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A NEW STANDARD FOR PHTHALATES IN TEXTILE PRODUCT: ISO 14389: 2014

In May 2014, an international standard ISO 14389:2014 Textiles – Determination of phthalate content – Tetrahydrofuran method was published and supersedes the European standard EN 15777:2009 which was withdrawn in July 2014.

EN 15777:2009 was the first European standard to determinate phthalate content in textile products.¹ This standard covers a method for determination of phthalates in printed or coated fabric using a correction calculation based on the mass of the print to the mass of the whole sample. Recently, a new standard ISO 14389:2014 was issued and supersedes EN 15777. The new standard uses the correction calculation method whereas a different extraction method is used. Under the new standard, phthalates are extracted using a dissolution technique which aligns with the extraction method in CPSC-CH-C1001-09.3. Table 1 summarizes the major difference compared with the superseded harmonized standard EN 15777 and CPSC-CH-C1001-09.3.



TABLE 1: COMPARISON BETWEEN ISO 14389, EN 15777 AND CPSC-CH-C1001-09.3

	EN 15777:2009	CPSC-CH-C1001-09.3	ISO 14389:2014
Scope	Textile articles	Toys and childcare articles	Textile articles
Target phthalates	DINP, DEHP, DNOP, DIDP, BBP, DBP (6 phthalates)	DINP, DEHP, DNOP, DIDP, BBP, DBP (6 phthalates)	DINP, DEHP, DNOP, DIDP, BBP, DBP, DPP, DIHP, DIBP, DMEP (10 phthalates)
Extraction method	Soxhlet extraction	Sonication	Ultrasonication
Extraction solvent	Hexane	THF	THF
Extraction time	1 hour	30 mins	4 hours
Analytical instrument	GC-MS	GC-MS	GC-MS
Calculation method	Based on the mass of the print/ coating to the mass of the whole sample.	Based on the mass of the whole sample.	Based on the mass of the print/ coating to the mass of the whole sample.

¹ [SGS-Safeguard 039/10](#)

Phthalates, esters of ortho-phthalic acid, are a group of organic compounds used as plasticizers to increase softness of plastic, especially PVC. In the clothing industry, they can be found in synthetic leather, buttons, coated fabric, plastisol and dye printing. Due to the toxicological concern caused by phthalates, certain phthalates in toys and childcare articles are regulated in EU and USA.² In addition to these

markets, they also are restricted in some Asian countries such as Korea³ and Taiwan⁴ and emerging countries, such as, Egypt⁵ and Turkey⁶. Table 2 summarizes the regulation of phthalates in different countries.

TABLE 2: REGULATION OF PHTHALATES IN DIFFERENT COUNTRIES

COUNTRY	REFERENCE FOR RESTRICTION	REQUIREMENT
EU	REACH Annex XVII	<ul style="list-style-type: none"> Toy and childcare articles DEHP+DBP+BBP \leq0.1% (sum) Toys and childcare articles that can be placed in a child's mouth DINP+DIDP+DNOP \leq0.1% (sum)
	SVHC Candidate List	DEHP, DBP, BBP, DIBP, DIHP, DHNUP, DnHP, DMEP, DnPP, DIPP, NPIPP, DPP, DHP \leq 0.1 % per article (each)
USA	Public Law 110-314 (CPSIA)	<ul style="list-style-type: none"> Toy and childcare articles DEHP, DBP, BBP \leq0.1 % (each) Toys and childcare articles that can be placed in a child's mouth DINP, DIDP, DNOP \leq0.1 % (each)
Korea	Self Regulatory Safety Confirmation Act	Infant textile products DEHP+ BBP+DBP+DINP+DNOP+DIDP \leq 0.1% (sum)
	Safety Quality Mark Act	<ul style="list-style-type: none"> Infant leather products DEHP+ BBP+DBP+DINP+DNOP+DIDP \leq0.1% (sum) Children textile & leather products DEHP+BBP+DBP \leq0.1% (sum)
Taiwan	CNS 3478, CNS 8634, CNS 10632	Plastic and leather footwear DEHP+DBP+BBP+DINP+DIDP+DNOP \leq 0.1 (sum)
	CNS 15503	Children products DEHP+DBP+BBP+DINP+DIDP+DNOP+DEP+DMP \leq 0.1 (sum)
Egypt	ES 7562	<ul style="list-style-type: none"> Toy and childcare articles DEHP+DBP+BBP \leq0.1% (sum) Toy and childcare articles that can be placed in a child's mouth DINP+DIDP+DNOP \leq0.1% (sum)
	ES 7266-4, ES7322	Children products DEHP, DBP, BBP, DNOP, DINP, DIDP \leq 0.1% (each)
Turkey	Turkey Official Gazette No. 27893	DEHP + DBP + BBP + DINP + DIDP +DNOP \leq 0.1% (sum)

² [SGS-Safeguard 168/09](#)

³ [SGS-Safeguard 004/13](#), [SGS-Safeguard 092/11](#), [SGS-Safeguard 051/10](#)

⁴ [SGS-Safeguard 086/11](#)

⁵ [SGS-Safeguard 104/13](#), [SGS-Safeguard 092/12](#), [SGS-Safeguard 031/12](#)

⁶ [SGS-Safeguard 037/13](#)

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