

TEST REPORT

Applicant:

Benfu Co., Ltd.

No. 87, Lane 571, Tai Ping Rd.,
Tai Ping Village, Pu Hsin Township,
Chang Hua County 513, Taiwan, R.O.C.

Number : TWNH00066917

Date : Nov 20, 2017

Sample Description:

One (1) group of submitted samples said to be :

Item name	: Ai-xpemats
Quantity	: 1 Group
Country of origin	: Taiwan
Date sample received	: Nov 08, 2017
Date test started	: Nov 08, 2017

Test Conducted:

As requested by the applicant, for details please refer to attached pages.

Conclusion:

Please see page two.

Authorized by:

On Behalf of Intertek Testing Services
Taiwan Limited

Matt Wang
Sr. Manager



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Conclusion:

Tested sample
Submitted Samples

Standard

Mechanical and physical properties

— As per European standard on safety of toys EN 71 part 1:2014

Result
Pass

Flammability test

— As per European standard on safety of toys EN 71 part 2: 2011 + A1:2014

Pass

Tested components of
Submitted Samples

19 Toxic Element Migration Test

— As per European standard on safety of toys EN71-3:2013+A1:2014

Pass

Total Cadmium (Cd) Content

— As Per Annex XVII Item 23 Of The REACH Regulation (EC) No. 1907/2006 (Formerly Known As Directive 91/338/EEC)

Pass

Phthalates In Toys And Childcare Articles

— As Per Applicant's Request With Reference To Annex XVII Items 51 & 52 Of The REACH Regulation (EC) No. 1907/2006 (Formerly Known As Directive 2005/84/EC) For Phthalate Content In Toys And Children Articles.

Pass

Organotin Content

— As Per Annex XVII Item 20 of the REACH Regulation (EC) No. 1907/2006

Pass

Polycyclic aromatic hydrocarbons (PAHs) for GS certification

— As per AfPS GS 2014:01 PAK

Pass

Formamide Content

— As Per Appendix C to Annex II of European Council Directive 2009/48/EC on the safety of toys and Amendment (EU) 2015/2115

Pass

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Note :

The attention of the applicant is drawn to the need for the item to be labeled as below

- Toys made available on the market shall bear the CE marking. The CE marking shall be subject to the general principles set out in Article 30 of Regulation (EC) No 765/2008. The CE marking shall be affixed visibly, legibly and indelibly to the toy, to an affixed label or to the packaging. In the case of small toys and toys consisting of small parts, the CE marking may alternatively be affixed to a label or an accompanying leaflet. Where, in the case of toys sold in counter displays, that is not technically possible, and on condition that the counter display was originally used as packaging for the toy, the CE marking may be affixed to the counter display. Where the CE marking is not visible from outside the packaging, if any, it shall as a minimum be affixed to the packaging. Where specific legislation does not impose specific dimensions, the CE marking shall be at least 5 mm high.
- The manufacturer's name, registered trade name or registered trade mark and the address at which the manufacturer can be contacted shall be indicated on the toy or, where that is not possible, on its packaging or in a document accompanying the toy. This requirement applies also to the name and address etc. of any importer.
- Manufacturers shall ensure that their toys bear a type, batch, serial or model number or other element allowing their identification, or where the size or nature of the toy does not allow it, that the required information is provided on the packaging or in a document accompanying the toy.
- Manufacturers and importers shall ensure that the toy is accompanied by instructions and safety information in a language or languages easily understood by consumers, as determined by the Member State concerned.
- A Member State may, within its territory, stipulate that warnings and safety instructions shall be written in a language or languages easily understood by consumers, as determined by that Member State.

If this information is not fixed to the toy itself, it should be accompanied by a notice in advising the purchaser to retain it.

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Test Conducted

1. Mechanical and Physical Properties

As per European standard on safety of toys EN 71 part 1:2014

Appropriate age group for testing # : For all ages.

Clause	Testing item	Assessment
4*	General requirements	P
5	Toys intended for children under 36 months	P
6	Packaging	NA
7	Warnings, markings and instructions for use	P#(See note)

Remarks : P = Pass ; NA = Not applicable

= The applicant has certified that proper age grading, label and marking will put on the final product, and the age grading, label and marking certified meet the requirement of this standard. It is applicant's responsibility to make sure the final product with the age grading, label and marking as certified.

