



STC Test Report

Date : 2017-01-09
No. : HP302873

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- Applicant** : Meffert's Puzzles & Games
2008 Remex Ctr
42 Wong Chuk Hang Road
Aberdeen Hong Kong

Attn: Uwe Meffert
- Supplier** : MEFFERT'S PUZZLES & GAMES
- Description of Samples** : Five pieces of submitted sample said to be:
FELIKS 9(see attached photo)
COUNTRY OF ORIGIN: CHINA
COUNTRY OF DESTINATION: USA & EUROPE
BUYER: RECENT TOYS INTL.
AGE GRADING: 9 YEARS OLD AND UP
- Investigation Requested** :
- (1) ASTM Standard Consumer Safety Specification on Toy Safety, F963-11:
 - physical and mechanical tests
 - flammability test
 - heavy metals content
 - (2) USA Consumer Product Safety Improvement Act
 - Sec. 101(a): Children's products containing lead - Total lead content for substrate
 - Sec. 108: Phthalates content
 - (3) European Standard for Safety of Toys
 - EN71-1:2014
 - EN71-2:2011+A1:2014
 - EN71-3:2013+A1:2014
 - (4) European Regulation (EU) No. 1907/2006(REACH) Annex XVII and its amendment – Phthalate content (Formerly directive: EC Directive 2005/84/EC).

WONG Wing-cheung, Benny
Authorized Signatory

Toys & Children's Products Department
For and on behalf of

The Hong Kong Standards and Testing Centre Ltd.





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Date Samples Received : 2016-12-19

Date Tested : 2016-12-19 to 2017-01-03

Conclusions : The submitted sample(s) **complied** with the test requirements:

ASTM F963-11: physical and mechanical tests

ASTM F963-11: flammability test

ASTM F963-11: heavy metals content

USA Consumer Product Safety Improvement Act, Sec. 101(a):
Total lead content for substrate in children's products

USA Consumer Product Safety Improvement Act, Sec. 108:
Phthalates content

EN71-1:2014

EN71-2:2011+A1:2014

EN71-3:2013+A1:2014

European Regulation (EU) No. 1907/2006(REACH) Annex XVII
and its amendment – Phthalate content

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Authorized Signatory
Toys & Children's Products Department
For and on behalf of
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AGE GRADING:

The sample was appropriately age graded with the marking of "Age 9-99".

AGE GRADING FOR TESTING:

9 years and up.

Test Results :

1. ASTM F963-11

1.1 Mechanical and physical hazards

Ref.: ASTM F963-11

Applicable requirements before and after normal use testing according to section 8.5:

<u>Applicable Section</u>	<u>Description</u>	<u>Result</u>
4	<u>Safety requirements</u>	
4.1	Material quality	Pass
4.2	Flammability	Pass* ¹
4.3	Toxicology	Pass* ¹
4.7	Accessible edges	Pass
5	<u>Labeling requirements</u>	
5.2	Age grading labeling	Pass
5.16	Promotional materials	Pass
6	<u>Instructional literature</u>	
6.1	Definition and description	Pass
7	<u>Producer's markings</u>	
7.1	Name and address of the producer or distributor	Pass

*¹ = Refer to the relevant test results at the following pages.

1.2 Flammability test of material other than textiles

Ref.: ASTM F963-11 Section 4.2

Method used: FHSA 16 CFR 1500.44

Result: Pass

<u>Sample</u>	<u>Burn rate (in/sec.)</u>
Feliks 9	DNI

DNI = Did Not Ignite.

Note 1: The burning rate should not be greater than 0.1 inch per second.

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1.3 Heavy element

Ref.: ASTM F963-11 Section 4.3.5

Method: ASTM F963-11 Section 8.3

Determined by: Inductively Coupled Argon Plasma Atomic Emission Spectrophotometer

Toys Substrate Materials

Ref.: ASTM F963-11 Section 4.3.5.2

Polymeric material

- (a) Main body: black plastic
- (b) Main body: white plastic
- (c) Main body: red plastic
- (d) Main body: orange plastic
- (e) Main body: yellow plastic
- (f) Main body: green plastic
- (g) Main body: blue plastic
- (h) Main body: light blue plastic
- (i) Main body: purple plastic

Sample no.	Total Lead content, ppm
(a)	<10
(b)	<10
(c)	<10
(d)	<10
(e)	<10
(f)	<10
(g)	<10
(h)	<10
(i)	<10
Limit	100

Sample no.	Soluble heavy metal content, ppm							
	Lead	Cadmium	Chromium	Barium	Antimony	Arsenic	Mercury	Selenium
(a)	<2	<2	<2	<2	<2	<2	<2	<2
(b)	<2	<2	<2	<2	<2	<2	<2	<2
(c)	<2	<2	<2	<2	<2	<2	<2	<2
(d)	<2	<2	<2	<2	<2	<2	<2	<2
(e)	<2	<2	<2	<2	<2	<2	<2	<2
(f)	<2	<2	<2	<2	<2	<2	<2	<2
(g)	<2	<2	<2	<2	<2	<2	<2	<2
(h)	<2	<2	<2	<2	<2	<2	<2	<2
(i)	<2	<2	<2	<2	<2	<2	<2	<2
Limit	90	75	60	1000	60	25	60	500

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ppm = mg/kg (milligram per kilogram)

2. USA Consumer Product Safety Improvement Act

2.1 Children's products containing lead - Total lead content in substrate

Ref.: CPSIA Sec 101(a).

