

Products

Report No.: 0144087948a 001

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Client:

Test item(s): Toys  
Identification/  
Model No(s): 4  
Sample Receiving date: 2016-01-05, 2016-01-13, 2016-01-19  
Testing Period: 2016-01-06 - 2016-01-20

Test Specification:

1. EN 71 - 1 : 2014 Mechanical and physical properties
2. 2009/48/EC CE marking
3. 2009/48/EC Labeling Requirement  
(Importer/ Manufacturer Mark, Product Identification, Washing/ Cleaning instruction)
4. EN 71 - 2 : 2011+A1 :2014 Flammability
5. EN71-3:2013+A1:2014 Migration of 19 Elements
6. Organic Tin content - EN71-3:2013+A1:2014
7. BBP, DBP, DEHP content and DNOP, DINP, DIDP content requirements of REACH regulation (EC) No. 1907/2006 and amendment no. 552/2009 Annex XVII Item 51 & 52 respectively (formerly known as 2005/84/EC)
8. CPSIA Sect 108 : Phthalates

Test result:

PASS  
PASS  
Please refer to page 5  
PASS  
PASS  
PASS  
PASS  
PASS

Other information:

Our reference no. of this report: 0144089135, 0144089663

Packaging provided: Yes

The provided age grade of the item(s) : 3+  
The appropriate age grade of the item(s) : For age over 3 years.  
The item(s) was/ were tested for the age of over 3 years.

For and on behalf of  
TÜV Rheinland Hong Kong Ltd.

2016-01-22  T. Wai Keung, William / Unit Senior Manager

Date Name/Position

Test result is drawn according to the kind and extent of tests performed.  
This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

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## Material List:

Item:

Item no.:

Material No.	Material	Color	Location
M001	Whole Product	Multicolor	Whole Product
M002	Coating	Multicolor	Instruction booklet
M003	Paper + coating	White+Multicolor	Instruction booklet
M004	Plastic	Clear	Mirror
M005	Plastic	White	Body
M006	Plastic	Violet	Body
M007	Plastic	Clear	Screen
M008	Plastic	Black	Switch
M009	Plastic	Clear	Suction cup
M010	Plastic	Clear	Cord
M011	Plastic + plating	Clear+Silvery	Mirror
M023	Plastic	Reddish brown	Inner button
M024	Plastic	Black	Inner button
M025	Plastic	Clear	LED
M026	Plastic + coating	Brown+Blue/White	PCB
M027	Plastic + coating	Light khaki+Blue/White	PCB
M028	Paper + adhesive	White	Mirror
M029	Plastic + printing + paper + adhesive	Clear+Multicolor+White	Sticker
M030	Glass	Clear	Gem
M031	Plastic	Red	Wire jacket - long
M032	Plastic	Yellow	Wire jacket - long
M033	Plastic	Deep green	Wire jacket - long
M034	Plastic	Light blue	Wire jacket - long
M035	Plastic	Purple	Wire jacket - long
M036	Plastic	Black	Wire jacket - long
M037	Plastic	Light blue	Wire jacket - short
M038	Plastic	Deep green	Wire jacket - short
M039	Plastic	Grey	Wire jacket

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M040	Plastic	Red	Wire jacket - thick
M041	Plastic	Black	Wire jacket - thick
M042	Plastic	White	Wire jacket
M043	Plastic	Clear	Hot melt glue (new)

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**1. EN71 - 1:2014 Mechanical and physical properties****Test result:**

	Test No:	T001
	Material No:	M001
<b>4. General requirements</b>		
4.1 Material cleanliness		PASS
4.7 Edges		PASS
4.8 Points and metallic wires		PASS
<b>6. Packaging</b>		
<b>7. Warnings, markings and instructions for use</b>		
7.1 General		PASS
7.2 Toys not intended for children under 36 months		PASS

The clause and/or sub-clause would be indicated only in the test report whichever applicable. The comprehensive result report is available upon request.

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**2. 2009/48/EC CE Marking**

**Test result:**

	Test No:	T001
	Material No:	M001
CE-marking		PASS

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**3. 2009/48/EC Labeling Requirement (Importer/ Manufacturer Mark, Product Identification, Washing/ Cleaning instruction)**
**Test result:**

Test No:	T001
Material No:	M001
Importer/ Manufacturer Mark (European Company name and address)+	Present(Product and Package)
Product Identification - type, batch, serial or model number+	Present(Product and Package)
Washing/ Cleaning instruction <sup>A</sup>	Not Applicable

**Remark:**

- \* Only the English version of the marking and instructions were assessed. According to the standard, instruction and other texts required by the standard should be written in the official language(s) of the country in which the product is to be sold.
- + These labeling shall be indicated on the toy, or where that is not possible, on its packaging or in documents accompanying the toys.

The correct adherence to all requirements according to directive 2009/48/EC in regards to the marking (name or trademark and contact address of the manufacturer respectively the marking for identification [type, batch, model or serial no.]of the toy can only be confirmed by the manufacturer, his delegate or the person who brings it onto the market. The marked article were assessed, however, they can not be evaluated in the frame of this test.

- <sup>A</sup> According to Directive 2009/48/EC, a toy intended for use by children under 36 months must be designed and manufactured in such a way that it can be cleaned. A textile toy shall, to this end, be washable, except if it contains a mechanism that may be damaged if soak washed. The toy shall fulfill the safety requirements also after having been cleaned in accordance with this point and the manufacturer's instructions.

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**4. EN 71 - 2: 2011+A1 :2014 Flammability**

**Test result:**

	Test No:	T001
	Material No:	M001
4.1 General		PASS

The clause and/or sub-clause would be indicated only in the test report whichever applicable. The comprehensive result report is available upon request.

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**5. EN71-3:2013+A1:2014 Migration of 19 Elements**

Test Method: with reference to EN71-3:2013+A1:2014, for inorganic elements, analyzed by ICP-OES or ICP-MS.