* = The following subclauses of the standard are found applicable :

- 1) 4.1 Material cleanliness
- 2) 4.7 Edges
- 3) 4.8 Points and metallic, wires
- 4) 4.15 Toys intended to bear the mass of a child
- 5) 5.1 General requirements
- 6) 7.1 General

2. Flammability Test

As per European standard on safety of toys EN 71 part 2 : 2011 + A1:2014

Clause	Testing item	Assessment
4.1	General	P
	– Cellulose nitrate	NA
	– Pile surface	NA
	– Flammable gas and liquid	NA
4.2	Toys to be worn on the head (5.2/5.3/5.4)	NA
4.3	Toy disguise costumes and toys intended to be worn by a child in play (5.4)	NA
4.4	Toys intended to be entered by a child (5.4)	NA
4.5	Soft-filled toys(5.5)	NA

Remarks : P = Pass

NA = Not applicable



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Test Conducted

3. 19 Toxic Element Migration Test

(A) Test Result

As per EN71-3:2013+A1:2014 and followed by Inductively Coupled Plasma-Optical Emission Spectrometer (ICP-OES) and Inductively Coupled Plasma Mass Spectrometer (ICP-MS).

Category (III): Scraped-off toy material

Element	Result (mg/kg)				DL (mg/kg)	Limit (mg/kg)
	(1)	(2)	(3)	(4)		
Aluminium (Al)	ND	ND	ND	ND	300	70000
Antimony (Sb)	ND	ND	ND	ND	10	560
Arsenic (As)	ND	ND	ND	ND	10	47
Barium (Ba)	ND	ND	ND	ND	10	18750
Boron (B)	ND	ND	ND	ND	50	15000
Cadmium (Cd)	ND	ND	ND	ND	5.0	17
Chromium (III) (Cr III) ++	ND	ND	ND	ND	10	460
Chromium (VI) (Cr VI) ++	ND	ND	ND	ND	0.1	0.2
Cobalt (Co)	ND	ND	ND	ND	10	130
Copper (Cu)	ND	ND	ND	ND	10	7700
Lead (Pb)	ND	ND	ND	ND	1.0	160
Manganese (Mn)	ND	ND	ND	ND	10	15000
Mercury (Hg)	ND	ND	ND	ND	10	94
Nickel (Ni)	ND	ND	ND	ND	10	930
Selenium (Se)	ND	ND	ND	ND	10	460
Strontium (Sr)	ND	ND	ND	ND	100	56000
Tin (Sn)	ND	ND	ND	ND	10	180000
Organic tin ++	ND	ND	ND	ND	3.0	12
Zinc (Zn)	ND	ND	ND	ND	100	46000



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3. 19 Toxic Element Migration Test

Element	Result (mg/kg)			DL (mg/kg)	Limit (mg/kg)
	(5)	(6)	(7)		
Aluminium (Al)	ND	ND	ND	300	70000
Antimony (Sb)	ND	ND	ND	10	560
Arsenic (As)	ND	ND	ND	10	47
Barium (Ba)	ND	ND	ND	10	18750
Boron (B)	ND	ND	ND	50	15000
Cadmium (Cd)	ND	ND	ND	5.0	17
Chromium (III) (Cr III) ++	ND	ND	ND	10	460
Chromium (VI) (Cr VI) ++	ND	ND	ND	0.1	0.2
Cobalt (Co)	ND	ND	ND	10	130
Copper (Cu)	ND	ND	ND	10	7700
Lead (Pb)	ND	ND	ND	1.0	160
Manganese (Mn)	ND	ND	ND	10	15000
Mercury (Hg)	ND	ND	ND	10	94
Nickel (Ni)	ND	ND	ND	10	930
Selenium (Se)	ND	ND	ND	10	460
Strontium (Sr)	ND	ND	ND	100	56000
Tin (Sn)	ND	ND	ND	10	180000
Organic tin ++	ND	ND	ND	3.0	12
Zinc (Zn)	ND	ND	ND	100	46000

Remarks:

- Organic tin test result was expressed as tributyl tin.
- The new lead migration limit [(2.0 mg/kg for Category (I), 0.5mg/kg for Category (II) and 23 mg/kg for Category (III)] was quoted from directive (EU) 2017/738 amending 2009/48/EC effective from 28 October 2018.
- ++ = Unless the test results were marked with "@" or "Δ", Chromium (III) & Chromium (VI) and Organic tin contents were not directly determined and were derived from migration results of total chromium and tin respectively.
- mg/kg = milligram per kilogram
- ND = Not detected
- DL = Detection limit



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3. 19 Toxic Element Migration Test

(B) Categories of various toy materials

Category I: Dry, brittle, powder like or pliable

Solid toy material from which powder-like material is released during playing and semi-solid materials that may also leave residues on the hands during play. The material can be ingested. Contamination of the hands with the material may contribute to the oral exposure of the material. (e.g. the cores of colouring pencils, chalk, crayons, modelling clays and plaster).

Category II: Liquid or sticky

Fluid or viscous toy material, which can be ingested or to which dermal exposure may occur during playing. (e.g. liquid paints, finger paints, liquid ink in pens, glue sticks, slimes, bubble solution).

