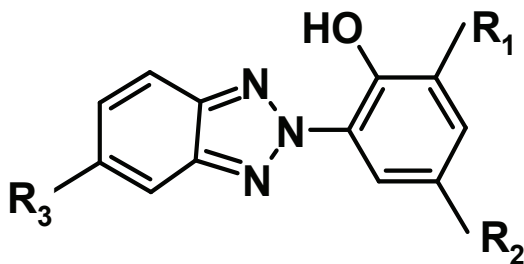


## A benzotriazole UV absorbent Banned in Japan

*Exposure of polymeric materials such as plastics, synthetic rubbers, fibers, paints, adhesives and the like to sunlight or artificial ultraviolet (UV) radiation initiates a chain of oxidative chemical reactions. The absorbance of UV radiation causes these polymeric materials to become physically weaker, their brittleness to increase, their paints to peel off and their colours to fade. To protect polymers against UV radiation, light stabilisers such as benzophenones, benzotriazoles, hindered amines and salicylates are added to improve their performance and duration.*

UV absorbents of the benzotriazole class were initially developed by Ciba-Geigy in the 1960s'. At present, the main producers are Ciba-Geigy, Cytec, Fairmount Chemicals, Akcros and some Japanese companies. These chemicals have pi (p) bond systems and are highly effective to UV radiation. They are usually found in the range of 0.1 to 2% in polymeric materials and have a variety of applications such as polyethylenes (PE), polypropylenes (PP), polyethylene terephthalates (PET), polyvinyl chlorides (PVC), polyurethanes (PU), polycarbonates (PC), polystyrenes (PS), acrylics, paints and adhesives.

Benzotriazole UV absorbents are ubiquitously known by their trade names such as UV-320 (TINUVIN 320), UV-326, UV-327 (TINUVIN 327) or UV-328 and have the general chemical structure as indicated below:



Scientists in Japan have found benzotriazole UV absorbents to be highly stable in the environment and accumulative in the human body. Long-term exposures were toxic to humans and affected birds to procreate. The effects prompted these chemicals to be listed as "Type I Monitoring Chemical Substances" in the list of Japanese Chemical Substances Control Law of 2004.

In 2006, TINUVIN-320 (CAS No 3846-71-7) was listed in the "Class I Specified Chemical Substances" of the Chemical Substances Control Law. On 4 July 2006, its production and importation as well as products containing this chemical was banned in Japan by the Ministry of Environment, Ministry of Economy, Trade and Industry and Ministry of Health, Labour and Welfare Departments.

*SGS is able to provide you with a range of services, including analytical testing and consultancy, for the presence of benzotriazole UV absorbents.*

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