**3) For scraped-off toy materials:**

Test Parameter	Unit	RL	Regulatory Requirement	Test No.	T001	T002	T003
				Material No.	M003	M004	M005
				Result	Result	Result	Result
Aluminium (Al)	mg/kg	10	70000	14	n.d.	n.d.	n.d.
Antimony (Sb)	mg/kg	1	560	n.d.	n.d.	n.d.	n.d.
Arsenic (As)	mg/kg	1	47	n.d.	n.d.	n.d.	n.d.
Barium (Ba)	mg/kg	2.5	18750	10.2	n.d.	n.d.	n.d.
Boron (B)	mg/kg	10	15000	n.d.	n.d.	n.d.	n.d.
Cadmium (Cd)	mg/kg	1	17	n.d.	n.d.	n.d.	n.d.
Chromium (Cr)	mg/kg	0.15	-	n.d.	n.d.	n.d.	n.d.
Chromium (III) (Cr (III))§	mg/kg	0.15	460	-	-	-	-
Chromium (VI) (Cr (VI))§	mg/kg	0.15	0.2	-	-	-	-
Cobalt (Co)	mg/kg	2.5	130	n.d.	n.d.	n.d.	n.d.
Copper (Cu)	mg/kg	2.5	7700	n.d.	n.d.	n.d.	n.d.
Lead (Pb)	mg/kg	2.5	160	n.d.	n.d.	n.d.	n.d.
Manganese (Mn)	mg/kg	2.5	15000	4.0	n.d.	n.d.	n.d.
Mercury (Hg)	mg/kg	1	94	n.d.	n.d.	n.d.	n.d.
Nickel (Ni)	mg/kg	2.5	930	n.d.	n.d.	n.d.	n.d.
Selenium (Se)	mg/kg	2.5	460	n.d.	n.d.	n.d.	n.d.
Strontium (Sr)	mg/kg	2.5	56000	107	n.d.	n.d.	n.d.
Tin (Sn)	mg/kg	1.0	180000	n.d.	1.95	n.d.	n.d.
Organic Tin <sup>A</sup>	mg/kg	1.0	12	-	-	-	-
Zinc (Zn)	mg/kg	10	46000	n.d.	n.d.	n.d.	n.d.



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				Test No.	T004	T005	T006
				Material No.	M006	M007	M008
Test Parameter	Unit	RL	Regulatory Requirement	Result	Result	Result	Result
Aluminium (Al)	mg/kg	10	70000	n.d.	n.d.	n.d.	n.d.
Antimony (Sb)	mg/kg	1	560	n.d.	n.d.	n.d.	n.d.
Arsenic (As)	mg/kg	1	47	n.d.	n.d.	n.d.	n.d.
Barium (Ba)	mg/kg	2.5	18750	n.d.	n.d.	n.d.	n.d.
Boron (B)	mg/kg	10	15000	n.d.	n.d.	n.d.	n.d.
Cadmium (Cd)	mg/kg	1	17	n.d.	n.d.	n.d.	n.d.
Chromium (Cr)	mg/kg	0.15	-	n.d.	n.d.	n.d.	n.d.
Chromium (III) (Cr (III))§	mg/kg	0.15	460	-	-	-	-
Chromium (VI) (Cr (VI))§	mg/kg	0.15	0.2	-	-	-	-
Cobalt (Co)	mg/kg	2.5	130	n.d.	n.d.	n.d.	n.d.
Copper (Cu)	mg/kg	2.5	7700	n.d.	n.d.	n.d.	n.d.
Lead (Pb)	mg/kg	2.5	160	n.d.	n.d.	n.d.	n.d.
Manganese (Mn)	mg/kg	2.5	15000	n.d.	n.d.	n.d.	n.d.
Mercury (Hg)	mg/kg	1	94	n.d.	n.d.	n.d.	n.d.
Nickel (Ni)	mg/kg	2.5	930	n.d.	n.d.	n.d.	n.d.
Selenium (Se)	mg/kg	2.5	460	n.d.	n.d.	n.d.	n.d.
Strontium (Sr)	mg/kg	2.5	56000	n.d.	n.d.	n.d.	n.d.
Tin (Sn)	mg/kg	1.0	180000	1.23	n.d.	2.27	n.d.
Organic Tin <sup>A</sup>	mg/kg	1.0	12	-	-	-	-
Zinc (Zn)	mg/kg	10	46000	n.d.	n.d.	n.d.	n.d.

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Test No.				T007	T008 (*1)(40mg)	T009 (*1)(79mg)
Material No.				M009	M010	M028
Test Parameter	Unit	RL	Regulatory Requirement	Result	Result	Result
Aluminium (Al)	mg/kg	10	70000	n.d.	n.d.	380
Antimony (Sb)	mg/kg	1	560	n.d.	n.d.	n.d.
Arsenic (As)	mg/kg	1	47	n.d.	n.d.	n.d.
Barium (Ba)	mg/kg	2.5	18750	n.d.	n.d.	7.2
Boron (B)	mg/kg	10	15000	n.d.	n.d.	n.d.
Cadmium (Cd)	mg/kg	1	17	n.d.	n.d.	n.d.
Chromium (Cr)	mg/kg	0.15	-	n.d.	n.d.	n.d.
Chromium (III) (Cr (III))§	mg/kg	0.15	460	-	-	-
Chromium (VI) (Cr (VI))§	mg/kg	0.15	0.2	-	-	-
Cobalt (Co)	mg/kg	2.5	130	n.d.	n.d.	n.d.
Copper (Cu)	mg/kg	2.5	7700	n.d.	n.d.	2.9
Lead (Pb)	mg/kg	2.5	160	n.d.	n.d.	n.d.
Manganese (Mn)	mg/kg	2.5	15000	n.d.	n.d.	6.8
Mercury (Hg)	mg/kg	1	94	n.d.	n.d.	n.d.
Nickel (Ni)	mg/kg	2.5	930	n.d.	n.d.	n.d.
Selenium (Se)	mg/kg	2.5	460	n.d.	n.d.	n.d.
Strontium (Sr)	mg/kg	2.5	56000	n.d.	n.d.	34.3
Tin (Sn)	mg/kg	1.0	180000	67.2	1.81	2.84
Organic Tin <sup>A</sup>	mg/kg	1.0	12	8.0 (*2)	-	-
Zinc (Zn)	mg/kg	10	46000	n.d.	n.d.	n.d.

