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Tinuvin® 1600

Very Low Volatile Hydroxyphenyl Triazine UV Absorber

Characterization

Tinuvin 1600 is an ultraviolet light absorber (UVA) of the hydroxyphenyl triazine class exhibiting very low volatility, high absorption and good compatibility with a variety of polymers, co-additives and resin compositions. Tinuvin 1600 allows polycarbonates, polyesters, and acrylics to achieve a higher resistance to weathering than conventional hydroxyphenyl triazine, benzotriazole or cyanoacrylate UV absorbers.

Chemical Nature

2-hydroxyphenyl-s-triazine derivative

Applications

Tinuvin 1600 applications include polyalkene terephthalates and naphthalates, linear and branched polycarbonates, acrylics (PMMA) and their copolymers, modified polyphenylene ether compounds, various high performance plastics, PA, SAN, ASA, as well as polyolefins.

The use of Tinuvin 1600 is indicated in polymer blends & alloys, such as PC/ABS, PC/PBT, PPE/IPS, PPE/PA and copolymers as well as in reinforced, filled and/or flame retarded compounds, which can be transparent, translucent and/or pigmented.

Features/Benefits

Due to its very low volatility, excellent thermal stability and high extinction coefficient, Tinuvin 1600 is particularly suitable for processing and aging conditions where high loadings, very good compatibility, and outstanding durability are required. Such requirements are especially critical for thin layers and films in general, e.g. extruded or co-extruded articles such as plain, multi-wall and corrugated sheets, oriented and biaxially oriented thin films, co-extruded or co-injected semi-finished parts, fibers and complex moldings.

Thanks to the high compatibility with polycarbonate combined with its extremely low volatility Tinuvin 1600 can be used in caplayer compounds avoiding plate-out, contributing to less frequent cleaning during extrusion. Moreover, its very high UV screening activity allows the use of lower concentrations than with traditional UV absorbers. This may be of particular importance when using Tinuvin 1600 in applications requiring high concentrations of UV absorbers. It also offers the opportunity to extend the service life of end-use articles.

Product Forms

Tinuvin 1600, yellowish, free-flowing powder

Guidelines for use

Tinuvin 1600 (0.2 – 6 % by weight) can be readily incorporated into the polymer by using conventional techniques, e. g. powder, solution, or melt blending. Tinuvin 1600 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. Extensive performance data are available in many of the substrates listed above.

Physical properties

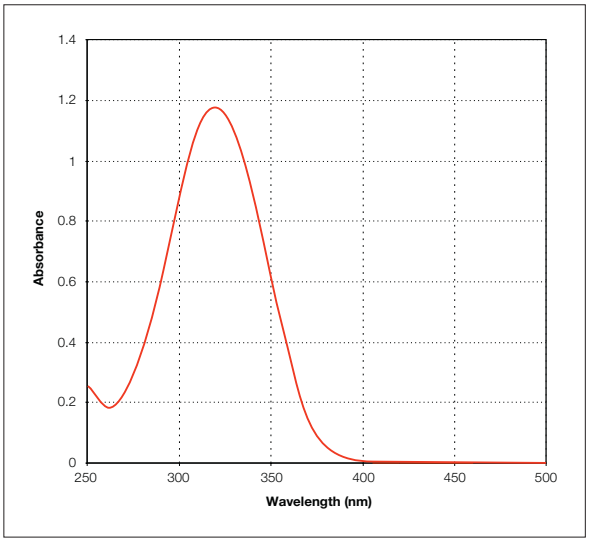
Melting range	120 – 130 °C
Flashpoint	not applicable
Vapor pressure (25 °C)	< 0.1 pPa
Specific gravity (at 25 °C)	1.05 g/ml
Bulk density	0.42 g/ml
Angle of repose	36°

Solubility (20 °C)	**g/l**
Acetone	2.4
Chloroform	547
Ethanol	8.7
Ethyl acetate	22.8
MMA	75
Methylene chloride	530
THF	540

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

Weight loss %	Temperature °C
1.0	366
5.0	412
10.0	432

Absorbance spectrum



Tinuvin 1600 exhibits strong absorbance in the 300 – 400 nm region and minimal absorbance in the visible region (> 400 nm). The absorption maximum ist at 302 nm ($\varepsilon = 7.1 \cdot 10^4$ l/mol · cm) in chloroform solution.

Handling & Safety

Tinuvin 1600 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.

Intellectual property rights

It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation is observed. Certain uses of Tinuvin 1600 as a stabilizer in specific substrates/applications are covered by third party patent rights. Some of these patent rights are subject of existing agreements and will not be asserted against BASF or its customers. Therefore, in case of corresponding questions concerning specific uses and applications of Tinuvin 1600, please revert to your BASF representative for further information.

Furthermore, Tinuvin 1600 as well as some applications thereof are subject of BASF intellectual property rights (like EP 815089 and its equivalents in other countries). Purchase of Tinuvin 1600 does not entitle the buyer or any third party to produce, offer or use blends of biodegradable polymers and Tinuvin 1600 protected under BASF intellectual property rights.

Note

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