Category III : Scraped-off

Solid toy material with or without a coating, which can be ingested as a result of biting, tooth scraping, sucking or licking. (e.g. coatings, lacquers, plastics, paper, textiles, glass, ceramic, metallic, wooden, bone, leather and other materials).

4. Total Cadmium (Cd) Content

Acid digestion method was used and total cadmium content was determined by Inductively Coupled Plasma-Optical Emission Spectrometer (ICP-OES).

<u>Tested Component</u>	<u>Result (ppm)</u>	<u>Limit (ppm)</u>
(1/2/3)	ND	100
(4/5/6)	ND	100
(7)	ND	100

Limit

Not detected For Cadmium Plating

100 ppm For All Plastic Materials, Paint Contain Less than 10% Zinc, Brazing Fillers & Metal Parts of Jewelry

1000 ppm For Recovered PVC, Coatings & Paint Contain Greater than 10% Zinc

Remarks: The above limit was quoted according to Annex XVII Items 23 of the REACH regulation (EC) No. 1907/2006 (formerly known as directive 91/338/EEC).

ppm = Parts per million = mg/kg

ND = Not detected

Detection limit = 5 ppm



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5. Phthalates In Toys And Childcare Articles

By solvent extraction and determined by Gas Chromatography-Mass Spectrometer (GC-MS).

I. Plasticised Material In Toys And Childcare Articles:

Compound	Result (%)			Limit (%)
	(1/2/3)	(4/5/6)	(7)	
Diethyl Hexyl Phthalate (DEHP)	ND	ND	ND	--
Dibutyl Phthalate (DBP)	ND	ND	ND	--
Benzyl Butyl Phthalate (BBP)	ND	ND	ND	--
Sum Of DEHP, DBP & BBP	ND	ND	ND	0.1

II. Plasticised Material In Toys And Childcare Articles Which Can Be Placed In The Mouth By Children:

Compound	Result (%)			Limit (%)
	(1/2/3)	(4/5/6)	(7)	
Di-(Iso-Nonyl) Phthalate (DINP)	ND	ND	ND	--
Di-(Iso-Decyl) Phthalate (DIDP)	ND	ND	ND	--
Di-(N-Octyl) Phthalate (DNOP)	ND	ND	ND	--
Sum Of DINP, DIDP & DNOP	ND	ND	ND	0.1

Remarks: The above limit was quoted according to Annex XVII Items 51 & 52 of the REACH regulation (EC) No. 1907/2006 (formerly known as directive 2005/84/EC) for phthalate content in toys and children articles.

% = Percentage based on weight of tested sample

ND = Not detected

Detection limit = 0.005% (for each compound)

6. Organotin Content

By solvent extraction, followed by Gas Chromatography-Mass Spectrometer (GC-MS) analysis.

Compound	Result (%) of tin			Limit (%) of tin
	(1/2/3)	(4/5/6)	(7)	
Sum of Tri-substituted organotin ^	ND	ND	ND	0.1
Di-butyltin (DBT)	ND	ND	ND	0.1
Di-octyltin (DOT)	ND	ND	ND	0.1

Remarks : The above limit was quoted according to Annex XVII Item 20 of the REACH regulation (EC) No. 1907/2006 & amendment (EU) No. 276/2010

^ = The reported value was calculated by summation of the values of Tri-butyltin (TBT), Tri-phenyltin (TPhT), Tri-methyltin (TMT), Tri-octyltin (TOT), Tri-cyclohexyltin (TCyT).

% = Percentage based on weight of tested sample

ND = Not detected

Detection Limit = 0.001% of Tin



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7. Polycyclic aromatic hydrocarbons (PAHs) for GS certification

As per AfPS GS 2014:01 PAK issued by the German committee on product safety (AfPS), by solvent extraction and determined by Gas Chromatography-Mass Spectrometer (GC-MS).

(I) Limits For PAH In Products

Parameter	Category 1	Category 2		Category 3	
Product	Materials intended to be put in the mouth, or materials of toys with intended long-term skin contact (longer than 30s)	Materials not covered by category 1, with foreseeable skin contact for longer than 30 seconds (long-term skin contact) or repeated short-term skin contact ##		Materials not covered by category 1 or 2 with foreseeable skin contact up to 30 seconds (short term skin contact)	
		A	B	A	B
Each (Ψ)	0.2 mg/kg	0.2 mg/kg	0.5 mg/kg	0.5 mg/kg	1 mg/kg
Sum of (Δ)	1 mg/kg	5 mg/kg	10 mg/kg	20 mg/kg	50 mg/kg
Naphthalene	1 mg/kg	2 mg/kg		10 mg/kg	
Sum of 18 PAHs	1 mg/kg	5 mg/kg	10 mg/kg	20 mg/kg	50 mg/kg

Remarks :