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				Test No.	T010	T011
				Material No.	M029	M030
Test Parameter	Unit	RL	Regulatory Requirement	Result	Result	Result
Aluminium (Al)	mg/kg	10	70000	47	n.d.	n.d.
Antimony (Sb)	mg/kg	1	560	n.d.	n.d.	n.d.
Arsenic (As)	mg/kg	1	47	n.d.	n.d.	n.d.
Barium (Ba)	mg/kg	2.5	18750	n.d.	n.d.	n.d.
Boron (B)	mg/kg	10	15000	n.d.	n.d.	n.d.
Cadmium (Cd)	mg/kg	1	17	n.d.	n.d.	n.d.
Chromium (Cr)	mg/kg	0.15	-	n.d.	n.d.	n.d.
Chromium (III) (Cr (III))§	mg/kg	0.15	460	-	-	-
Chromium (VI) (Cr (VI))§	mg/kg	0.15	0.2	-	-	-
Cobalt (Co)	mg/kg	2.5	130	n.d.	n.d.	n.d.
Copper (Cu)	mg/kg	2.5	7700	n.d.	n.d.	n.d.
Lead (Pb)	mg/kg	2.5	160	n.d.	n.d.	n.d.
Manganese (Mn)	mg/kg	2.5	15000	6.3	n.d.	n.d.
Mercury (Hg)	mg/kg	1	94	n.d.	n.d.	n.d.
Nickel (Ni)	mg/kg	2.5	930	n.d.	n.d.	n.d.
Selenium (Se)	mg/kg	2.5	460	n.d.	n.d.	n.d.
Strontium (Sr)	mg/kg	2.5	56000	43.2	n.d.	n.d.
Tin (Sn)	mg/kg	1.0	180000	n.d.	n.d.	n.d.
Organic Tin <sup>^</sup>	mg/kg	1.0	12	-	-	-
Zinc (Zn)	mg/kg	10	46000	n.d.	n.d.	n.d.

**Abbreviation:** n.d. = Not Detected (< RL)  
 RL = Reporting Limit  
 mg/kg denotes milligram per kilogram  
 § denotes Cr(III) and Cr(VI) are not necessary to be determined when the Combined Chromium concentration value is less than the requirement  
 ^ denotes Organic tin are not necessary to be determined when the Tin concentration is less than calculated limit (3.9 mg/kg) or the components were confirmed to be pure metal

**Remark:**

- \*1 According to EN71- 3:2013+A1:2014, the weight of test portion was less than 100mg, but greater than 10mg. The result was calculated as if 100mg of the samples were available.
- \*2 Confirmation of Organic tin content has been performed. Result can refer to subsequent page(s) for details.

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**6.Organic Tin content**

Test Method: EN71-3: 2013 + A1:2014, analyzed by GC-MS

**Test Result:**

Test No.		T007	
Material No.		M009	
Test Parameter	Unit	RL	Result
MeT (Methyltin cation)	mg/kg	0.2	8.0
BuT (Butyltin cation)	mg/kg	0.2	n.d.
DBT (Dibutyltin cation)	mg/kg	0.2	n.d.
TBT (Tributyltin cation)	mg/kg	0.2	n.d.
TeBT (Tetrabutyltin cation)	mg/kg	0.2	n.d.
MOT (Monooctyltin cation)	mg/kg	0.2	n.d.
DOT (Dioctyltin cation)	mg/kg	0.2	n.d.
DProT (Dipropyltin cation)	mg/kg	0.2	n.d.
DPhT (Diphenyltin cation)	mg/kg	0.2	n.d.
TPhT (Triphenyltin cation)	mg/kg	0.2	n.d.
Sum of Organic tin cations	mg/kg	--	8.0
Category*	NA	NA	3
Limit	mg/kg	NA	12

Note: The weight of the organotin cations were expressed in terms of Tributyltin (TBT) cation

**Abbreviation:** n.d. = not detected (< Reporting Limit)  
 RL = Reporting Limit  
 NA = Not Applicable  
 mg/kg = milligram per kilogram

**Remark:**

\* According to EN71-3:2013+A1:2014, section 4.2, the sum of migration of organic tin shall not exceed the migration limits as below:

Category	Category I	Category II	Category III
Scope	Dry, brittle, powder-like or pliable toy materials	Liquid or sticky toy materials	Scraped-off toy materials
Limit	0.9mg/kg	0.2mg/kg	12mg/kg

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**7. Phthalates**

Test Method: Organic solvent extraction, analyzed by GCMS

**Test Result:**

					Test No.	T001	T002	T003
					Material No.	M002	M005 + M006	M007 + M008
Test Parameter	CAS NO	Unit	RL	Regulatory Requirement	Result	Result	Result	
Dibutyl phthalate (DBP)	84-74-2	%	0.005	--	n.d.	n.d.	n.d.	
Benzylbutyl phthalate (BBP)	85-68-7	%	0.005	--	n.d.	n.d.	n.d.	
Diethylhexyl phthalate (DEHP)	117-81-7	%	0.005	--	n.d.	n.d.	n.d.	
Sum (DBP+BBP+DEHP)	-	%	NA	0.1	n.d.	n.d.	n.d.	
Di-n-octyl phthalate (DNOP)	117-84-0	%	0.005	--	n.d.	n.d.	n.d.	
Diisodecyl phthalate (DIDP)	26761-40-0, 68515-49-1	%	0.005	--	n.d.	n.d.	n.d.	
Diisononyl phthalate (DINP)	28553-12-0, 68515-48-0	%	0.005	--	n.d.	n.d.	n.d.	
Sum (DNOP+DIDP+DINP)	-	%	NA	0.1	n.d.	n.d.	n.d.	

