



Test Report

Date : 2017-06-14
No. : DP17060552

Page 1 of 8

Applicant : HANDSOME CHEMICAL LTD
Industrial Zone Da Ban Di, Cun Tou, Hu Men Town,
Dongguan City

Attn: Mr. Cheng

Description of Samples : One bag of submitted sample(s) said to be :
(see the attached photo)
NO.: RED 3BT(398)
COLOR: RED
LOT NO.: 0013788647

Date Samples Received : 2017-06-12

Date Tested : 2017-06-12 to 2017-06-14

CONCLUSION :		
TEST SAMPLES	TEST STANDARD	RESULT
Pigment	ASTM F963-16: Heavy metals content	Pass
	16 CFR Part 1303, U.S. CPSC	Pass
	SRS-018 Rev. C	Pass
	Directive 2009/48/EC ,Appendix A ,Total Nickel(Ni) content in accessible materials	Pass
	Hasbro requirements on selected heavy elements (w.r.t. EN 71-3:2013+A1:2014)	Pass
	Heavy elements contents in accordance with Mattel Specification RMS #0006-2903 Rev.1.00	Pass
	Mattel Specification QSOP #0006-3600 Rev. 2.00	Pass



HUANG Qi-yin, Shanny
Authorized Signatory
Toys and Children's Products Department
For and on behalf of
STC (Dongguan) Company Ltd

STC (Dongguan) Company Limited

68 Fumin Nan Road, Dalang, Dongguan, China. (Zip Code: 523770)

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Test Report

Date : 2017-06-14
No. : DP17060552

Page 2 of 8

- Investigation Requested :**
- 1.ASTM F963-16: Standard Consumer Safety Specification for Toy Safety
- Heavy metals content
 - 2.Title 16, Code of Federal Regulations, Part 1303,CPSC of U.S.A.
-Total Lead content
 - 3.Hasbro Safety and Reliability Specification-SRS-018 Rev. C.
Heavy metal content specification
-Heavy metal contents in Coatings materials
 - 4.Total Nickel and Tin contents
 - 5.EN71-3:2013+A1:2014: Migration of certain elements
 - 6.Heavy elements contents in accordance with Mattel Specification RMS #0006-2903 Rev.1.00
 - 7.Heavy elements contents in accordance with Mattel Specification QSOP #0006- 3600 Rev. 2.00

Sample description

Coating materials

(1) Pigment: red

Test Results:

1. ASTM F963-16

1.1 Total lead content analysis

Ref.: ASTM F963-16 Section 4.3.5

Method: ASTM F963-16 Section 8.3

Determined by: Inductively Coupled Argon Plasma Atomic Emission Spectrophotometer

<u>Element</u>	<u>Result(%)</u>	<u>Limit(%)</u>
	(1)	
Total Lead (Pb)	<0.0005	0.009

Note(s): (1) < = Less than.

(2) mg/kg = milligrams per kilogram

1.2 Soluble content analysis

Ref.: ASTM F963-16 Section 4.3.5

Method: ASTM F963-16 Section 8.3

Determined by: Inductively Coupled Argon Plasma Atomic Emission Spectrophotometer

<u>Element</u>	<u>Result(mg/kg)</u>	<u>Limit(mg/kg)</u>
	(1)	
Soluble Lead	<2	90
Soluble Cadmium	<2	75
Soluble Chromium	<2	60
Soluble Barium	<2	1000
Soluble Antimony	<2	60

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Test Report

Date : 2017-06-14
No. : DP17060552

Page 3 of 8

<u>Element</u>	<u>Result(mg/kg)</u>	<u>Limit(mg/kg)</u>
	(1)	
Soluble Arsenic	<2	25
Soluble Mercury	<2	60
Soluble Selenium	<2	500

Note(s): (1) < = Less than.
(2) mg/kg = milligrams per kilogram

2. **Children's products containing lead - Total Lead content in paint and surface coating**

