

TEST REPORT

<u>APPLICANT</u>	: Fujian Zhangping D-road Forestry Co.,Ltd
<u>ADDRESS</u>	: Fushan Industry District, Zhangping City, Fujian, China, 364400
<u>SAMPLE DESCRIPTION</u>	: Sandpit
<u>ITEM NO.</u>	: 2076
<u>MANUFACTURER</u>	: Fujian Zhangping D-road Forestry Co.,Ltd
<u>COUNTRY OF ORIGIN</u>	: China
<u>AGE REQUESTED ON APPLICATION FORM</u>	: 3-7years
<u>LABELED AGE GRADE</u>	: 3-7years
<u>AGE GRADE APPLIED IN TESTING</u>	: 3-7years
<u>SAMPLE RECEIVED DATE</u>	: 24-Sep-2020
<u>TURN AROUND TIME</u>	: 24-Sep-2020 to 13-Oct-2020
<u>REVISED DATE</u>	: 30-Oct-2021

The following test item(s) was/were performed on submitted sample(s) and/or component(s) confirmed by applicant

TEST REQUESTED	TEST METHOD/REGULATION	RESULT
Mechanical and Physical Properties	ASTM F963-17	Pass
Flammability of Toys	ASTM F963-17	Pass
Mechanical and Physical Properties	SOR/2011-17 amended by SOR/2018-138	Pass
Flammability of Toys	SOR/2011-17 amended by SOR/2018-138	Pass
Heavy Metals	ASTM F963-17	Pass
Total Lead Content in Paint / Surface Coating	US CPSIA, Section 101	Pass
Total Lead Content in Substrate	US CPSIA, Section 101	Pass
Phthalates Content	CPSC 16 CFR part 1307	Pass
Phthalates Content	SOR/2016-188, Phthalate Regulations	Pass
Heavy Metals In Surface Coating	SOR/2011-17 amended by SOR/2018-138	Pass
Heavy Metals In Plastic Materials	SOR/2011-17 amended by SOR/2018-138	Not Applicable
Mechanical and Physical Properties	EN71 Part 1:2014+A1:2018	Pass
Labeling Requirement	Directive 2009/48/EC	Pass
Flammability of Toys	EN71 Part 2:2020	Pass
Migration of Certain Elements	EN71 Part 3:2019	Pass

Note:

This report cancels and supersedes report number EFHZ20091816-CG+Rev3 issued on 28-Jan-2021. Modification description: per client's request, update EU standard version of Flammability of Toys report in the revised report.

Eurofins (Hangzhou) contact information

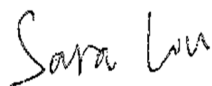
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***** FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S) *****

Signed for and on behalf of

Eurofins Product Testing Service (Shanghai) Co., Ltd. Hangzhou Branch



Sara Liu
Lab Manager

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SAMPLE PHOTO(S)



EFHZ20091816-CG-01+Rev4

TO BE CONTINUED

COMPONENT LIST

Component No.	Component	Quote From	Sample No.
1	Blue fabric with coating		A
2	White fabric with coating		A
3	Black plastic		A
4	Black non-woven fabric	EFHZ20091805-CG-01-3	A
5	Natural color wood	EFHZ20091813-CG-01-27	A
6	Copper plated metal		A
7	Bright silver plated metal screw		A