					Test No.	T004	T005	T011
					Material No.	M009 + M010	M011	M024 + M025
Test Parameter	CAS NO	Unit	RL	Regulatory Requirement	Result	Result	Result	
Dibutyl phthalate (DBP)	84-74-2	%	0.005	--	n.d.	n.d.	n.d.	
Benzylbutyl phthalate (BBP)	85-68-7	%	0.005	--	n.d.	n.d.	n.d.	
Diethylhexyl phthalate (DEHP)	117-81-7	%	0.005	--	n.d.	n.d.	n.d.	
Sum (DBP+BBP+DEHP)	-	%	NA	0.1	n.d.	n.d.	n.d.	
Di-n-octyl phthalate (DNOP)	117-84-0	%	0.005	--	n.d.	n.d.	n.d.	
Diisodecyl phthalate (DIDP)	26761-40-0, 68515-49-1	%	0.005	--	n.d.	n.d.	n.d.	
Diisononyl phthalate (DINP)	28553-12-0, 68515-48-0	%	0.005	--	n.d.	n.d.	n.d.	
Sum (DNOP+DIDP+DINP)	-	%	NA	0.1	n.d.	n.d.	n.d.	

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					Test No.	T012	T013	T014
					Material No.	M026 + M027	M028	M029
Test Parameter	CAS NO	Unit	RL	Regulatory Requirement	Result	Result	Result	
Dibutyl phthalate (DBP)	84-74-2	%	0.005	--	n.d.	n.d.	n.d.	
Benzylbutyl phthalate (BBP)	85-68-7	%	0.005	--	n.d.	n.d.	n.d.	
Diethylhexyl phthalate (DEHP)	117-81-7	%	0.005	--	n.d.	n.d.	n.d.	
Sum (DBP+BBP+DEHP)	-	%	NA	0.1	n.d.	n.d.	n.d.	
Di-n-octyl phthalate (DNOP)	117-84-0	%	0.005	--	n.d.	n.d.	n.d.	
Diisodecyl phthalate (DIDP)	26761-40-0, 68515-49-1	%	0.005	--	n.d.	n.d.	n.d.	
Diisononyl phthalate (DINP)	28553-12-0, 68515-48-0	%	0.005	--	n.d.	n.d.	n.d.	
Sum (DNOP+DIDP+DINP)	-	%	NA	0.1	n.d.	n.d.	n.d.	

					Test No.	T016	T017	T018
					Material No.	M023	M031 + M032 + M033	M034 + M035 + M036
Test Parameter	CAS NO	Unit	RL	Regulatory Requirement	Result	Result	Result	
Dibutyl phthalate (DBP)	84-74-2	%	0.005	--	n.d.	n.d.	n.d.	
Benzylbutyl phthalate (BBP)	85-68-7	%	0.005	--	n.d.	n.d.	n.d.	
Diethylhexyl phthalate (DEHP)	117-81-7	%	0.005	--	n.d.	n.d.	n.d.	
Sum (DBP+BBP+DEHP)	-	%	NA	0.1	n.d.	n.d.	n.d.	
Di-n-octyl phthalate (DNOP)	117-84-0	%	0.005	--	n.d.	n.d.	n.d.	
Diisodecyl phthalate (DIDP)	26761-40-0, 68515-49-1	%	0.005	--	n.d.	n.d.	n.d.	
Diisononyl phthalate (DINP)	28553-12-0, 68515-48-0	%	0.005	--	n.d.	n.d.	n.d.	
Sum (DNOP+DIDP+DINP)	-	%	NA	0.1	n.d.	n.d.	n.d.	

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## 8.CPSIA Sect 108: Phthalates

CPSIA Sect. 108	Phthalates	PASS
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Test Method: CPSC-CH-C1001-09.3

## Result:

Test Parameter	CAS NO	Unit	RL	Regulatory Requirement	Test No.	T001	T002	T003
					Material No.	M002	M005 + M006	M007 + M008
Dibutyl phthalate (DBP)	84-74-2	%	0.005	0.1		n.d.	n.d.	n.d.
Benzylbutyl phthalate (BBP)	85-68-7	%	0.005	0.1		n.d.	n.d.	n.d.
Diethylhexyl phthalate (DEHP)	117-81-7	%	0.005	0.1		n.d.	n.d.	n.d.
Di-n-octyl phthalate (DNOP)	117-84-0	%	0.005	0.1		n.d.	n.d.	n.d.
Diisodecyl phthalate (DIDP)	26761-40-0, 68515-49-1	%	0.005	0.1		n.d.	n.d.	n.d.
Diisononyl phthalate (DINP)	28553-12-0, 68515-48-0	%	0.005	0.1		n.d.	n.d.	n.d.

Test Parameter	CAS NO	Unit	RL	Regulatory Requirement	Test No.	T004	T005	T006
					Material No.	M009 + M010	M011	M028
Dibutyl phthalate (DBP)	84-74-2	%	0.005	0.1		n.d.	n.d.	n.d.
Benzylbutyl phthalate (BBP)	85-68-7	%	0.005	0.1		n.d.	n.d.	n.d.
Diethylhexyl phthalate (DEHP)	117-81-7	%	0.005	0.1		n.d.	n.d.	n.d.
Di-n-octyl phthalate (DNOP)	117-84-0	%	0.005	0.1		n.d.	n.d.	n.d.
Diisodecyl phthalate (DIDP)	26761-40-0, 68515-49-1	%	0.005	0.1		n.d.	n.d.	n.d.
Diisononyl phthalate (DINP)	28553-12-0, 68515-48-0	%	0.005	0.1		n.d.	n.d.	n.d.

