

Industrial Coatings

Technical Data Sheet

Tinuvin® 405

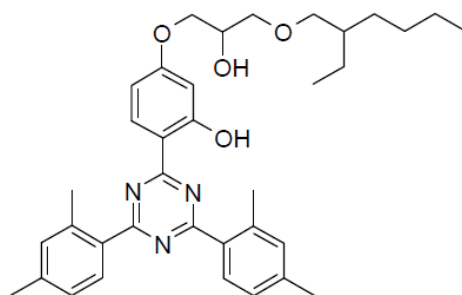


Product Description

Tinuvin® 405 is a solid triazine-based UV absorber for coatings. It is designed to meet the high performance and durability requirements of acrylic powder coatings for transportation and industrial applications.

Key Features & Benefits

- Excellent long term photo permanence
- Excellent thermal stability
- Non-migrating
- Ideal for glycidyl-methylacrylate-type (GMA) powder coatings due to low melting temperature
- Does not interact with amine- and/or metal-catalyzed coating systems or coatings applied on base coats or substrates containing such catalysts



Chemical Structure

2-Hydroxyphenyl-s-triazine

Typical Properties

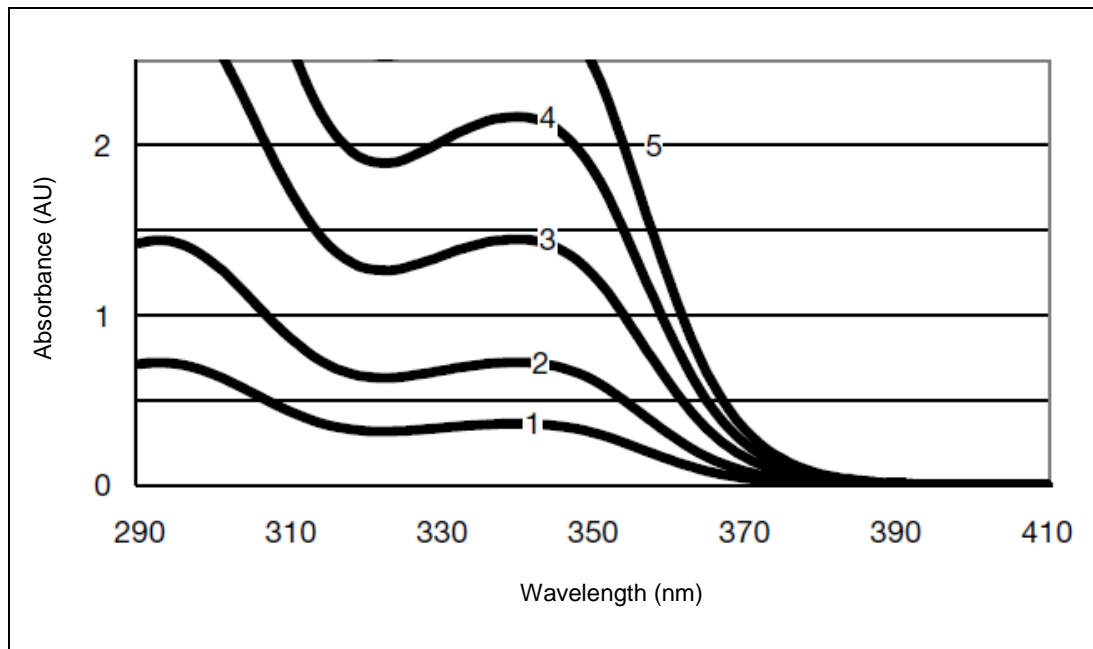
Properties

| | |
|------------------|---|
| Appearance | light yellow powder |
| CAS number | 137658-79-8 |
| Molecular weight | 583.8 g/mol |
| Melting point | 73 - 77°C (163 - 171°F) (no specification) |

Solubility Tinuvin® 405 is soluble up to 20% in most organic solvents, easy to incorporate into water-based systems by use of co-solvents.