TO BE CONTINUED

TEST RESULT

Mechanical and Physical Properties

Test Request: As specified in Consumer Safety Specification ASTM F963-17

Section	Description	Result
4.1	Material Quality	P
4.3.7	Stuffing Materials	N/A
4.5	Sound-Producing Toys	N/A
4.6	Small Objects	N/A
4.6.1	Toys that are intended for children under 36 months of age	N/A
4.6.2	Mouth-Actuated Toys	N/A
4.6.3	Toys that are intended for children over 36 months but less than 72 months	N/A
4.7	Accessible Edges	P
4.8	Projections	N/A
4.8.1	Bath Toy Projections	N/A
4.9	Accessible Points	P
4.10	Wires or Rods	N/A
4.11	Nails and Fasteners	P
4.12	Plastic Film	N/A
4.13	Folding Mechanisms and Hinges	N/A
4.14	Cords, Straps and Elastics	N/A
4.15	Stability and Over-Load Requirements	P
4.16	Confined Spaces	N/A
4.17	Wheels, Tires, and Axles	N/A
4.18	Holes, Clearances, and Accessibility of Mechanisms	N/A
4.19	Simulated Protective Devices	N/A
4.20	Pacifiers	N/A
4.21	Projectile Toys	N/A
4.22	Teethers and Teething Toys	N/A
4.23	Rattles	N/A
4.24	Squeeze Toys	N/A
4.25	Battery-Operated Toys (exclude section 4.25.10 Battery-powered ride-on toys and section 4.25.11 Toys contain secondary cells or secondary batteries)	N/A
4.26	Toys Intended to be Attached to a Crib or Playpen	N/A
4.27	Stuffed and Beanbag-Type Toys	N/A
4.28	Stroller and Carriage Toys	N/A
4.30	Toy Gun Marking	N/A
4.31	Balloons	N/A
4.32	Certain Toys with Nearly Spherical Ends	N/A
4.33	Marbles	N/A
4.34	Balls	N/A
4.35	Pompoms	N/A
4.36	Hemispheric-Shaped Objects	N/A
4.37	Yo Yo Elastic Tether Toys	N/A
4.38	Magnets	N/A
4.39	Jaw Entrapment in Handles and Steering Wheels	N/A
4.40	Expanding material	N/A
4.41	Toy Chests	N/A
5	Labeling Requirements	
5.2	Age Grading Labeling	P
5.3	Safety Labeling Requirements	N/A

TEST RESULT

Section	Description	Result
5.4	Aquatic Toys	N/A
5.5	Crib and Playpen Toys	N/A
5.6	Mobiles	N/A
5.7	Stroller and Carriage Toys	N/A
5.8	Toys Intended to be Assembled by an Adult	N/A
5.9	Simulated Protective Devices	N/A
5.10	Toys with Functional Sharp Edges and Sharp Points	N/A
5.11	Small Objects, Small Balls, Marbles and Balloons (16 CFR 1500.19)	N/A
5.12	Toy Caps (16 CFR 1500.86 for Required Labeling)	N/A
5.13	Art Materials (16 CFR 1500.14(b)(8))	N/A
5.14	Electric Toys	N/A
5.15	Battery-Operated Toys	N/A
5.15.1	Battery-Powered Ride-On Toys	N/A
5.15.2	Button or Coin Cell Batteries	N/A
5.16	Promotional Materials	N/A
5.17	Magnets	N/A
6	Instructional Literature	
6.1	Definition and Description	P
6.2	Crib and Playpen Toys	N/A
6.3	Mobiles	N/A
6.4	Toys Intended to be Assembled by an Adult	N/A
6.5	Battery-Operated Toys	N/A
6.6	Battery-Powered Ride-On Toys	N/A
6.7	Toys in Contact with Food	N/A
6.8	Toy Chests	N/A
7	Producer's Markings	
7.1	Producer's or Distributor's Name and Address	P
7.2	Battery-Powered Ride-on Toys	N/A
7.3	Toy Chests	N/A

Remark:

P – Pass

N/A – Not Applicable

TO BE CONTINUED

TEST RESULT

Flammability of Toys

Test Request: As specified in ASTM F963-17, Section 4.2, testing procedure for materials other than textiles (excluding paper) used in toys is contained in Annex A5.

Sample	Limit	Result
A	0.1 inch/second	P

Remark:

P – Pass

TO BE CONTINUED

TEST RESULT

Mechanical and Physical Properties

Test Request: As specified in the mechanical hazards requirements of the tested sections of Canada Consumer Product Safety Act, Toys Regulations, SOR/2011-17 amended by SOR/2018-138 and Schedule 2.

Section	Description	Result
	Packaging	
4	Flexible film bag	N/A
	Mechanical Hazards	
7	Small parts	N/A
8	Metal edges	P
9	Wire frames	N/A
10	Plastic edges	N/A
11	Wood	P
12	Glass	N/A
13	Fasteners	P
14	Safety stops or locking devices	N/A
15	Spring-wound driving mechanisms	N/A
16	Projectile components	N/A
17	Enclosures	N/A
18	Stability	P
	Auditory Hazards	
19	Decibel limit	N/A
	Thermal and Flammability Hazards	
20	Heated surfaces, parts or substances	N/A
	Specific Products	
28	Dolls, plush toys and soft toys - fastenings	N/A
29	Dolls, plush toys and soft toys – stuffing	N/A
30	Dolls, plush toys and soft toys - small parts	N/A
31	Dolls, plush toys and soft toys - eyes and noses	N/A
35	Plant seeds - noise	N/A
36	Plant seeds - stuffing material	N/A
37	Pull and push toys - shaft-like handles	N/A
38	Toys steam engines - boilers – safety valves	N/A
39	Finger paints - water-based paints	N/A
40	Rattles - construction	N/A
41	Elastics - length or extensibility	N/A
42	Yo-Yo type balls - stretchable cord	N/A
43	Magnetic Toys - Magnetic Force	N/A
44	Magnetic Toys - Exceptions	N/A
	Canada Consumer Product Safety Act, Schedule 2	
1	Jequirity Beans	P
8	Kites	N/A
9	Kite strings	N/A
14	Lawn, darts with elongated tips	N/A