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				Test No.	T007
				Material No.	M029
Test Parameter	CAS NO	Unit	RL	Regulatory Requirement	Result
Dibutyl phthalate (DBP)	84-74-2	%	0.005	0.1	n.d.
Benzylbutyl phthalate (BBP)	85-68-7	%	0.005	0.1	n.d.
Diethylhexyl phthalate (DEHP)	117-81-7	%	0.005	0.1	n.d.
Di-n-octyl phthalate (DNOP)	117-84-0	%	0.005	0.1	n.d.
Diisodecyl phthalate (DIDP)	26781-40-0, 68515-49-1	%	0.005	0.1	n.d.
Diisononyl phthalate (DINP)	28553-12-0, 68515-48-0	%	0.005	0.1	n.d.

**Abbreviation:** Abbreviation n.d. = Not Detected (< RL)  
 RL = Reporting Limit  
 % denotes percentage

**Remark:**

\* Requirement according to Consumer Product Safety Improvement Act 2008, section 108, is summarized below:

Date of Implementation	Parameter	Unit	Maximum Permissible Limit
180 days after the date of enactment/10 Feb 2009	Any children's toy or childcare article:		
	Dibutyl phthalate (DBP), Benzylbutyl phthalate (BBP) or Diethylhexyl phthalate (DEHP)	%	0.1
	Any children's toy that can be placed in a child's mouth or childcare article:		
	Di-n-octyl phthalate (DNOP), Diisodecyl phthalate (DIDP) or Diisononyl phthalate (DINP)	%	0.1



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Sample Photos



- END -

Products



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Client:

Test Item(s): Toys material

Identification/  
Model No(s):

Sample Receiving date: 2016-01-05, 2016-01-13

Testing Period: 2016-01-07 - 2016-01-18

Test Specification:

Cadmium, Lead, Chromium (VI), Mercury, Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE)  
Labeling Requirement  
According to RoHS (recast): Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, 2011/85/EU

Test result:

PASS

PASS

Other information:

Our reference no. of this report: 0144087948

For and on behalf of  
TÜV Rheinland Hong Kong Ltd.

2016-01-22

  
Andy Ng / Project Manager

Date

Name/Position

Test result is drawn according to the kind and extent of tests performed.

This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.

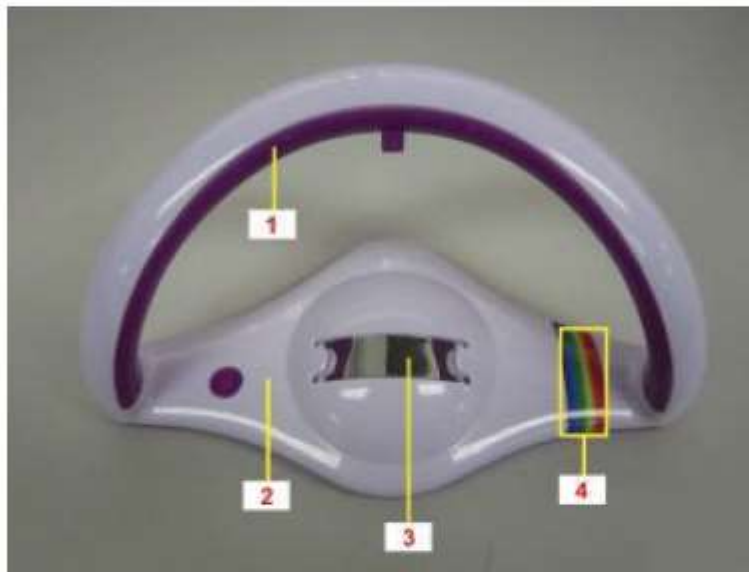
TÜV Rheinland Hong Kong Ltd. 8F-10F., Goldin Financial Global Square, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong  
Tel.: (852) 2152 1000 Fax: (852) 2192 1003 Mail: service-gc@tuv.com Web: [www.tuv.com](http://www.tuv.com)

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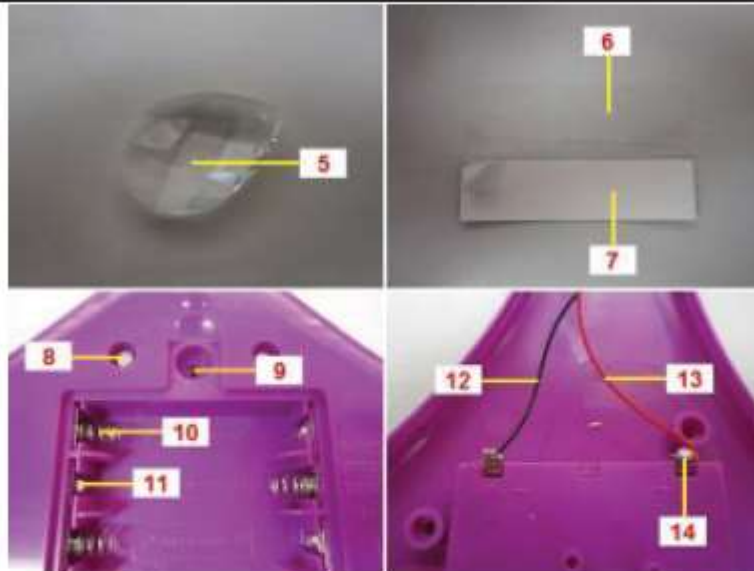
**1. Screening Test by XRF spectroscopy**

 Test Method: Cadmium, Lead, Mercury, Chromium, Bromine  
 -- With reference to IEC 62321-3-1:2013

