containing surface-modified inorganic oxide particles tailored to provide exceptional protection from the effects of ultraviolet (UV) light. These particles provide a level of UV protection that is greater than that of organic UV absorbers on an equal weight basis. The particles are non-migratory, and possess extraordinary stability in use. The material is provided as a dry, readily-handled powder and possesses typical properties as shown in **Table 1**.

Table 1. Typical Properties of DuPont™ Light Stabilizer 210

Titanium dioxide, wt%, min.	85
Alumina, wt%, max.	10
Specific gravity, g/cc	3.7
Median particle size, nm	135
Surface area, m ² /g	45

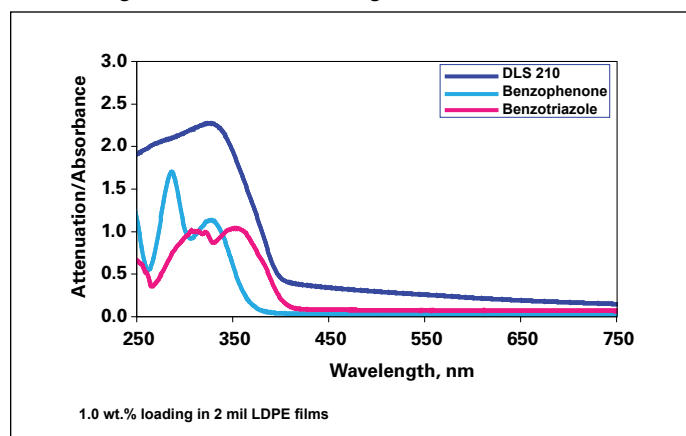
Key Features

- High UV Attenuation
- Excellent Discoloration Resistance
- No Migration from Polymer

High UV Attenuation

DuPont™ Light Stabilizer 210 has been shown to be a stronger UV screener on an equal weight basis than typical organic UV absorbers like benzophenones and benzotriazoles. DuPont™ Light Stabilizer 210 has broad-spectrum UV screening capability, enabling it to attenuate UV across both the UVA and UVB regions. Attenuation is defined as the total UV screening effect, due to both UV absorbance and scattering. The organic light stabilizers have one or two absorption maxima (peaks) in their spectra, with lower absorbance away from these peaks (**Figure 1**).

Figure 1. UV Visible Attenuation/Absorbance of DuPont™ Light Stabilizer 210 and Organic UV Absorbers



DuPont™ Light Stabilizer 210 achieves high UV attenuation through a combination of absorbance and scattering. In order to provide this high level of UV screening, the appearance of systems containing DuPont™ Light Stabilizer 210 is necessarily translucent.

Excellent Discoloration Resistance

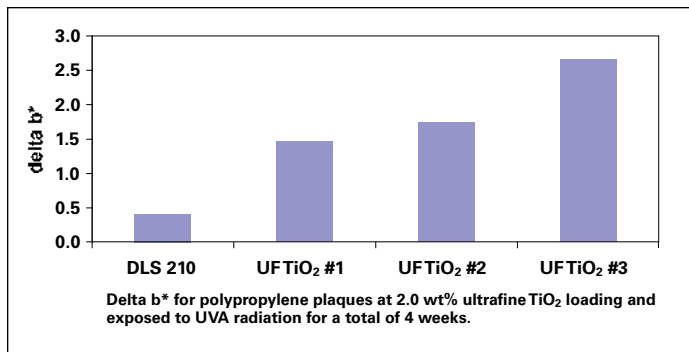
The unique alumina surface treatment used in production of DuPont™ Light Stabilizer 210 provides excellent resistance to additive interactions. Excellent discoloration resistance during exposure to UV light is maintained for resin compounds and finished plastic products.

Discoloration resistance of DuPont™ Light Stabilizer 210 is superior when compared to other ultrafine TiO₂ products in accelerated UV exposure testing. Very low yellowing, as indicated by change in b* (delta b*), is observed for polypropylene plaques exposed to UVA bulbs for an extended period in a light box exposure test (**Figure 2**).



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Figure 2. Photochemical Discoloration/Yellowing of Ultrafine TiO₂ Products



Migration

The migration of organic UV absorbers out of a polymer matrix lessens their ability to protect. DuPont™ Light Stabilizer 210 is not prone to migration.

Figure 3. Accelerated Migration Study at 70°C Exposure

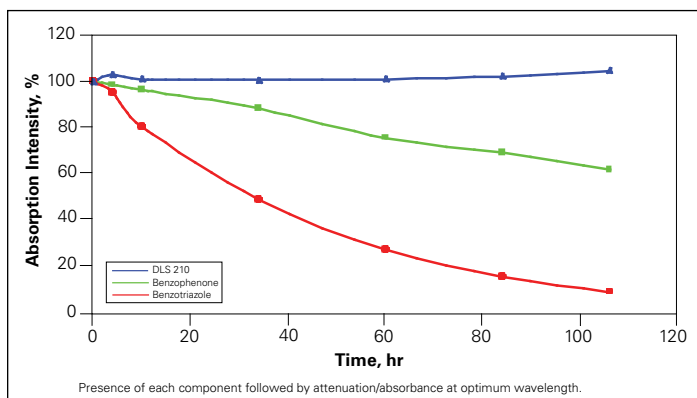


Figure 3 documents the accelerated aging of polypropylene films containing typical organic UV absorbers versus DuPont™ Light Stabilizer 210. Under these conditions, the DuPont™ Light Stabilizer 210 is completely stable while the organic compounds show significant migration.

Suggestions for Use

DuPont™ Light Stabilizer 210 is a valuable addition to polymer protection packages. It has been specifically designed to protect substrates from the deleterious effects of UV light exposure, whether from sunlight or from synthetic sources such as fluorescent lighting or other indoor illumination. The excellent broad spectrum UV screening, non-migratory and chemical compatibility properties make it an attractive alternative to conventional UV protection systems.

DuPont™ Light Stabilizer 210 is a fine powder that can be made into carrier masterbatches for let down or added directly to the polymer compound using conventional thermoplastic polymer processing equipment.

Safety Precautions

The use of DuPont™ Light Stabilizer 210 does not present unusual safety concerns provided reasonable precautions and suitable PPE are employed. DuPont™ Light Stabilizer 210 is not explosive, flammable, catalytically reactive or corrosive. It is a stable compound that has no known incompatibility with other materials.

DuPont™ Light Stabilizer 210 can generate dust during handling and precautions should be taken to minimize dust formation. Follow all local regulations and DuPont recommendations for exposure limits as described in the Material Safety Data Sheet (MSDS) and Product Use, Safety, and Handling (PUSH) bulletin. If the recommended exposure limits of DuPont™ Light Stabilizer 210 may be exceeded, approved air-purifying respirators with particulate filters (Type 100) should be used.

Shipping Containers

DuPont™ Light Stabilizer 210 is available in 18 kg plastic bags.

For further information about this grade or to request a sample, please see the DuPont Titanium Technologies web site.

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