Remark:

P – Pass

N/A – Not Applicable

TO BE CONTINUED

TEST RESULT

Flammability of Toys

Test Request: As specified in the flammability requirements of the tested sections of Canada Consumer Product Safety Act, Toys Regulations, SOR/2011-17 amended by SOR/2018-138.

Section	Description	Result
21	Flammability Of Cellulose Nitrate	P
32	Flammability Of Outer Covering On Doll, Plush Toy And Soft Toy	P
33	Flammability of Yarn on Doll, Plush Toy and Soft Toy	N/A
34	Flammability of Hair or Mane on Doll, Plush Toy and Soft Toy	N/A

Remark:

P – Pass

N/A – Not Applicable

TO BE CONTINUED

TEST RESULT

Heavy Metals

1) ASTM F963-17- Heavy Elements – Total Lead in Paint and Similar Surface-Coating Material(Clause 4.3.5.1(1))

Test Method: ASTM International Standard ASTM F963-17, Section 8.3.1 and Annex A7.

Tested Item(s)	Unit	Limit	MDL	Result	
				1	2
Total Lead	mg/kg	90	10	ND	ND

2) ASTM F963-17- Heavy Elements – Total Lead in Substrate Material (Clause 4.3.5.2(2)(a))

Test Method: ASTM International Standard ASTM F963-17, Section 8.3.1 and Annex A7.

Tested Item(s)	Unit	Limit	MDL	Result				
				3	4	5	6	7
Total Lead	mg/kg	100	10	ND	ND	ND	ND	ND

3) ASTM F963-17- Heavy Elements – Total Elements Content, Initial Screening for Soluble Migrated Elements Content in Surface Coatings and Substrates Other Than Modeling Clay(Clause 4.3.5.1(2) and 4.3.5.2(2)(b))

Test Method: ASTM International Standard ASTM F963-17, Section 8.3.1 and Annex A7.

Tested Item(s)	Unit	Limit	MDL	Result				
				1	2	3	4	5
Total Antimony	mg/kg	60	5	150*	227*	ND	ND	ND
Total Arsenic	mg/kg	25	5	ND	ND	ND	ND	ND
Total Barium	mg/kg	1000	10	162	84	ND	ND	ND
Total Cadmium	mg/kg	75	5	ND	ND	ND	ND	ND
Total Chromium	mg/kg	60	5	ND	ND	ND	ND	ND
Total Lead	mg/kg	90	10	ND	ND	ND	ND	ND
Total Mercury	mg/kg	60	5	ND	ND	ND	ND	ND
Total Selenium	mg/kg	500	10	ND	ND	ND	ND	ND

TO BE CONTINUED

TEST RESULT

4) ASTM F963-17- Heavy Elements – Soluble Migrated Elements Content in Surface Coatings and Substrates Other Than Modeling Clay (Clause 4.3.5.1(2) and 4.3.5.2(2)(b))

Test Method: ASTM International Standard ASTM F963-17, Section 8.3.2 to 8.3.5 (excluding 8.3.5.5(3))

Tested Item(s)	Unit	Limit	MDL	Result	
				1	2
Soluble Antimony	mg/kg	60	5	ND	ND
Soluble Arsenic	mg/kg	25	5	ND	ND
Soluble Barium	mg/kg	1000	10	ND	ND
Soluble Cadmium	mg/kg	75	5	ND	ND
Soluble Chromium	mg/kg	60	5	ND	ND
Soluble Lead	mg/kg	90	10	ND	ND
Soluble Mercury	mg/kg	60	5	ND	ND
Soluble Selenium	mg/kg	500	10	ND	ND

Remark:

mg/kg = milligram per kilogram

MDL = method detection limit

ND = Not detected, less than MDL

The analytical results were adjusted by subtracting analytical correction factor.

