

TESTING OF MURFITTS SBR TO EN 71 SAFETY OF TOYS

CLIENT	Murfitts Industries Ltd
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REPORT NUMBER	LSUK.15-0825	
REPORTED BY		James Blackburn Technical Director
APPROVED BY		Dr Colin Young Managing Director

SUMMARY OF REPORT	<p>Toxicology test according to EN 71-3 - <i>Safety of toys Part 3: Migration of certain elements</i> has been carried out on a rubber sample supplied by Murfitts Industries Ltd.</p> <p>The Toy Safety Directive (2009/48/EC) [1] specifies maximum migration limits for three categories of toy materials. The limits for the migration of certain elements are expressed in milligram per kilogram toy material. The purpose of the limits is to minimise children's exposure to certain potentially toxic elements. The EN 71-3 concerns all toys and materials that might be ingested.</p>
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SCOPE OF TESTING	Determination of migration of certain elements in accordance with EN 71-3:2013+A1:2014
TEST PROCEDURE/STANDARDS	<p>EN 71-3:2013+A1:2014 Migration of Certain Elements</p> <p>Soluble elements are extracted from materials using conditions which simulate the material remaining in contact with gastric juices for a period of time after swallowing. The concentrations of the soluble elements are determined quantitatively by two different methods:</p> <ol style="list-style-type: none"> 1. Method for determining general elements: Aluminium, Antimony, Arsenic, Barium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Mercury, Nickel, Selenium, Strontium, Tin and Zinc; 2. Method for determining Chromium (III) and Chromium (VI); <p>The standard contains requirements for the migration of certain elements from the following categories of toy materials:</p> <p>Category I: Dry, brittle, powder like or pliable materials; Category II: Liquid or sticky materials; Category III: Scraped-off materials.</p> <p>See table 2 for determination of relevant category to material tested.</p>
PRODUCT DETAILS / DESCRIPTION	A sample of SBR granulate supplied by Murfitts Industries Ltd.

<p>TEST CONDITIONS</p>	<p>The test samples were tested at 23 ± 2 °C and 50 ± 10 % relative humidity and conditioned for a minimum of 24 hours prior to testing commencement.</p>
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TEST RESULTS EN71-3 MIGRATION OF CERTAIN ELEMENTS

ELEMENT	UNITS	TEST METHOD	RESULTS	REQUIREMENTS			PASS/FAIL
				CATEGORY 1	CATEGORY 2	CATEGORY 3	
ALUMINIUM	mg/kg	EN ISO 11885	25.7	5625	1406	70000	PASS
ANTIMONY	mg/kg	EN ISO 11885	<0.5	45	11.3	560	PASS
ARSENIC	mg/kg	EN ISO 11885	<0.5	3.8	0.9	47	PASS
BIARIUM	mg/kg	EN ISO 11885	2.6	1500	375	18750	PASS
BORON	mg/kg	EN ISO 17294-1 & 2	11.5	1200	300	15000	PASS
CADMIUM	mg/kg	EN ISO 17294-1 & 2	<0.5	1.3	0.3	17	PASS
COBALT	mg/kg	EN ISO 11885	0.7	10.5	2.6	130	PASS
COPPER	mg/kg	EN ISO 11885	39.2	622.5	156	7700	PASS
LEAD	mg/kg	EN ISO 11885	<0.5	13.5	3.4	160	PASS
MANGANESE	mg/kg	EN ISO 11885	2.6	1200	300	15000	PASS
MERCURY	mg/kg	EN ISO 17294-1 & 2	<0.5	7.5	1.9	94	PASS
NICKEL	mg/kg	EN ISO 11885	<0.5	75	18.8	930	PASS
SELENIUM	mg/kg	EN ISO 11885	<0.5	37.5	9.4	460	PASS
STRONTIUM	mg/kg	EN ISO 17294-1 & 2	0.6	4500	1125	56000	PASS
TIN	mg/kg	EN ISO 11885	<0.5	15000	3750	180000	PASS
ZINC	mg/kg	EN ISO 11885	491	3750	938	46000	PASS
CHROMIUM III	mg/kg	NF T 90-043	<0.5	37.5	9.4	460	PASS
CHROMIUM VI	mg/kg	NF T 90-043	<0.004	0.02	0.005	0.2	PASS

CROSS REFERENCE TABLE FOR DETERMINING CATEGORY

TOY MATERIAL	CATEGORY 1	CATEGORY 2	CATEGORY 3
COATINGS OF PAINTS, VARNISHES, LACQUERS, PRINTING INKS, POLYMERS, FOAMS AND SIMILAR COATINGS			X
POLYMERIC AND SIMILAR MATERIALS, INCLUDING LAMINATES, WHETHER TEXTILE REINFORCED OR NOT, BUT EXCLUDING OTHER TEXTILES			X
PAPER AND PAPER BOARD			X
TEXTILES, WHETHER NATURAL OR SYNTHETIC			X
GLASS, CERAMIC, METALLIC MATERIALS			X
OTHER MATERIALS WHETHER MASS COLOURED OR NOT (E.G. WOOD, FIBRE BOARD, HARD BOARD, BONE AND LEATHER)			X
COMPRESSED PAINT TABLETS, MATERIALS INTENDED TO LEAVE A TRACE OR SIMILAR MATERIALS IN SOLID FORM APPEARING AS SUCH IN THE TOY (E.G. THE CORES OF COLOURING PENCILS, CHALK, CRAYONS)	X		
PLIABLE MODELLING MATERIALS, INCLUDING MODELLING CLAYS AND PLASTER [3]	X		
LIQUID PAINTS, INCLUDING FINGER PAINTS, VARNISHES, LACQUERS, LIQUID INK IN PENS AND SIMILAR MATERIALS IN LIQUID FORM APPEARING AS SUCH IN THE TOY (E.G., SLIMES, BUBBLE SOLUTION)		X	
GLUE STICKS		X	

<p>CONCLUSIONS</p>	<p>The submitted sample complied with the requirements of EN 71-3:2013+A1:2014 Migration of certain elements for categories 1, 2 and 3.</p>
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