Ref.: 16 CFR Part 1303, U.S. CPSC

Method used: CPSC-CH-E1003-09.1

Determined by: Inductively Coupled Argon Plasma Atomic Emission Spectrophotometer

<u>Element</u>	<u>Result(mg/kg)</u>	<u>Limit(mg/kg)</u>
	(1)	
Total Lead (Pb)	<5	90

Note(s): (1) < = less than
(2) mg/kg = milligrams per kilogram

3. **Hasbro Safety and Reliability Specification-SRS-018 Rev. C. Heavy metal content specification**

Test Method / Instrument:

Total testing is carried out in accordance with EPA3052, EPA3050 B or other validated test methods;
Soluble testing was carried out in accordance with EN71-3:2013+A1:2014, Analysis were performed
by using Inductively Coupled Argon Plasma Atomic Emission Spectrophotometer

Coating materials

Sample Elements	<u>Result in ppm</u>	Limit in ppm ACTION	Limit in ppm REQUIRED
	(1)		
Total Cadmium (Cd)	ND	30	40
Total Lead (Pb)	ND	--	20
Total Chromium (Cr)	ND	500	750
Total Mercury (Hg)	ND	--	<5
Total Antimony (Sb)	ND	750	--
Total Arsenic (As)	ND	30	--
Total Barium (Ba)	ND	750	--
Total Selenium (Se)	ND	750	--
Soluble Chromium (Cr)	ND	40	60
Soluble Antimony (Sb)	ND	25	60
Soluble Arsenic (As)	ND	10	25
Soluble Barium (Ba)	ND	--	350

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Test Report

Date : 2017-06-14
No. : DP17060552

Page 4 of 8

Sample Elements	Result in ppm	Limit in ppm ACTION	Limit in ppm REQUIRED
	(1)		
Soluble Selenium (Se)	ND	200	500
Soluble Cadmium (Cd)	ND	10	17
Soluble Lead (Pb)	ND	--	20
Soluble Mercury (Hg)	ND	--	<5

Note(s): ND = Not Detected, Method detection limit (MDL) for Total Cd, Pb, Cr, Hg, As, Ba, Se are 5ppm (ICP-OES); for Soluble Cr, Sb, As, Ba, Se, Cd, Pb, Hg are 5ppm(ICP-OES).

4. **Total Tin(Sn) and Total Nickel(Ni) content in accessible materials**

Test Method / Instrument:

With reference to EPA3052, EPA3050 B or other validated test methods. Analysis were performed by using Inductively Coupled Argon Plasma Atomic Emission Spectrophotometer

For Category III : Scrape off toys materials

Sample Elements	Result in ppm	Limit in ppm ACTION	Limit in ppm REQUIRED
	(1)		
Total Nickel (Ni)	ND	930	10000
Total Tin (Sn)	ND	12	--

Note(s): ND = Not Detected, Method detection limit(MDL) for Total Ni, Sn are 5ppm.

5. **EN 71-3:2013+A1:2014: Migration of certain elements**

Test Method / Instrument:

With reference to EN 71-3:2013+A1:2014, Analysis were performed by using Inductively Coupled Argon Plasma Atomic Emission Spectrophotometer & Inductively Coupled Plasma Mass Spectrometry.

Category III: Scraped off toy materials

Sample Elements	Result in ppm	Limit in ppm ACTION	Limit in ppm REQUIRED
	(1)		
Soluble Aluminium (Al)	ND	--	70000
Soluble Boron (B)	ND	--	15000
Soluble Cobalt (Co)	ND	--	130
Soluble Copper (Cu)	ND	--	7700
Soluble Manganese (Mn)	ND	--	15000
Soluble Strontium (Sr)	ND	--	56000
Soluble Zinc (Zn)	ND	--	46000
Soluble Antimony (Sb)	ND	--	560
Soluble Arsenic (As)	ND	--	47
Soluble Barium (Ba)	ND	--	18750