**Test Result:**


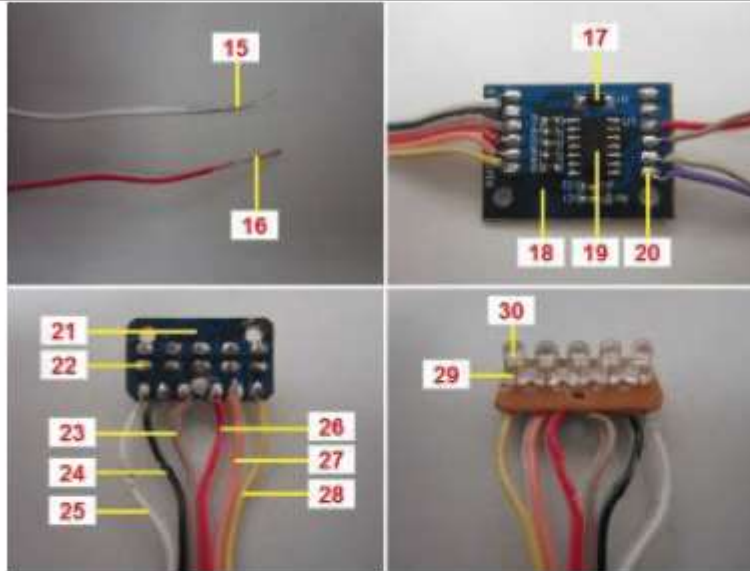
Material No.	Cd	Cr <sup>^</sup>	Pb	Hg	Br <sup>^</sup>
A001	n.d.	n.d.	n.d.	n.d.	n.d.
A002	n.d.	n.d.	n.d.	n.d.	n.d.
A003	n.d.	n.d.	n.d.	n.d.	n.d.
A004	n.d.	n.d.	n.d.	n.d.	n.d.

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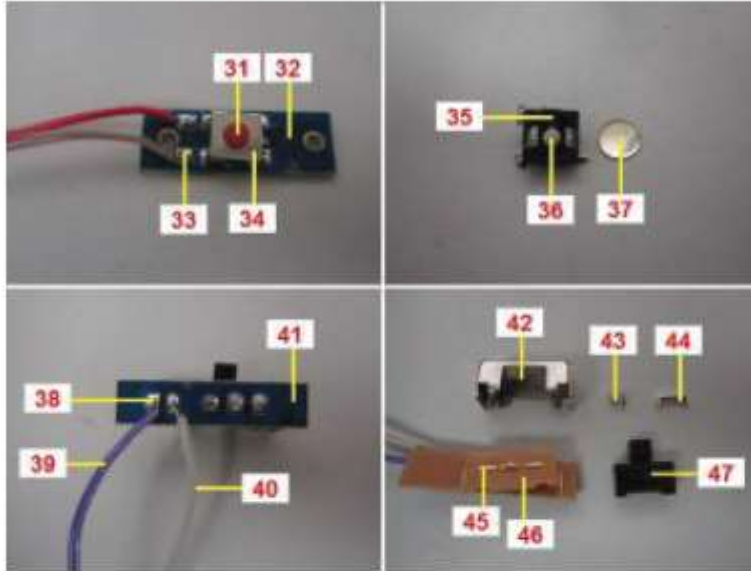
Material No.	Cd	Cr <sup>^</sup>	Pb	Hg	Br <sup>^</sup>
A005	n.d.	n.d.	n.d.	n.d.	n.d.
A006	n.d.	n.d.	n.d.	n.d.	n.d.
A007	n.d.	n.d.	n.d.	n.d.	n.d.
A008	n.d.	n.d.	n.d.	n.d.	n.a.
A009	n.d.	n.d.	n.d.	n.d.	n.a.
A010	n.d.	n.d.	n.d.	n.d.	n.a.
A011	n.d.	n.d.	n.d.	n.d.	n.a.
A012	(*6)	(*6)	(*6)	(*6)	(*6)
A013	(*6)	(*6)	(*6)	(*6)	(*6)
A014	*	*	*	*	*

\*Confirmed in Section 2



Material No.	Cd	Cr <sup>^</sup>	Pb	Hg	Br <sup>^</sup>
A015	n.d.	n.d.	n.d.	n.d.	n.a.
A016	n.d.	n.d.	n.d.	n.d.	n.a.
A017	n.d.	n.d.	n.d.	n.d.	d(*1)
A018	n.d.	n.d.	n.d.	n.d.	n.d.
A019	n.d.	n.d.	n.d.	n.d.	d(*1)
A020	*	*	*	*	*
A021	n.d.	n.d.	n.d.	n.d.	n.d.
A022	*	*	*	*	*
A023	(*6)	(*6)	(*6)	(*6)	(*6)
A024	(*6)	(*6)	(*6)	(*6)	(*6)
A025	(*6)	(*6)	(*6)	(*6)	(*6)
A026	(*6)	(*6)	(*6)	(*6)	(*6)
A027	(*6)	(*6)	(*6)	(*6)	(*6)
A028	(*6)	(*6)	(*6)	(*6)	(*6)
A029	n.d.	n.d.	n.d.	n.d.	n.a.
A030	n.d.	n.d.	n.d.	n.d.	d(*1)

