



## UV ABSORBERS / STABILIZERS

**Other Names** Benzotriazoles

CAS Number	Substance
3846-71-7	UV 320
3864-99-1	UV 327
25973-55-1	UV 328
36437-37-3	UV 350
2440-22-4	UV-P (Drometrizole)

**May Be Found In**

- PU foam materials such as open cell foams for padding
- Used as UV-absorbers for plastics (PVC, PET, PC, PA, ABS, and other polymers), rubber, and polyurethane
- Some textiles

UV Absorbers / Stabilizers are used in a variety of polymers throughout the industry to protect against degradation by ultraviolet light.

### Uses in the Supply Chain

The UV Absorbers / Stabilizers listed are used to absorb UV light. This protects paints, plastics, coatings, adhesives, etc. and thus stabilizes them to UV light or natural sunlight.

UV radiation is one of the major causes of degradation of textile materials, and therefore benzotriazoles can be found in some textiles.

### Why UV Absorbers / Stabilizers are Restricted

- These substances may cause damage to organs through prolonged or repeated exposure, are harmful to aquatic life with long lasting effects, and are suspected of causing cancer.
- The first four UV Absorbers listed above are classified under REACH as SVHCs while the latter (Drometrizole) is known as a skin sensitizer and is also known to be very toxic to aquatic life.<sup>1</sup>

### Sourcing Compliant Materials from Your Suppliers

- Contact your suppliers and explain that you require their manufactured materials to be compliant with the current AFIRM RSL limits.<sup>2</sup>
- Require suppliers to submit a confirmation of material compliance or a test report from a third-party laboratory.
- When materials are received, consider performing risk-based testing to ensure the current AFIRM RSL limits are met.
- Share this information sheet with your material suppliers so they have full visibility and understand your sourcing requirements.
- Ask for the reason why some chemistries are used so that you are fully aware of what may be present in your products.

### Sourcing Compliant Formulations from Your Chemical Suppliers

- For all formulations, request SDS documentation that meets current GHS requirements.
- Contact your suppliers and explain that you require formulations to be compliant with the current ZDHC MRSL limits whenever applicable.<sup>3</sup>



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- Discuss with your chemical supplier whether any safer alternatives are available that are suitable substitutes for your production needs.
- Prior to procuring any formulation, the chemical properties must be reviewed to ensure that proper protective equipment, chemical storage facilities, facility engineering controls, and associated treatment/disposal facilities are appropriate for the chemical(s).
- Check regularly the formulation and SDS from the chemical supplier to review if any of the restricted UV stabilizers are being added.
- Communicate with the responsible person for chemical management at the supplier. In many cases, it may be more efficient to replace the chemistry with a non-restricted substance than carefully controlling the concentration of the UV Stabilizers to meet product-level restrictions.

**Safer Alternatives**

There are several UV-stabilizers that are not on the REACH SVHC list. Not all stabilizers are appropriate for all applications and the list below is not exhaustive. Brands and manufacturers are responsible for making their own sourcing decisions. AFIRM does not endorse any chemistry or manufacturer; however, the following is a list of UV-stabilizers not currently listed as SVHCs:

CAS	Notes
127519-17-9; 108-65-6	Has not been cleared by the FDA for use in food contact applications; Predicted likely to meet criteria for category 1A or 1B carcinogenicity, mutagenicity or reproductive toxicity <sup>4</sup> ; Known as Tinuvin 99-2, Tinuvin 384 or BLS 99-2
70321-86-7	Regulated in food-contact items; Minnesota Chemicals of High Concern List; Also known as H413 or UV-234
1843-05-6	REACH CoRAP list; Regulated in food-contact items; May cause an allergic skin reaction <sup>4</sup> ; Known as Octabenzone
104810-48-2; 104810-47-1	Toxic to aquatic life with long lasting effects; May cause damage to organs through prolonged or repeated exposure; May cause an allergic skin reaction; Known as Tinuvin-1130
3896-11-5	Potential bioaccumulation/aquatic concerns; Regulated in food-contact items; Known as UV-326
5232-99-5	Regulated in food-contact items; Known as Etocrilene or Etocrylene and UV-3035.
6197-30-4	REACH CoRAP list; Regulated in food-contact items; Very toxic to aquatic life with long lasting effects <sup>4</sup> ; Known as Octocrylene or Octocrilene
3147-75-9	High-priority substance for PBT screening; Known as UV-329 or Octrizole
103597-45-1	Environmentally hazardous, Chronic aquatic toxicity; May cause long lasting harmful effects to aquatic life <sup>4</sup> ; Known as UV-360.
371146-04-2	Known as LA-46, it is a high performance triazine UV absorber for the light stabilization of engineering plastics (PBT, PET) and fibers PET. It offers low volatility and excellent thermal stability as well as high absorption between 280 nm & 300 nm UV region. Classified as an irritant.



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### Additional Information

- ECHA Mapping *Exercise for Plastic Additives Initiative* <https://echa.europa.eu/mapping-exercise-plastic-additives-initiative>
- Green Chemicals *Additives and additive formulations studied to protect plastic compounds from sunlight* <https://greenchemicals.eu/product-category/uv-absorbers/>
- Mayzo (Chemical Supplier) Information on UV Absorber Options <https://www.mayzo.com/uv-absorbers.html>
- Amfine Chemical Corporation Information on UV Absorber Options [http://www.amfine.com/uv\\_absorbers.shtml](http://www.amfine.com/uv_absorbers.shtml)

### References

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<sup>1</sup> European Chemical Agency - Candidate List of substances of very high concern for Authorisation.

<https://www.echa.europa.eu/candidate-list-table>.

<sup>2</sup> Apparel and Footwear International RSL Management Group Restricted Substances List (AFIRM RSL) <http://afirm-group.com/afirm-rsl/>

<sup>3</sup> ZDHC Manufacturing Restricted Substances List (ZDHC MRSL) [https://www.roadmaptozero.com/mrsl\\_online/](https://www.roadmaptozero.com/mrsl_online/)

<sup>4</sup> European Chemicals Agency – Information on Chemicals, <https://echa.europa.eu/information-on-chemicals>, Retrieved June 2020