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Tinuvin[®] P

Benzotriazole UV absorber

Characterization

Tinuvin P is an ultraviolet light absorber (UVA) of the hydroxyphenyl benzotriazole class, imparting good light stability to a wide variety of polymers.

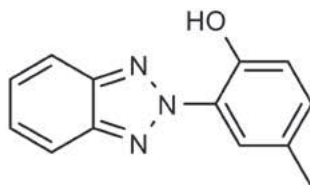
Chemical name

Phenol, 2-(2H-benzotriazol-2-yl)-4-methyl

CAS number

2440-22-4

Chemical formula



Molecular weight

225 g/mol

Applications

Tinuvin P provides ultraviolet protection in a wide variety of polymers including styrene homo- and copolymers, engineering plastics such as polyesters and acrylic resins, polyvinyl chloride, and other halogen containing polymers and copolymers (e. g. vinylidenes), acetals and cellulose esters. Elastomers, adhesives, polycarbonate blends, polyurethanes, and epoxy materials also benefit from the use of Tinuvin P.

Features/benefits

Tinuvin P features a strong absorption of ultraviolet radiation in the 300–400 nm region. It also has a high degree of photostability over long periods of light exposure. The high absorbance combined with photostability and the ability to release absorbed energy in non sensitizing ways make Tinuvin P an effective stabilizer against the effects of ultraviolet light.

Product forms

Slightly yellow powder

Guidelines for use

The use levels of Tinuvin P range between 0.1 % and 0.5 %, depending on substrate and performance requirements of the final application. Tinuvin P can be used alone or in combination with other functional additives such as antioxidants (hindered phenols, phosphites) and HALS light stabilizers, where often a synergistic performance is observed.

Tinuvin P may react with various heavy metal ions to form salts or complexes. For example, if Tinuvin P comes into contact with iron or cobalt ions, colored complexes are formed. Reducing and oxidizing agents used in polymerization and curing processes have no effect on the stability of Tinuvin P.

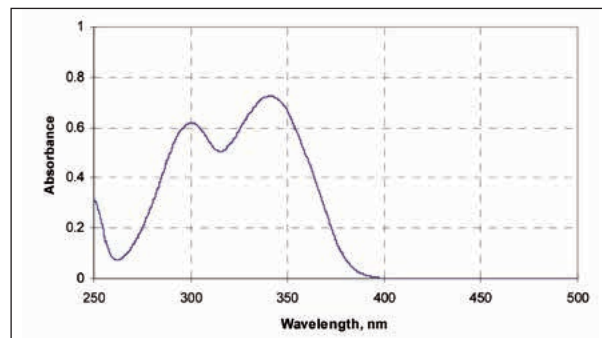
Physical Properties

Melting Range	128–132 °C
Flashpoint	205 °C
Specific Gravity (20 °C)	1.38 g/ml
Bulk density	0.50–0.80 g/ml
Angle of repose	45 °
Vapor Pressure (20 °C)	1.5 E-4 Pa

Solubility (20 °C)	g/100 g solution
Acetone	3
Benzene	7
Chloroform	13
Cyclohexane	1
Ethyl acetate	3.5
n-Hexane	0.8
Methanol	0.2
Water	<0.01

Volatility (pure substance; TGA, heating rate 20 °C/min in air)

Weight Loss %	Temperature °C
1.0	153
2.0	170
5.0	190

Absorbance spectrum
(10 mg/l, Chloroform)

Tinuvin P exhibits strong absorbance in the 300–400 nm region and minimal absorbance in the visible region (>400 nm) of the spectrum. The absorption maxima are at 301 nm and 341 nm ($\epsilon = 16 \cdot 150 \text{ l/mol} \cdot \text{cm}$) in chloroform solution

Handling & Safety

Tinuvin P exhibits a very low order of oral toxicity and does not present any abnormal problems in its handling or general use.

Detailed information on handling and any precautions to be observed in the use of the product(s) described in this leaflet can be found in our relevant health and safety information sheet.

Note

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