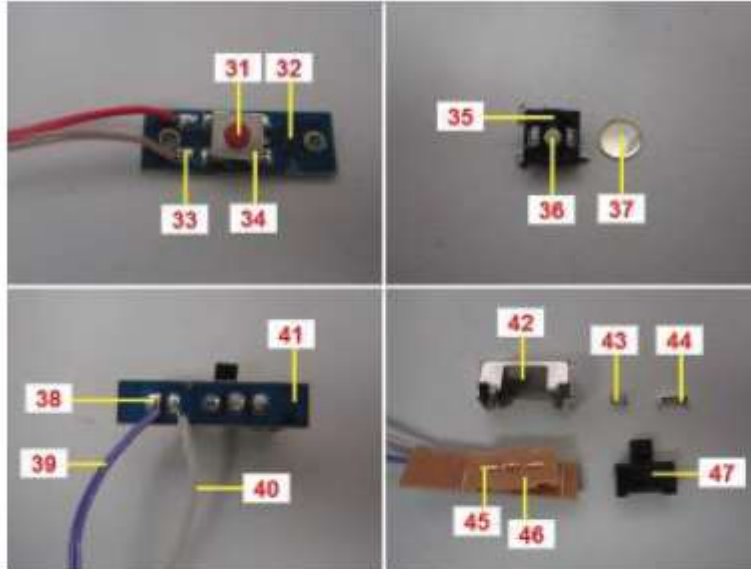
\*Confirmed in Section 2



Material No.	Cd	Cr <sup>^</sup>	Pb	Hg	Br <sup>^</sup>
A031	n.d.	n.d.	n.d.	n.d.	n.d.
A032	n.d.	n.d.	n.d.	n.d.	d(*1)
A033	*	*	*	*	*
A034	n.d.	n.d.	n.d.	n.d.	n.a.
A035	n.d.	n.d.	n.d.	n.d.	n.d.
A036	n.d.	n.d.	n.d.	n.d.	n.a.
A037	n.d.	n.d.	n.d.	n.d.	n.a.
A038	*	*	*	*	*
A039	(*6)	(*6)	(*6)	(*6)	(*6)
A040	(*6)	(*6)	(*6)	(*6)	(*6)

\*Confirmed in Section 2

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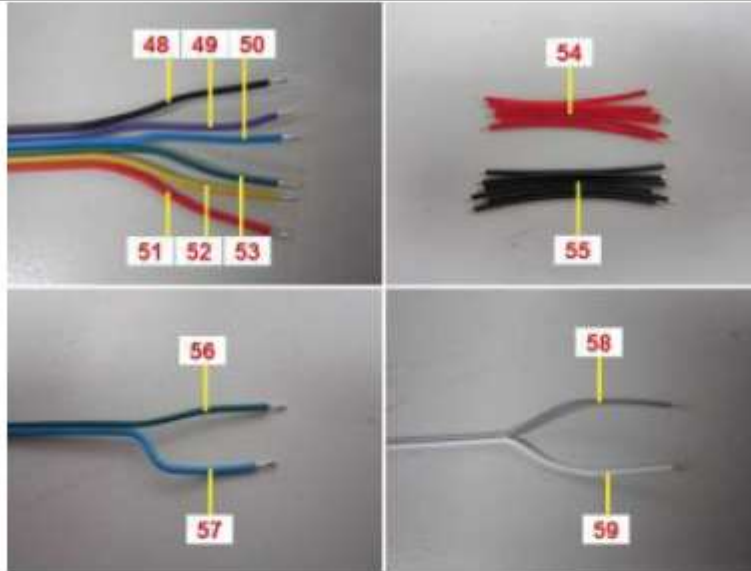


Material No.	Cd	Cr <sup>^</sup>	Pb	Hg	Br <sup>^</sup>
A041	n.d.	n.d.	n.d.	n.d.	n.d.
A042	n.d.	d(*3)	n.d.	n.d.	n.a.
A043	n.d.	n.d.	n.d.	n.d.	n.a.
A044	n.d.	n.d.	n.d.	n.d.	n.a.
A045	n.d.	n.d.	n.d.	n.d.	n.a.
A046	n.d.	n.d.	n.d.	n.d.	n.d.
A047	n.d.	n.d.	n.d.	n.d.	n.d.



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Material No.	Cd	Cr^	Pb	Hg	Br^
A048	n.d.	n.d.	n.d.	n.d.	n.d.
A049	n.d.	n.d.	n.d.	n.d.	n.d.
A050	n.d.	n.d.	n.d.	n.d.	n.d.
A051	n.d.	n.d.	n.d.	n.d.	n.d.
A052	n.d.	n.d.	n.d.	n.d.	n.d.
A053	n.d.	n.d.	n.d.	n.d.	n.d.
A054	n.d.	n.d.	n.d.	n.d.	n.d.
A055	n.d.	n.d.	n.d.	n.d.	n.d.
A056	n.d.	n.d.	n.d.	n.d.	n.d.
A057	n.d.	n.d.	n.d.	n.d.	n.d.
A058	n.d.	n.d.	n.d.	n.d.	n.d.
A059	n.d.	n.d.	n.d.	n.d.	n.d.



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**Abbreviation:** Pb = Lead  
 Cd = Cadmium  
 Hg = Mercury  
 Cr = Chromium  
 Br = Bromine  
 n.a. = not applicable  
 n.d. = not detected  
 d. = detected

Material No.	Confirmation for Cr (VI) (*3)
A042	Negative

**Remark:**

- \*1 The screening result was found in the inconclusive region, thus the further wet chemistry tests are suggested.
- \*2 The screening result was detected above the screening limits, thus the further wet chemistry tests are suggested.
- \*3 The chromium (VI) content have been confirmed with EN 62321:2009 Annex.
- \*4 The screening result of Cr was found in the inconclusive region, thus the chromium (VI) content have been confirmed with ISO 17075:2007.
- \*5 Component(s)/ materials(s) with an area of less than 2mm x2 mm will not be selected for testing according to RoHS Directive 2011/65/EU due to technical reason.  
 For the test sample does not have detail materials information provided by client, visually identical materials (e.g. wire insulation, solder points, etc.) will be considered as the same material.  
 Solder points on a printing circuit board will be examined several times based on optical anomalies or discoloration of the solder point(s) unless the solder point(s) is obviously generated automatically during production.  
 All other materials will be sampled and tested at one test point representatively.
- \*6 Client confirmed material A012, A013, A023 to A028, A039, A040 are replaced by material A048 to A059.