* On the initial analysis for soluble heavy metals content, any tested component of greater than the set limit, the result is inconclusive for the requirement and therefore were retested with soluble heavy metals analysis of ASTM F963-17, Sections 8.3.2 to 8.3.5 as specified in Section 8.3.1.3. The result herein is for reference only (show data), please refer to soluble heavy metals content analysis for the corresponding conclusive results.

According to Section 8.3.1.3, if results of total eight elements are below soluble limits for each element as prescribed in the table, the material can be considered to conform to requirements of 4.3.5.1(2) or 4.3.5.2(2)(b), or both, without further testing.

TO BE CONTINUED

TEST RESULT

Total Lead Content in Paint / Surface Coating

Test Request: Total lead in paint/ similar surface coatings as specified in US Consumer Product Safety Improvement Act 2008 (CPSIA), Section 101

Test Method: CPSC-CH-E1003-09.1
The sample was acid digested, and total lead content was determined by ICP-OES.

Tested Item(s)	Unit	Limit	MDL	Result
				1+2
Total Lead(Pb)	mg/kg	90	10	ND

Remark:

mg/kg = milligram per kilogram

MDL = method detection limit

ND = Not detected, less than MDL

According to client's request, tests are combination tests. The experimental results are the total result of mixed samples.

TO BE CONTINUED

TEST RESULT

Total Lead Content in Substrate

Test Request: Total lead in substrate as specified in US Consumer Product Safety Improvement Act 2008 (CPSIA), Section 101

Test Method: CPSC-CH-E1002-08.3
The sample was acid digested, and total lead content was determined by ICP-OES.

Tested Item(s)	Unit	Limit	MDL	Result			
				3	5	6	7
Total Lead(Pb)	mg/kg	100	10	ND	ND	ND	ND

Remark:

mg/kg = milligram per kilogram

MDL = method detection limit

ND = Not detected, less than MDL

TO BE CONTINUED

TEST RESULT

Phthalates Content

Test Request: Prohibition of Children's Toys and Child Care Articles Containing Specified Phthalates as specified in CPSC 16 CFR part 1307.

Test Method: CPSC-CH-C1001-09.4

Tested Item(s)	CAS No.	Unit	Limit	MDL	Result	
					1+2	3
Diisononylphthalate (DINP)	28553-12-0	%	0.1	0.005	ND	ND
Di-n-pentyl phthalate (DPENP)	131-18-0	%	0.1	0.005	ND	ND
Di-n-hexyl phthalate (DHEXP)	84-75-3	%	0.1	0.005	ND	ND
Dicyclohexyl phthalate (DCHP)	84-61-7	%	0.1	0.005	ND	ND
Diisobutyl phthalate (DIBP)	84-69-5	%	0.1	0.005	ND	ND
Di-2-ethylhexylphthalate (DEHP)	117-81-7	%	0.1	0.005	ND	ND
Dibutylphthalate (DBP)	84-74-2	%	0.1	0.005	ND	ND
Benzylbutylphthalate (BBP)	85-68-7	%	0.1	0.005	ND	ND

Remark:

MDL = method detection limit

ND = Not detected, less than MDL

According to client's request, tests are combination tests. The experimental results are the total result of mixed samples.

TO BE CONTINUED

TEST RESULT

Phthalates Content

Test Request: Phthalates Content as specified in Canada Consumer Product Safety Act - Phthalate Regulations, SOR/2016-188.

Test Method: EPA 3550C:2007, EPA 8270E:2018, solvent extraction and quantification by GC-MS.

Tested Item(s)	CAS No.	Unit	Limit	MDL	Result	
					1+2	3
For the vinyl in a toy or child care article					ND	ND
Dibutylphthalate (DBP)	84-74-2	%	0.1	0.005	ND	ND
Benzylbutylphthalate (BBP)	85-68-7	%	0.1	0.005	ND	ND
Diethylhexylphthalate (DEHP)	117-81-7	%	0.1	0.005	ND	ND
For the vinyl in any part of a toy or child care article that can, in a reasonably foreseeable manner, be placed in the mouth of a child under four years of age					ND	ND
Di-n-octylphthalate (DNOP)	117-84-0	%	0.1	0.005	ND	ND
Diisononylphthalate (DINP)	28553-12-0	%	0.1	0.005	ND	ND
Diisodecylphthalate (DIDP)	26761-40-0	%	0.1	0.005	ND	ND

Remark:

MDL = method detection limit

ND = Not detected, less than MDL

According to client's request, tests are combination tests. The experimental results are the total result of mixed samples.