Determined by: Inductively Coupled Argon Plasma Atomic Emission Spectrophotometer

Polymeric materia

Test method: Standard operation procedure for determining total lead (Pb) in non-metal children's products, CPSC-CH-E1002-08.3

- (a) Main body: black plastic
- (b) Main body: white plastic
- (c) Main body: red plastic
- (d) Main body: orange plastic
- (e) Main body: yellow plastic
- (f) Main body: green plastic
- (g) Main body: blue plastic
- (h) Main body: light blue plastic
- (i) Main body: purple plastic

Sample No.	Total lead content, ppm
(a)	<10
(b)	<10
(c)	<10
(d)	<10
(e)	<10
(f)	<10
(g)	<10
(h)	<10
(i)	<10
Limit	100

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2.2 Phthalates content

Ref.: CPSIA Sec. 108

Test method: CPSC-CH-C1001-09.3 by Gas Chromatography with Mass Selective Detector

- (a) Main body: black plastic
- (b) Main body: white plastic
- (c) Main body: red plastic
- (d) Main body: orange plastic
- (e) Main body: yellow plastic
- (f) Main body: green plastic
- (g) Main body: blue plastic
- (h) Main body: light blue plastic
- (i) Main body: purple plastic

Sample No.	Phthalates content, %(w/w)					
	DBP	BBP	DEHP	DNOP	DINP	DIDP
(a)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(b)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(c)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(d)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(e)	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
(f)	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
(g)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(h)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(i)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Limit	0.1	0.1	0.1	0.1	0.1	0.1

Remark:

- DBP =Di-n-butyl phthalate
- BBP =Benzyl-n-butyl phthalate
- DEHP = Di (2-ethylhexyl) phthalate
- DNOP = Di-n-octyl phthalate
- DINP = Diisononyl phthalate
- DIDP = Diisodecyl phthalate
- %(w/w) =percentage weight per weight
- The requirements of DNOP, DINP and DIDP are only applicable to components that can be placed in children's mouths.

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3. EN71

3.1 EN71-1:2014 - Part 1: Mechanical and physical properties

<u>Applicable Clause</u>	<u>Description</u>	<u>Result</u>
4	<u>General requirements</u>	
4.1	Materials cleanliness	Pass
4.7	Edges	Pass
4.8	Points and metallic wires	Pass
7	<u>Markings and instructions for use</u>	
7.1	General	Pass
7.2	Toys not intended for children under 36 months	Pass

3.2 EN71-2:2011+A1:2014 - Part 2: Flammability

<u>Applicable Clause</u>	<u>Description</u>	<u>Result</u>
4.1	General requirements	Pass

3.3 EN71-3 :2013+A1:2014 - Part 3: Migration of certain elements

Test Method: EN71-3: 2013+A1:2014

Determined by: Inductively Coupled Argon Plasma Atomic Emission Spectrophotometer and Inductively Coupled Plasma Mass Spectrometry

Category III: Scraped-off toy material

Polymeric material

- (a) Main body: black plastic
- (b) Main body: white plastic
- (c) Main body: red plastic
- (d) Main body: orange plastic
- (e) Main body: yellow plastic
- (f) Main body: green plastic
- (g) Main body: blue plastic
- (h) Main body: light blue plastic
- (i) Main body: purple plastic

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Elements	Result (mg/kg)			Limit(mg/kg)
	a	b	c	
Aluminium	ND	ND	ND	70000
Antimony	ND	ND	ND	560
Arsenic	ND	ND	ND	47
Barium	ND	ND	ND	18750
Boron	ND	ND	ND	15000
Cadmium	ND	ND	ND	17
Chromium(III)	ND	ND	ND	460
Chromium (VI)	ND	ND	ND	0.2
Cobalt	ND	ND	ND	130
Copper	ND	ND	ND	7700
Lead	ND	ND	ND	160
Manganese	ND	ND	ND	15000
Mercury	ND	ND	ND	94
Nickel	ND	ND	ND	930
Selenium	ND	ND	ND	460
Strontium	ND	ND	ND	56000
Tin	0.2	ND	0.3	180000
Organic tin	0.2	ND	0.3	12
Zinc	ND	ND	ND	46000

