

## OPTICAL BRIGHTENER OB-1(CI 393 )

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**1. Item Name:** 2,2-(1,2-Ethenediyl-di-4, 1-phenylene) bisbenzoxazole

### 2. Specifications:

Appearance:	Pale yellowish green crystal powder/granule
Molecular Formula:	$C_{28}H_{18}N_2O_2$
Molecular weight:	414.4
CAS No.:	1533-45-5
Melting Point:	353°C-359°C
Assay:	98%min
Ash:	0.3%max.
Volatile Content:	0.3%max.
Particle Size:	500meshes

### 3. Properties

Optical brightener OB-1 is the best whitening agent for polymer fiber, and is also widely used in plastics, such as PP, ABS, PS, HIPS, PA, PC, EVA, Rigid PVC, etc

OB-1 produces very brilliant white effect with neutral to blue-violet shade. Because of its exceptional whitening properties, heat stability and low volatility, it is now popularly used in the engineering plastic market as well.

### 4. Effect of Optical Brighteners on the Whiteness of Polymers

Optical brighteners function by absorbing ultraviolet radiation and remitting blue light. The emitted blue light will reduce the yellow color of a polymer. In the presence of a whitening agent, such as  $TiO_2$ , the use of OB-1 will produce a brilliant white or "white than white" appearance.

Two primary factors affect the whiteness/yellowness of a formulation. They are the color of the base polymer and the level of brightener added. If no whitening agent, such as  $TiO_2$ , is used, the level of OB-1 required will likely be lower than when a whitening agent is preset. This level might be as little as 25-50 ppm. In determining the optimum concentration of brightener, the effect of any other UV-absorbing materials in the plastic should be considered. It is important that users perform sufficient evaluations to determine the optimum level of OB-1 for their specific end uses.

### 5. Methods of Addition

Please mix thoroughly to obtain best effect. OB-1 concentrated masterbatch can be even better mixed.

#### Dosage-----in each 100kg polymers

Transparent:	0.0025--0.005%	(2.5g-5g)
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Commonly use: 0.01--0.05% (10g-50g)

When UV absorber is used, the level of OB-1 is likely to be changed. To be effective, an optical brightener must dissolve in the polymer to which it is added. Since the typical addition levels of OB-1 is in the range of 25-250 ppm, the use of a concentrate, or masterbatch, is recommended. Concentrates are containing 1%-10% by weight of OB-1 typical.

The concentrate can be produced in an extruder under normal processing conditions for the polymer, including drying if necessary. The concentrate is then let down to typical use levels in the final formulation. Plastics compounding equipment is normally adequate for producing OB-1 brightener formulations. The key requirement is to thoroughly disperse the brightener so that it will dissolve uniformly throughout the molten polymer. This is usually achieved most readily with a concentrate.

### **6. Improving Whiteness of Recycled Polymer**

The business of processing consumed plastics and waste polymer continue to grow. These materials can be recycled into a variety of useful products, from plastic lumber to synthetic fiber. Polyester bottle polymer, polyester plastic waste and waste fiber polymer can be recycled into polyester fiber, which used in carpets, filling and insulation material, nonwovens, and apparel. One of the shortcomings of processing these materials is the uncertainty of the color in the source material.

By using optical brighteners, the value of the recycled materials can be significantly enhanced by providing a more uniform white. OB-1 will greatly improve the whiteness, normal fiber applications require only 200-300 ppm in new polymer, but recycled material may require as much as 300-450 ppm. Optical brighteners are very effective in improving the appearance of the polymer or fiber. Off-class or second-quality nylon polymer can also be upgraded in the same way.

### **7. Food Industry Applicable**

OB-1 complies with regulations for indirect-contact food additives. OB-1 is restricted to use as an optical brightener for all polymers at a level not to exceed 0.025% by weight of polymer and at the temperatures not to exceed 135 °C(275°F).

### **8. Packing:**

25kg / fiber drum with PE liner

### **9. Safety and Stock:**

Keep in stock as ordinary chemicals. Wear protective goggles and gloves while applying. Avoid direct contact with skin and eyes. Soap clean if skin contaminated.

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