- A = Toys in the scope of 2009/48/EC
- B = Other products in the scope of ProdSG
- Ψ = Benzo[a]Pyrene, Benzo[e]Pyrene, Benzo[a]Anthracene, Benzo[b]Fluoranthene, Benzo[j]Fluoranthene, Benzo[k]Fluoranthene, Chrysene, Dibenzo[a,h]Anthracene, Benzo[g,h,i]Perylene and Indeno[1,2,3-cd]Pyrene
- Δ = Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene, Anthracene and Fluoranthene
- ## = "repeated short-term skin contact" according to REACH Annex XVII No. 50 addition regulation (EC) No. 1272/2013



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7. Polycyclic aromatic hydrocarbons (PAHs) for GS certification

(II) Test Result

Testing Item	Result (ppm)		
	(1/2/3)	(4/5/6)	(7)
Polycyclic Aromatic Hydrocarbons (PAHs)			
Naphthalene	ND	ND	ND
Acenaphthylene (Δ)	ND	ND	ND
Acenaphthene (Δ)	ND	ND	ND
Fluorene (Δ)	ND	ND	ND
Phenanthrene (Δ)	ND	ND	ND
Anthracene (Δ)	ND	ND	ND
Fluoranthene (Δ)	ND	ND	ND
Pyrene (Δ)	ND	ND	ND
Chrysene (Ψ)	ND	ND	ND
Benzo[a]Anthracene (Ψ)	ND	ND	ND
Benzo[b]Fluoranthene (Ψ)	ND	ND	ND
Benzo[k]Fluoranthene (Ψ)	ND	ND	ND
Benzo[j]Fluoranthene (Ψ)	ND	ND	ND
Benzo[a]Pyrene (Ψ)	ND	ND	ND
Benzo[e]Pyrene (Ψ)	ND	ND	ND
Indeno[1,2,3-c,d]Pyrene (Ψ)	ND	ND	ND
Dibenzo[a,h]Anthracene (Ψ)	ND	ND	ND
Benzo[g,h,i]Perylene (Ψ)	ND	ND	ND
Sum of (Δ)	ND	ND	ND
Sum Of 18 PAHs	ND	ND	ND
Classification Of Samples: Category	2B	2B	2B
Conclusion	P	P	P

Remarks : ppm = Parts per million = mg/kg

ND = Not detected

Detection limit = 0.2 ppm

P = Pass



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8. Polycyclic Aromatic Hydrocarbons (PAHs) Content

By solvent extraction and determined by Gas Chromatography-Mass Spectrometer (GC-MS).

Compound	Result (ppm)			Limit (ppm)
	(1/2/3)	(4/5/6)	(7)	
Benzo[a]Pyrene	ND	ND	ND	0.5
Benzo[e]Pyrene	ND	ND	ND	0.5
Benzo[a]Anthracene	ND	ND	ND	0.5
Chrysene	ND	ND	ND	0.5
Benzo[b]Fluoranthene	ND	ND	ND	0.5
Benzo[j]Fluoranthene	ND	ND	ND	0.5
Benzo[k]Fluoranthene	ND	ND	ND	0.5
Dibenzo[a,h]Anthracene	ND	ND	ND	0.5

Remarks : The above limit was quoted according to annex XVII items 50 of the REACH regulation (EC) No. 1907/2006.

ppm = Parts per million = mg/kg

ND = Not detected

Detection Limit = 0.2 ppm

9. Formamide Content

By acetone extraction and Gas Chromatography-Mass Spectrometer (GC-MS) Analysis.

Tested Component	Result (ppm)	Screening Limit (ppm)
	(1/2/3)	
(1/2/3)	18	200
(4/5/6)	28	200
(7)	16	200

Remarks : ppm = Parts Per Million = mg/kg

ND = Not Detected

Detection limit = 2 ppm

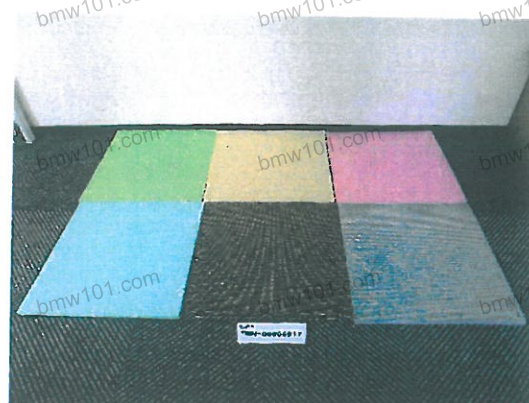
Tested Components:

- (1) Sky blue foam with transparent film
- (2) Grass green foam with transparent film
- (3) Brown foam with transparent film
- (4) Cream foam with transparent film
- (5) Grey foam with transparent film
- (6) Pink foam with transparent film
- (7) Cream foam with wooden color film



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End of Report

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