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Elements	Result (mg/kg)			Limit(mg/kg)
	d	e	f	
Aluminium	ND	ND	ND	70000
Antimony	ND	ND	ND	560
Arsenic	ND	ND	ND	47
Barium	ND	ND	ND	18750
Boron	ND	ND	ND	15000
Cadmium	ND	ND	ND	17
Chromium(III)	ND	ND	ND	460
Chromium (VI)	ND	ND	ND	0.2
Cobalt	ND	ND	ND	130
Copper	ND	ND	ND	7700
Lead	ND	ND	ND	160
Manganese	ND	ND	ND	15000
Mercury	ND	ND	ND	94
Nickel	ND	ND	ND	930
Selenium	ND	ND	ND	460
Strontium	ND	ND	ND	56000
Tin	ND	0.6	ND	180000
Organic tin	ND	0.6	ND	12
Zinc	ND	ND	ND	46000

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Elements	Result (mg/kg)			Limit(mg/kg)
	g	h	i	
Aluminium	ND	ND	ND	70000
Antimony	ND	ND	ND	560
Arsenic	ND	ND	ND	47
Barium	ND	ND	ND	18750
Boron	ND	ND	ND	15000
Cadmium	ND	ND	ND	17
Chromium(III)	ND	ND	ND	460
Chromium (VI)	ND	ND	ND	0.2
Cobalt	ND	ND	ND	130
Copper	ND	ND	ND	7700
Lead	ND	ND	ND	160
Manganese	ND	ND	ND	15000
Mercury	ND	ND	ND	94
Nickel	ND	ND	ND	930
Selenium	ND	ND	ND	460
Strontium	ND	ND	ND	56000
Tin	ND	ND	ND	180000
Organic tin	ND	ND	ND	12
Zinc	ND	ND	ND	46000

Remark: ND = Not detected (see Table A)
mg/kg = milligram per kilogram

The Chromium content was reported as Chromium (III) and Chromium (VI). Whenever the result of Chromium exceeded the limit of Chromium (III) and Chromium (VI), confirmation test was performed.

The Tin content was reported as Organic tin unless specified.

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Table A. Detection limit	
Elements	Limit of Detection (mg/kg)
Aluminium	5
Antimony	5
Arsenic	5
Barium	5
Boron	5
Cadmium	2.5
Chromium(III)	0.1
Chromium (VI)	0.1
Cobalt	5
Copper	5
Lead	5
Manganese	5
Mercury	5
Nickel	5
Selenium	5
Strontium	5
Tin	0.2
Organic tin	0.2
Zinc	5

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4. Phthalate content

Ref.: EU Directive 1907/2006(REACH) Annex XVII
Method used: Gas Chromatography Mass Spectrometer

- (a) Main body: black plastic
- (b) Main body: white plastic
- (c) Main body: red plastic
- (d) Main body: orange plastic
- (e) Main body: yellow plastic
- (f) Main body: green plastic
- (g) Main body: blue plastic
- (h) Main body: light blue plastic
- (i) Main body: purple plastic

Sample	Phthalates content, %(w/w)					
	DBP	BBP	DEHP	DNOP	DINP	DIDP
(a)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(b)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(c)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(d)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(e)	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
(f)	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
(g)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(h)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(i)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Limit	The cumulative total of DBP, BBP and DEHP shall not be greater than 0.1% by mass of the plasticised material.			The cumulative total of DNOP, DINP and DIDP shall not be greater than 0.1% by mass of the plasticised material.		

Remark:

- DBP = Di-n-butyl phthalate
- BBP = Benzyl-n-butyl phthalate
- DEHP = Di (2-ethylhexyl) phthalate
- DNOP = Di-n-octyl phthalate
- DINP = Diisononyl phthalate
- DIDP = Diisodecyl phthalate
- %(w/w) = percentage weight per weight
- Method detection limit = 0.01%(w/w)
- The requirements of DNOP, DINP and DIDP are only applicable on tested material which can be placed in the mouth by children.

***** End of Test Report *****

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Appendix for Photos of the Submitted Sample





STC Test Report

Conditions of Issuance of Test Reports

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2. Any report issued by the Company as a result of this application for testing service (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to his customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
4. The Report refers only to the sample tested and does not apply to the bulk, unless the sampling has been carried out by the Company and is stated as such in the Report.
5. In the event of the improper use the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
6. Sample submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
7. The Company will not be liable for or accept responsibility for any loss or damage howsoever arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
8. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
9. Subject to the variable length of retention time for test data and report stored hereinto as to otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of this test report for a period of three years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after the retention period. Under no circumstances shall we be liable for damages of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.
10. Issuance records of the Report are available on the internet at www.stc-group.org. Further enquiry of validity or verification of the Reports should be addressed to the Company.