



March 2024

Chemical profile

UV-328

Summary

- UV-328 is internationally recognised as an environmental pollutant. It is listed on the [Stockholm Convention on Persistent Organic Pollutants](#) to eliminate production and use of the chemical.
- UV-328 is a chemical of high concern due to its persistence in the environment, bioaccumulation properties and tendency to undergo long-range transport through the environment to locations far from sites of production and places of use. Since the chemical accumulates in organisms in the environment, long-term toxic effects are likely to occur as a result of high internal concentrations in exposed organisms. It is likely to lead to significant adverse human health and/or environmental effects.
- UV-328 belongs to a group of chemicals known as phenolic benzotriazoles. Phenolic benzotriazoles are added to chemical products and plastic articles as UV stabilisers. They protect products from degradation which may occur when exposed to sunlight.
- UV-328 is a priority for scheduling under the [Industrial Chemicals Environmental Management Standard](#) (IChEMS) in order to manage the significant long-term risks it poses to the environment and to fulfill Australia's international obligations.

Introduction and use of UV-328 in Australia

UV-328 is an ultraviolet radiation (UV) absorber additive used in plastic products and coatings. It filters out UV light to protect surfaces from discolouration and degradation under sunlight exposure.

The chemical is mostly used in surface coatings and paints and as an additive in plastics. It is also used in printing inks and adhesives used in food contact materials. UV-328 is a critical component of liquid crystal displays (LCDs) that are used in electronic machines and devices. In Australia, UV-328 is used in industrial sealants in aftermarket automotive products.

UV-328 may also be used in chemical products such as inks, automotive fluids and lubricants, lacquers, varnishes, thinners and fragrances. It may also be present in photographic paper or fabrics and textiles.

There is no evidence that production of the chemical has occurred in Australia.

Controls under the Stockholm Convention

UV-328 has been listed under Annex A (Elimination) of the Stockholm Convention on persistent organic pollutants. Restrictions on import, manufacture, use and disposal of UV-328 apply in countries that have

ratified the UV-328 amendment to the Stockholm Convention. Australia has not yet ratified this amendment.

The Stockholm Convention listing of UV-328 has specific exemptions to allow for production and use for selected purposes. Exemptions are temporary and reduce challenges that some industry sectors may have with the replacement of UV-328 in their products. These exemptions include use in motor vehicles; automotive coatings, machine coatings, rail transit coatings, and heavy-duty coating for large steel structures; triacetyl cellulose (TAC) film in polarisers; and photographic paper. Exemptions also allow use in replacement parts for motor vehicles, industrial machines and LCDs in instruments.

The waste management requirements of Article 6 of the Stockholm Convention apply for UV-328 which include the requirement to manage stockpiles and waste disposal in an environmentally sound manner to eliminate or minimise releases.

Chemical identity

- **CAS Name:** Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylpropyl)-
- **CAS registry number:** 25973-55-1
- **Synonyms:** UV-328; Tinuvin 328; 2-(2H-Benzotriazol-2-yl)-4,6-di-tert-pentylphenol; 2-(2H-Benzotriazol-

UV-328 belongs to a group of chemicals known as phenolic benzotriazoles. Phenolic benzotriazoles are added to chemical products and plastic articles as UV stabilisers. They protect products from degradation which may occur when exposed to sunlight.

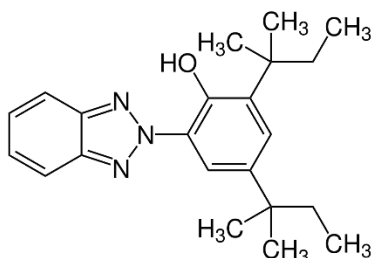


Figure 1 - Chemical structure of UV-328.

Hazards and risks to the environment

UV-328 poses a risk to the environment because of its persistence, potential to undergo long-range environmental transport, bioaccumulation and toxicity in mammals. UV-328 has been detected frequently in the biota of remote regions due to its long-range environmental transport potential. UV-328 is not chemically bound to the materials that it is added to, which results in release from these products into the environment. UV-328 is released to the environment during industrial production of the substance, during its use in products and as a result of end-of-life management of products containing UV-328.

Emissions of UV-328 occur at all life cycle stages: it is released to the environment through diffuse emissions from UV-328-containing articles as well as from point source emissions such as manufacturing plants, wastewater treatment plants and landfills.

Environmental monitoring data show that UV-328 is present in water and sediment samples taken from urban areas and nearby production facilities. It is frequently detected in arctic biota, particularly in birds and mammals. UV-328 may cause significant adverse effects to mammals and fish based on repeated-dose toxicity studies.

In humans, exposure to UV-328 can occur by ingesting or inhaling contaminated dust as well as by consuming contaminated seafood. UV-328 has been detected in human adipose tissue and breast milk.

Based on the evidence of UV-328's persistence, bioaccumulation, toxicity in mammals and long-range environmental transport potential, it is likely to lead to significant adverse human health and/or environmental effects.

Additional information: regulation of UV-328 in Australia

The National Industrial Chemicals Notification and Assessment Scheme (NICNAS), now known as Australian Industrial Chemicals Introduction Scheme (AICIS), published an [Inventory Multi-tiered Assessment and Prioritisation \(IMAP\) Assessment](#) for phenolic benzotriazoles in June 2017. The assessment for UV-328 concluded that its hazard characteristics are of concern for the environment.

UV-328 is listed on the [Australian Inventory of Industrial Chemicals \(AIIC\)](#), which permits its introduction into Australia subject to any AICIS conditions on the listing.

The industrial use of UV-328 is not subject to any national environmental regulations in Australia.

Additional information: replacements for UV-328

There are available alternatives to UV-328 in most applications.

Some users of UV-328 have highlighted difficulties in the substitution of UV-328 in replacement parts of motor vehicles and construction machinery as well as some electric and electronic instruments. These difficulties stem from the technical challenges of testing alternatives in a timely manner. The terms of the Stockholm Convention listing allow time-limited exemptions to prohibitions to assist transition to alternative technologies.

The automotive industry has already started to investigate alternatives to UV-328 and substitution is in progress.

Additional information: disposal of UV-328

The destruction of UV-328-containing waste in accordance with Article 6 of the Convention is the most effective way of minimising the emissions of UV-328 from waste. UV-328 decomposes at a temperature of 448°C and appropriate waste incineration facilities may ensure its complete destruction. Since UV-328 is a non-halogenated chemical, halogenated POPs do not arise from its incineration. However, halogenated POPs may be formed from the incineration of a halogenated material containing UV-328.

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More information

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Web www.dcceew.gov.au/environment/protection/chemicals-management/national-standard

Acknowledgement of Country

We recognise the First Peoples of this nation and their ongoing connection to culture and country. We acknowledge First Nations Peoples as the Traditional Owners, Custodians and Lore Keepers of the world's oldest living culture and pay respects to their Elders past, present and emerging.

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