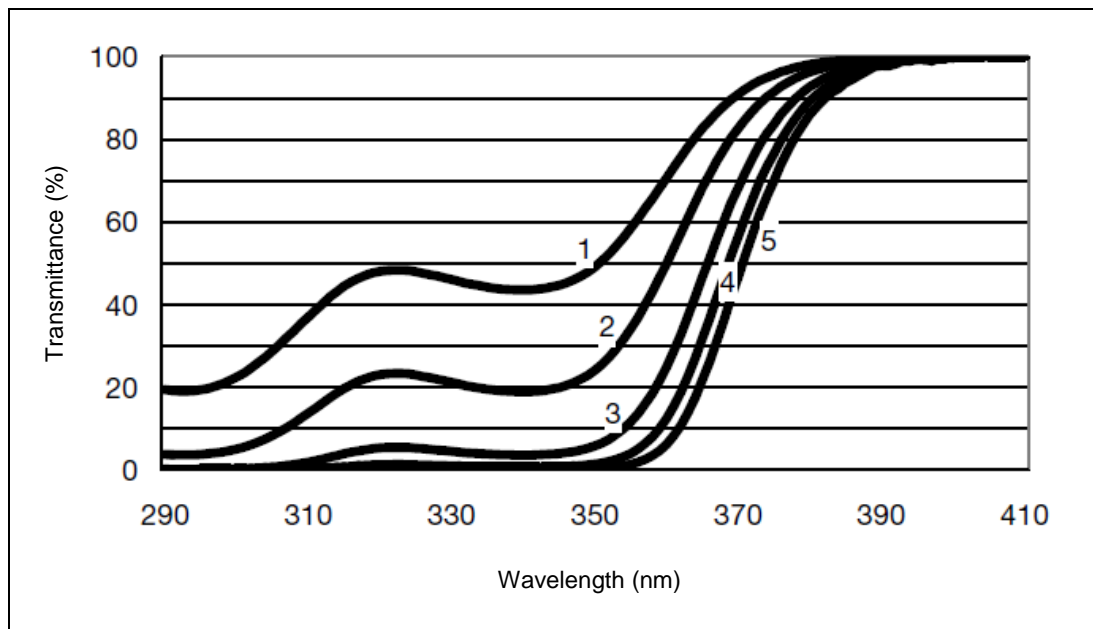
These typical values should not be interpreted as specifications.

UV Absorbance Spectrum



UV Transmission Spectrum

(The theoretical concentration of the UVA in an applied 40 μm clear coat was calculated as a function of the concentration in toluene with the help of the Lambert-Beer law. Spectra were recorded in toluene, light path length = 1 cm.)



Line one: 10 mg/l (0.001% Tinuvin[®] 405, corresponds to 0.25% active in 40 μm film)
Line two: 20 mg/l (0.002% Tinuvin[®] 405, corresponds to 0.50% active in 40 μm film)
Line three: 40 mg/l (0.004% Tinuvin[®] 405, corresponds to 1.00% active in 40 μm film)
Line four: 60 mg/l (0.006% Tinuvin[®] 405, corresponds to 1.50% active in 40 μm film)
Line five: 80 mg/l (0.008% Tinuvin[®] 405, corresponds to 2.00% active in 40 μm film)

Applications

Tinuvin[®] 405 is designed to fulfill the high performance and durability requirements of acrylic powder coatings.

Tinuvin[®] 405 is recommended for applications such as:

- High performance automotive OEM powder coatings
- High performance industrial powder coatings

For outdoor applications, Tinuvin[®] 405 needs to be combined with a hindered amine light stabilizer (HALS) such as Tinuvin[®] 144 or Tinuvin[®] 152.

Recommended concentrations The amount of Tinuvin® 405 required for optimum performance should be determined in trials covering a concentration range.

The dry film thickness (DFT) directly affects the amount of UVA needed. The following recommended concentrations are to achieve proper stabilization for given DFT (light stabilizers % is indicated on total formulation):

| | |
|----------------|-------------------------------|
| 10 µm – 20 µm: | 8.0 % – 4.0 wt % Tinuvin® 405 |
| 20 µm – 40 µm: | 4.0 % – 2.0 wt % Tinuvin® 405 |
| 40 µm – 60 µm: | 2.0 % – 1.5 wt % Tinuvin® 405 |

Safety

General

The usual safety precautions when handling chemicals must be observed. These include the measures described in Federal, State and Local health and safety regulations, thorough ventilation of the workplace, good skin care and wearing of protective goggles.

Safety Data Sheet

All safety information is provided in the Safety Data Sheet Tinuvin® 405.

Storage

Properly stored and protected, the original unopened container of Tinuvin® 405 should have a shelf life of at least 24 months. Store at room temperatures between 5 – 35°C (41 – 95°F).

Important

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