TO BE CONTINUED

TEST RESULT

Heavy Metals In Surface Coating

Test Request: Heavy Metals Content In Surface Coating as specified in Canada Consumer Product Safety Act - Toys Regulations, SOR/2011-17 amended by SOR/2018-138, Section 23

Test Method: Sample portion of surface coating was collected by mechanical method with surgical blade. Wet digestion with nitric acid for lead and mercury; migration of soluble elements of antimony, arsenic, barium, cadmium and selenium were performed in 5% hydrochloric acid after being stirred for 10 minutes at 20°C. All elements were analyzed by ICP-OES.

Tested Item(s)	Unit	Limit	MDL	Result	
				1	2
Total Lead(Pb)	%	0.009	0.001	ND	ND
Total Mercury(Hg)	%	See Note	0.0001	ND	ND
soluble Antimony(Sb)	%	0.1	0.0005	ND	ND
soluble Arsenic(As)	%	0.1	0.00025	ND	ND
soluble Barium(Ba)	%	0.1	0.001	ND	ND
soluble Cadmium(Cd)	%	0.1	0.0005	ND	ND
soluble Selenium(Se)	%	0.1	0.001	ND	ND

Remark:

Note: Any compound of mercury introduced as such.

mg/kg = milligram per kilogram

MDL = method detection limit

ND = Not detected, less than MDL

TO BE CONTINUED

TEST RESULT

Mechanical and Physical Properties

Test Request: As specified in European Standard on Safety of Toys EN71 Part 1:2014+A1:2018

Section	Description	Result
4	General requirements	
4.1	Material cleanliness (by visual assessment)	P
4.2	Assembly	P
4.3	Flexible plastic sheeting	N/A
4.4	Toy Bags	N/A
4.5	Glass	N/A
4.6	Expanding Materials	N/A
4.7	Edges	P
4.8	Points and Metallic Wires	P
4.9	Protruding parts	N/A
4.10	Parts moving against each other	
4.10.1	Folding and sliding mechanisms	N/A
4.10.2	Driving mechanisms	N/A
4.10.3	Hinges	N/A
4.10.4	Springs	N/A
4.11	Mouth-actuated toys and other toys intended to be put in the mouth	N/A
4.12	Balloons	N/A
4.13	Cords of toy kites and other flying toys	N/A
4.14	Enclosures	
4.14.1	Toys which a child can enter	N/A
4.14.2	Masks and helmets	N/A
4.15	Toys intended to bear the mass of a child	
4.15.1	Toys propelled by the child or by other means	N/A
4.15.2	Toy bicycles	N/A
4.15.3	Rocking horses and similar toys	N/A
4.15.4	Toys not propelled by a child	P
4.15.5	Toys scooters	N/A
4.16	Heavy immobile toys	N/A
4.17	Projectiles	N/A
4.17.1	General	N/A
4.17.2	All projectiles	N/A
4.17.3	Projectile toy with stored energy	N/A
4.17.4	Certain projectile toys without stored energy	N/A
4.18	Aquatic toys and inflatable toys	N/A
4.19	Percussion caps specifically designed for use in toys and toys using percussion caps	N/A
4.20	Acoustics	
4.20.2.1	General	N/A
4.20.2.2	Close-to-the-ear toys	N/A
4.20.2.3	Table-top or floor toys	N/A
4.20.2.4	Hand-held toys	N/A
4.20.2.5	Toys using headphones or earphones	N/A
4.20.2.6	Rattles	N/A
4.20.2.7	Squeeze toys	N/A
4.20.2.8	Pull-along or push toys	N/A
4.20.2.9	Percussion toys	N/A
4.20.2.10	Wind toys	N/A
4.20.2.11	Cap-firing toys	N/A

