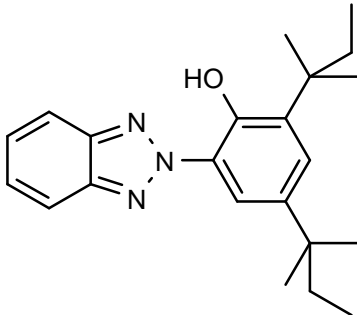




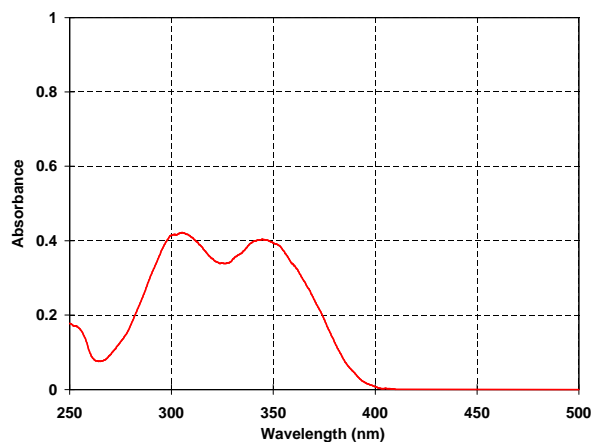
Ciba® TINUVIN® 328

Benzotriazole UV Absorber

Characterization	TINUVIN 328 is an ultraviolet light absorber (UVA) of the hydroxyphenylbenzotriazole class, which imparts outstanding light stability to plastics and other organic substrates.		
Chemical name	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol		
CAS number	25973-55-1		
Structure	 <p>The chemical structure shows a benzotriazole ring system (a benzene ring fused to a five-membered triazole ring) attached at the 2-position to a phenol ring. The phenol ring has a hydroxyl group (-OH) at the 1-position and two tert-pentyl groups at the 4 and 6 positions. The tert-pentyl groups are represented as a central carbon atom bonded to three other carbon atoms, one of which is part of an ethyl chain.</p>		
Molecular weight	351.5 g/mol		
Applications	TINUVIN 328 is a highly effective light stabilizer for a variety of plastics and other organic substrates. Its use is recommended for the stabilization of styrene homo- and copolymers, acrylic polymers, unsaturated polyesters, polyvinylchloride, polyolefins, polyurethanes, polyacetals, polyvinyl butyral, elastomers, and adhesives.		
Features/benefits	TINUVIN 328 features strong UV absorption, low initial color, excellent compatibility in a wide variety of substrates, good solubility in plasticizers and monomers, and moderately low volatility. It protects polymers as well as organic pigments from UV radiation, helping to preserve the original appearance and physical integrity of molded articles, films, sheets, and fibers during outdoor weathering.		
Product forms	<i>Code:</i>	TINUVIN 328	TINUVIN 328 FF
	<i>Appearance:</i>	Slightly yellow powder	Slightly yellow, free-flowing granules
Guidelines for use	The use levels of TINUVIN 328 range between 0.10 and 1.0%, depending on substrate and performance requirements of the final application. The product can be used alone or in combination with other additives such as light stabilizers (hindered amines), antioxidants (hindered phenols, phosphites, thiosynergists, hydroxylamines, lactones), and other functional stabilizers and additives. The use of TINUVIN 328 in combination with hindered amine light stabilizers is particularly noteworthy in that a synergistic performance is often observed. Performance data for TINUVIN 328 alone and in combination with other additives are available in a variety of substrates.		

Physical Properties		
<i>Melting Range</i>		80-88 °C
<i>Flashpoint</i>		229 °C
<i>Density (20 °C)</i>		1.17 g/cm ³
<i>Vapor Pressure (20 °C)</i>		4.7 E-6 Pa
Solubility (20 °C)		
		% w/w
<i>Water</i>		< 0.01
<i>Acetone</i>		6
<i>Benzene</i>		39
<i>Chloroform</i>		44
<i>Cyclohexane</i>		15
<i>Ethyl acetate</i>		16
<i>n-Hexane</i>		16
<i>Methanol</i>		0.4
<i>Methylene chloride</i>		56
Volatility		
		Pure substance; TGA, heating rate 20 °C/min in air
<i>Weight Loss (%)</i>		<i>Temperature °C</i>
1.0		183
2.0		202
5.0		223

Absorption Spectrum (10 mg/l, Chloroform)



TINUVIN 328 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 306 nm and 347 nm ($\epsilon = 14760 \text{ l/mol}\cdot\text{cm}$) in chloroform solution.

Handling & Safety	
	In accordance with good industrial practice, handle with care and avoid unnecessary personal contact. Avoid continuous or repetitive breathing of dust. Use only with adequate ventilation. Prevent contamination of the environment. Avoid dust formation and ignition sources. For more detailed information please refer to the material safety data sheet.
Registration	
	TINUVIN 328 is listed on the following Inventories:
Australia:	AICS
Canada:	DSL
China:	First Import
Europe:	EINECS
Japan:	MITI
Korea:	ECL
Philippines:	PICCS
USA:	TSCA
	TINUVIN 328 is approved in certain countries for use in food contact applications. For detailed information refer to our Positive List or contact your local sales office.

IMPORTANT: The following supersedes Buyer's documents.

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