

SAFEGUARDS

SGS CONSUMER TESTING SERVICES

SOFTLINES

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ORGANOTIN COMPOUNDS IN TEXTILE ARTICLES

European Commission Decision 2009/425/EC has officially banned specific organotin compounds in consumer products. The usage of Tri-substituted organostannic compounds such as Tributyltin (TBT) compounds and Triphenyltin (TPT) compounds, Dibutyltin (DBT) compounds and Dioctyltin (DOT) compounds in consumer products or part of a consumer product shall not be in a concentration of greater than 0.1% by weight of tin. Articles not complying with the ban shall not be placed on the market after the effective date. Articles that were already in use in the Community before the effective date are not banned. The effective dates can be found in the [SGS Safeguard EU Bans Certain Organotin Compounds in Consumer Products](#).

Impact on the textile industry

Organotin compounds contain at least one bond between the tin and carbon atoms. Most of these compounds are used in three major textile applications: PVC Heat Stabilizers, catalysts and Biocides.

1. PVC Heat Stabilizers

Mono- and di-organotins are used extensively as heat stabilizers for processing polyvinyl chloride (PVC). The main purpose of these stabilizers is to reduce the polymer degradation during high temperature processing. The major tin stabilizers used include Dimethyltin (DMT), Dibutyltin (DBT), and Dioctyl tin (DOT) compounds.



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2. Catalysts

The most common applications of organotin compounds is to speed up chemical reactions, especially polymerization of polyurethane, polyester and silicones. The most common organotin-based catalyst is Dibutyltin (DBT). As curing catalysts, the largest use of Dibutyltin (DBT) is for urethane coatings and polyurethane foam production. It also is used for esterification and transesterification reactions, such as in the production of polyesters.

3. Biocides

Organotin compounds are used as active ingredients in anti-fouling agents, fungicides, insecticides, and bactericides. Tributyltin (TBT), is sometimes applied to socks, shoes and sportswear for its anti-microbial function c.q. to prevent unpleasant odours caused by sweat. Due to its highly toxic potential, the use has been phased out.

Harmful effects to human

In recent years there has been a great concern over the use of organotin compounds.

The use of organotin compounds in consumer articles has been found to pose a risk to human health, particularly for children. The specific published human health are:

- Possible damage to liver & kidney organs,
- Possible disruption of biochemical process such as blood-forming mechanisms,
- Possible disruption of the enzyme system.

The textile industry has applied organotin compounds to a wide range of textile products like sanitary towels, nappies (diapers), tents, carpets and synthetic clothing (e.g. underwear, socks and sportswear). Due to the new EU legislation, time is running out to determine to what extent your products containing organotin compounds. SGS provides a range of services, including analytical testing and consultancy, for Organotin compounds. SGS services cover a wide range of consumer products for the EU and worldwide markets. Please do not hesitate to contact us for further information.



Reference:

1. Commission Decision 2009/425/EC, Official Journal of the European Union of 4 June 2009.
2. Development of an integrated approach for the removal of tributyltin (TBT) from waterways and harbours: Prevention, treatment and reuse of TBT contaminated sediments – Environmental, Research, Center (ERC).
3. Environmental Contamination and Analytical Methodology - IUCT Annual Report 2000
4. Risk assessment studies on targeted consumer applications of certain organotin compounds. [RPA study](#) finalised in September 2005.

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