TEST RESULT

Section	Description	Result
4.20.2.12	Voice toys	N/A
4.21	Toys containing a non-electrical heat source	N/A
4.22	Small balls	N/A
4.23	Magnets	N/A
4.24	Yo-yo balls	N/A
4.25	Toys attached to food	N/A
4.26	Toy disguise costumes	N/A
4.27	Flying toys	N/A
4.27.1	General	N/A
4.27.2	Rotors and propellers on flying toys	N/A
4.27.3	Rotors and propellers on remote controlled flying toys	N/A
5	Toys intended for children under 36 months	
5.1	General requirements	N/A
5.2	Soft-filled toys and soft-filled parts of a toy	N/A
5.3	Plastic sheeting	N/A
5.4	Cords, chains and electrical cables in toys	N/A
5.5	Liquid-filled toys	N/A
5.6	Speed limitation of electrically-driven ride-on toys	N/A
5.7	Glass and porcelain	N/A
5.8	Shape and size of certain toys	N/A
5.9	Toys comprising monofilament fibres	N/A
5.10	Small balls	N/A
5.11	Play figures	N/A
5.12	Hemispheric-shaped toys	N/A
5.13	Suction cups	N/A
5.14	Straps intended to be worn fully or partially around the neck	N/A
5.15	Sledges with cords for pulling	N/A
6	Packaging	N/A
7	Warnings, markings and instructions for use	
7.1	General	P
7.2	Toys not intended for children under 36 months	P
7.3	Latex Balloons	N/A
7.4	Aquatic toys	N/A
7.5	Functional Toys	N/A
7.6	Hazardous sharp functional edges and points	N/A
7.7	Projectiles toys	N/A
7.8	Imitation protective masks and helmets	N/A
7.9	Toy kites	N/A
7.10	Roller skates, inline skates, skateboards and certain other ride-on toys	N/A
7.11	Toys intended to be strung across a cradle, cot, or perambulator	N/A
7.12	Liquid-filled teethingers	N/A
7.13	Percussion caps specifically designed for use in toys	N/A
7.14	Acoustics	N/A
7.15	Toys bicycles	N/A
7.16	Toys intended to bear the mass of a child	N/A
7.17	Toys comprising monofilament fibres	N/A
7.18	Toy scooters	N/A
7.19	Rocking horses and similar toys	N/A
7.20	Magnetic/electrical experimental sets	N/A
7.21	Toy with electrical cables exceeding 300mm in length	N/A
7.22	Toys with cords or chains intended for children of 18 months and over but under 36 months	N/A

TEST RESULT

Section	Description	Result
7.23	Toys intended to be attached to a cradle, cot or perambulator	N/A
7.24	Sledges with cords for pulling	N/A
7.25	Flying toys	N/A
7.25.1	Flying toys	N/A
7.25.2	Remote controlled flying toys	N/A
7.26	Improvised projectiles	N/A

Remark:

P – Pass

N/A – Not Applicable

TO BE CONTINUED

TEST RESULT

Labeling Requirement

Test Request: Labeling requirement including Washing/Cleaning instruction, CE mark, importer / manufacturer name and address, product identification as specified in Directive 2009/48/EC
– Safety of toys

Labeling Content	Observation Result	Location	Conclusion
Washing/Cleaning Instruction	Not Applicable	-	-
CE Mark	Present, Correct form, CE marking (height = 9.8 mm)	Packaging	Pass
Importer's Name & Address	Present	Packaging	Pass
Manufacturer's Name & Address	Present	Packaging	Pass
Product ID	Present	Packaging	Pass

TO BE CONTINUED

TEST RESULT

Flammability of Toys

Test Request: As Specified in European Standard on Safety of Toys EN71 Part 2:2020

Section	Description	Result
4	Requirements	
4.1	General Requirements	P
4.2	Toys to be worn on the head	N/A
4.3	Toy disguise costumes and toys intended to be worn by a child in play	N/A
4.4	Toys intended to be entered by a child	N/A
4.5	Soft-filled toys (Sample was not tested if its maximum dimension is 150mm or less.)	N/A

Remark:

P - Pass, NA - Not Applicable

TO BE CONTINUED

TEST RESULT

Migration of Certain Elements

Test Request: Migration of certain elements as specified in European Standard on Safety of Toys EN71 Part 3:2019

Test Method: General elements, with reference to EN 71 Part 3:2019, analysis was performed by ICP-MS; Extractable Chromium (VI), with reference to EN 71 Part 3:2019, analysis was performed by IC-ICP-MS / IC-UV/VIS; Extractable organic tin, with reference to EN 71 Part 3:2019, analysis was performed by GC-MS.

