



Technical Information Sheet TIS 19

(previously BTI4)

Compliance of Azote Foams with Standards for Toy Safety

Toy safety standards are designed to prevent and limit injuries and health risks incurred during playing with toys. The EEC agreed a toy safety directive in 1988 (titled 1988/378/EEC) which was amended in 1993 by directive 1993/68/EEC to cover the requirements of CE marking. The directive defines essential requirements of products and materials intended for use in play by children under 14 years of age including physical, mechanical, chemical and electrical properties, flammability, hygiene and radioactivity.

The requirements of this directive have been converted into a European Standard under the designation EN 71: Safety of toys and an International Standard under the designation ISO 8124: Safety of toys. Both standards are divided into several parts which cover the requirements and testing for specific properties.

Most of these tests and regard the properties of the finished toy and are therefore not applicable to the foam on its own. The only subject which can be applied to the foam is the information regarding toxicity.

Certain heavy metals which are known to have adverse effects on the health have been restricted for use in materials utilised in toy manufacture. Directive 1988/378/EEC states maximal levels of bioavailability of these elements. The limits given in Part 3: Migration of certain elements of EN 71 and ISO 8124 respectively in mg/kg of toy are based on the bioavailability limits stated in directive 1988/378/EEC. The test method in these standards takes into account that not all of the elements detected by some "total analysis methods" are necessarily bio-available.

The elements restricted under these standards are Antimony (Sb), Arsenic (As), Barium (Ba), Cadmium (Cd), Chromium (Cr), Lead (Pb), Mercury (Hg) and Selenium (Se) and limits for soluble amounts are given below:

Antimony	< 60 mg/kg	Chromium	< 60 mg/kg
Arsenic	< 25 mg/kg	Lead	< 90 mg/kg
Barium	< 1000 mg/kg	Mercury	< 60 mg/kg
Cadmium	< 75 mg/kg	Selenium	< 500 mg/kg

With the exception of Antimony which is present in the fire retardant grades (designations FR, FM and FB) Zotefoams plc does not use any of these metals in the formulation of our foams.

Confirmatory analytical tests as described in these standards have been performed by an independent test laboratory. Samples from the following ranges have been tested :

Plastazote® grades: LD, HD, HL, MP
 Evazote® grades: EV, VA
 Supazote® EM
 Propozote® PPA

Samples from these ranges have been tested in various colours as well as fire retardant and conductive grades. All products from the Azote product range were shown to comply with the requirements of EN 71-3:1994 and ISO 8124-3:1997. Copies of the relevant test reports are available on request.

A further section of BS EN 71, newly introduced in 2005, also limits the amounts of certain organic chemical compounds in materials used for manufacturing toys. BS EN 71 Part 9 sets out the requirements for materials suitable for use in toys.

Polymeric materials are required to comply with the limit tables for monomers (2D), migration of solvents (2E), inhalation of solvents (2F) and plasticizers (2I) dependent on the intended use of the toy. Below is a summary of the compounds listed in these tables.

Table 2D	Table 2E	Table 2F	Table 2I
Acrylamide	Trichloroethylene	Toluene	Triphenyl phosphate
Bisphenol A	Dichloromethane	Ethylbenzene	Tri- <i>o</i> -cresyl phosphate
Formaldehyde	2-Methoxyethyl acetate	Xylene (all isomers)	Tri- <i>m</i> -cresyl phosphate
Phenol	2-Ethoxyethanol	1,3,5-Trimethylbenzene (mesitylene)	Tri- <i>p</i> -cresyl phosphate
Styrene	2-Ethoxyethyl acetate	Trichloroethylene	
	Bis(2-methoxyethyl) ether	Dichloromethane	
	2-Methoxypropyl acetate	n-Hexane	
	Methanol	Nitrobenzene	
	Nitrobenzene	Cyclohexanone	
	Cyclohexanone	3,5,5-Trimethyl-2-cyclohexene-1-one	
	3,5,5-Trimethyl-2-cyclohexene-1-one		
	Toluene		
	Ethylbenzene		
	Xylene (all isomers)		

BS EN 71-9 lists limits for the substances above.

To date no tests have been carried out to confirm that any of these substances are present in Zotefoams materials. It should be noted however that **none of the substances listed are included in the formulation of any of Zotefoams foam grades nor are they knowingly added at any stage of the manufacturing process.** We therefore consider our materials to be free of these substances.

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**ISO 9001:2000
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**ISO 14001
EMS 36270**

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