^ The result will reflect the total chromium and total bromine present in the sample. The presence or absence of hexavalent chromium, PBB, or PBDE shall be confirmed with Reference to EN 62321:2009

XRF Screening limits for different matrices :

Material	Concentration (mg/kg)				
	Cd	Cr	Pb	Hg	Br
<b>Metallic</b>	P ≤ 60 < X ≤ 140 < F	P ≤ 640 < X	P ≤ 670 < X ≤ 1330 < F	P ≤ 660 < X ≤ 1340 < F	NA
<b>Polymeric</b>	P ≤ 60 < X ≤ 140 < F	P ≤ 640 < X	P ≤ 670 < X ≤ 1330 < F	P ≤ 660 < X ≤ 1340 < F	P ≤ 290 < X
<b>Electronic Components</b>	P ≤ 40 < X ≤ 160 < F	P ≤ 440 < X	P ≤ 470 < X ≤ 1530 < F	P ≤ 460 < X ≤ 1540 < F	P ≤ 240 < X

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**2. Cadmium, Lead, Chromium (VI), Mercury, Polybrominated biphenyls (PBB) and Polybrominated diphenyl ethers (PBDE)**

Test Method: Total Cadmium, Lead, Mercury, Chromium  
 - Ref. to IEC 62321-4:2013 and IEC 62321-5:2013

Chromium (VI)  
 - Ref. to EN 62321:2009  
 (for Leather Material, Chromium (VI) - Ref. to ISO 17075:2007)

PBBs, PBDEs  
 - Ref. to EN 62321:2009

**Material List:**

Material No.	Material	Color	Location	Test plan
				A = Test HM only B = Test FR only C = Test HM + FR
A014	Solder	Silver	Refer to photo	A
A017	Electronic components	Black	Refer to photo	B
A019	Electronic components	Black	Refer to photo	B
A020	Solder	Silver	Refer to photo	A
A022	Solder	Silver	Refer to photo	A
A030	Plastic	Transparent	Refer to photo	B
A032	PCB board	Multicolor	Refer to photo	B
A033	Solder	Silver	Refer to photo	A
A038	Solder	Silver	Refer to photo	A

**Abbreviation:** HM (Heavy metal) = Cd, Pb, Hg, Cr (VI)  
 FR (Flame Retardant) = PBBs, PBDEs

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**Test Result:**

	Cd	Cr(VI)	Pb	Hg	PBBs (*)	PBDEs (*)
<b>Maximum Permissible Limit (mg/kg)</b>	100	1000	1000	1000	1000	1000

Material No.	(mg/kg)					
	Cd	Cr <sup>^</sup>	Pb	Hg	PBBs (*)	PBDEs (*)
	RL (mg/kg)					
	10	10	10	10	5	5
A014	n.d.	n.d.	58	n.d.	n.a.	n.a.
A017	n.a.	n.a.	n.a.	n.a.	n.d.	n.d.
A019	n.a.	n.a.	n.a.	n.a.	<100(*2)	<100(*2)
A020	n.d.	n.d.	53	n.d.	n.a.	n.a.
A022	n.d.	38	185	n.d.	n.a.	n.a.
A030	n.a.	n.a.	n.a.	n.a.	<500(*2)	<500(*2)
A032	n.a.	n.a.	n.a.	n.a.	<100(*2)	<100(*2)
A033	<50(*1)	<50(*1)	51(*1)	<50(*1)	n.a.	n.a.
A038	n.d.	n.d.	173	n.d.	n.a.	n.a.

**Abbreviation:** Pb = Lead  
 Cd = Cadmium  
 Hg = Mercury  
 Cr = Chromium  
 Cr (VI) = Chromium (VI)  
 PBBs = Total Polybrominated Biphenyls  
 PBDEs = Total Polybrominated Diphenyl Ethers  
 n.d. = Not Detected (<RL)  
 RL = Reporting Limit  
 n.a. = Not Applicable  
 ^ = The total Chromium have been determined  
 mg/kg = milligram per kilogram

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**Remark:**

- \*1 The reporting limit is scaled up to 50mg/kg due to sample size < 0.1 g.
- \*2 The reporting limit is scaled up to 100, 500mg/kg due to sample size < 0.5 g.
- \*3 The plating / coating of all the metal sample(s) is not confirmed, it cannot be further mechanically disjoined into different materials.
- \* The reporting limit for each individual PBBs and individual PBDEs are :

Reporting Limit (mg/kg)		
PBBs	Bromobiphenyl	1
	Dibromobiphenyl	1
	Tribromobiphenyl	1
	Tetrabromobiphenyl	1
	Pentabromobiphenyl	2
	Hexabromobiphenyl	2
	Heptabromobiphenyl	2
	Octabromobiphenyl	5
	Nonabromobiphenyl	5
	Decabromobiphenyl	5
	PBDEs	Bromodiphenylether
Dibromodiphenyl ether		1
Tribromodiphenyl ether		1
Tetrabromodiphenyl ether		1
Pentabromodiphenyl ether		2
Hexabromodiphenyl ether		2
Heptabromodiphenyl ether		2
Octabromodiphenyl ether		5
Nonabromodiphenyl ether		5
Decabromodiphenyl ether		5

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**#3. Labeling Requirement****Test Result:**

	Test No:	T001
	Material No:	M001
<b>Requirements</b>		<b>Result</b>
CE-marking		Complied
Company name and address:		Complied
Identification - type, batch, serial, model number or other element allowing their identification		Complied

**Abbreviation:** EEE = Electrical and electronic equipment

# The test is not covered by DAkkS accreditation.

Testing Laboratory accredited by DAkkS according to DIN EN ISO/IEC 17025. The accreditation is valid for the test methods stated in the certificate.

Sample Photos



M001-1



M001-2



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Sample Photos



- END -