Test Item(s):	Unit	Result				
		1	2	3	4	5
Category Type		III	III	III	III	III
Extractable Lead (Pb)	mg/kg	ND	ND	ND	ND	ND
Extractable Antimony (Sb)	mg/kg	ND	ND	ND	ND	ND
Extractable Arsenic (As)	mg/kg	ND	ND	ND	ND	ND
Extractable Barium (Ba)	mg/kg	ND	ND	ND	ND	ND
Extractable Cadmium (Cd)	mg/kg	ND	ND	ND	ND	ND
Extractable Mercury (Hg)	mg/kg	ND	ND	ND	ND	ND
Extractable Selenium (Se)	mg/kg	ND	ND	ND	ND	ND
Extractable Boron (B)	mg/kg	ND	ND	ND	ND	ND
Extractable Cobalt (Co)	mg/kg	ND	ND	ND	ND	ND
Extractable Manganese (Mn)	mg/kg	ND	ND	ND	ND	ND
Extractable Strontium (Sr)	mg/kg	ND	ND	ND	ND	ND
Extractable Zinc (Zn)	mg/kg	ND	ND	ND	ND	ND
Extractable Copper (Cu)	mg/kg	ND	ND	ND	ND	ND
Extractable Aluminum (Al)	mg/kg	ND	ND	ND	ND	ND
Extractable Nickel (Ni)	mg/kg	ND	ND	ND	ND	ND
Extractable Tin (Sn)	mg/kg	ND	ND	ND	ND	ND
Extractable Organic Tin#1	mg/kg	ND	ND	ND	ND	ND
Extractable Chromium#2	mg/kg	-	0.021	-	0.050	0.029
Extractable Chromium (III) (Cr III)#3	mg/kg	ND	-	ND	-	-
Extractable Chromium (VI) (Cr VI)	mg/kg	ND	-	ND	-	-

Note:

- #1 - Result of Organic Tin is calculated by assuming the extractable Tin content is wholly contributed from tributyltin (TBT) cation unless further specified.
- #2 - If the migration of total Chromium is below the maximum limit for Chromium (VI), it can be inferred that the material complies with the requirements for both Chromium(III) and Chromium(VI).
- #3 - In particular Chromium (III) is calculated by subtracting the Chromium (VI) concentration from the total chromium concentration.

Remarks:

mg/kg = milligram per kilogram
MDL = Method Detection Limit
ND = Not Detected, less than MDL

TO BE CONTINUED

TEST RESULT

Limits –MDL per category type:

Test Item(s):	Unit	Limit	MDL	Limit	MDL	Limit	MDL
Category Type		I		II		III	
Extractable Lead (Pb)	mg/kg	2.0	1.0	0.5	0.2	23	10
Extractable Antimony (Sb)	mg/kg	45	5	11.3	1	560	10
Extractable Arsenic (As)	mg/kg	3.8	0.2	0.9	0.1	47	5
Extractable Barium (Ba)	mg/kg	1500	50	375	10	18750	50
Extractable Cadmium (Cd)	mg/kg	1.3	0.1	0.3	0.05	17	1
Extractable Mercury (Hg)	mg/kg	7.5	0.5	1.9	0.2	94	10
Extractable Selenium (Se)	mg/kg	37.5	2	9.4	1	460	10
Extractable Boron (B)	mg/kg	1200	50	300	10	15000	50
Extractable Cobalt (Co)	mg/kg	10.5	1	2.6	0.2	130	10
Extractable Manganese (Mn)	mg/kg	1200	50	300	10	15000	50
Extractable Strontium (Sr)	mg/kg	4500	50	1125	50	56000	50
Extractable Zinc (Zn)	mg/kg	3750	50	938	50	46000	50
Extractable Copper (Cu)	mg/kg	622.5	10	156	10	7700	50
Extractable Aluminum (Al)	mg/kg	5625	50	1406	50	70000	50
Extractable Nickel (Ni)	mg/kg	75	5	18.8	2	930	10
Extractable Tin (Sn)	mg/kg	15000	50	3750	50	180000	50
Extractable Organic Tin	mg/kg	0.9	0.2	0.2	0.2	12	0.2
Extractable Chromium	mg/kg	-	0.02	-	0.005	-	0.02
Extractable Chromium (III) (Cr III)	mg/kg	37.5	2	9.4	1	460	10
Extractable Chromium (VI) (Cr VI)	mg/kg	0.02	0.02	0.005	0.005	0.053	0.02

Category I: dry, brittle, powder-like or pliable toy material

Category II: liquid or sticky toy material

Category III: scrapped-off toy material

“-” = Not Regulated

END OF THE REPORT