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Test Report

Date : 2017-06-14
No. : DP17060552

Page 5 of 8

Sample Elements	Result in ppm	Limit in ppm	Limit in ppm
	(1)	ACTION	REQUIRED
Soluble Cadmium (Cd)	ND	--	17
Soluble Lead (Pb)	ND	--	160
Soluble Mercury (Hg)	ND	--	94
Soluble Selenium (Se)	ND	--	460
Soluble Nickel (Ni)	ND	--	930
Soluble Tin (Sn)	ND	2.5*	180000

Note(s): ND = Not Detected, Method detection limit(MDL) for Soluble Al, B, Cu, Mn, Sr, Zn, Ba are 20ppm; for soluble Sb, As, Co, Pb, Hg, Ni, Se are 5ppm; for Soluble Cd, Sn are 2.5ppm

*= If Soluble Tin content > action limit, proceed to Organic Tin analysis

Chromium (VI) analysis

Test Method / Instrument:

With reference to EN 71-3 Annex G, Analysis were performed by using Inductively Coupled Plasma Mass Spectrometry

For Category III : Scrape off toys materials

Sample Elements	Result in ppm	Limit in ppm	Limit in ppm
	(1)	ACTION	REQUIRED
Soluble Chromium (Cr)	ND	0.2* ¹	--

Note(s): (1)ND = Not Detected, Method detection limit(MDL)for Soluble Cr is 0.1ppm

(2)*¹ =If soluble Chromium content > action limit, proceed to soluble Chromium(VI) analysis using LC-ICP-MS.

6. Heavy elements contents

Ref.: Mattel Specification RMS #0006-2903 Rev.1.00

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

<u>Element</u>	<u>Result(ppm)</u>	<u>Total Limit (ppm)</u>	<u>Soluble limit For method 1 (ppm)</u>
	(1)		
Antimony (Sb)	ND	--	30
Arsenic (As)	ND	--	10
Barium (Ba)	ND	--	250
Cadmium (Cd)	ND	40	17
Chromium (Cr)	ND	50	30
Lead (Pb)	ND	20	20

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Test Report

Date : 2017-06-14
No. : DP17060552

Page 6 of 8

<u>Element</u>	<u>Result(ppm)</u>	<u>Total Limit (ppm)</u>	<u>Soluble limit For method 1 (ppm)</u>
	(1)		
Mercury (Hg)	ND	500	30
Selenium (Se)	ND	--	150
Aluminum (Al)	12	--	70000
Boron (B)	22	--	15000
Cobalt (Co)	ND	--	130
Copper (Cu)	ND	--	7700
Manganese (Mn)	ND	--	15000
Nickel (Ni)	ND	10000	930
Strontium (Sr)	ND	--	56000
Tin (Sn)	ND	--	180000
Zinc (Zn)	ND	--	46000
Organic tin	--	--	0.2

Note(s):
 (1) ppm = parts per million
 (2) ND= Not detected (method detection limit for Sb, As, Ba, Cd, Cr, Pb, Se, Al, B, Co, Cu, Mn, Ni, Sr, Sn, Zn = 5ppm, and Hg = 2ppm).

7. Heavy Element Contents

Ref.: Mattel Specification QSOP #0006-3600 Rev. 2.00

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

Clause 2.3.1 Surface Coatings

<u>Element</u>	<u>Result (ppm)</u>	<u>Total Limit (ppm)</u>	<u>Soluble limit For method 1 (ppm)</u>	<u>Soluble limit For method 2 (ppm)</u>
	(1)			
Total Antimony (Sb)	ND	-	60	1000
Total Arsenic (As)	ND	-	25	1000
Total Barium (Ba)	ND	-	1000	1000
Total Cadmium (Cd)	ND	75	17	1000
Total Chromium (Cr)	ND	-	60	-
Total Lead (Pb)	ND	40	46	-
Total Mercury (Hg)	ND	10	60	-
Total Selenium (Se)	ND	-	460	1000
Total Aluminum (Al)	12	-	70000	-
Total Boron (B)	22	-	15000	-
Total Cobalt (Co)	ND	-	130	-
Total Copper (Cu)	ND	-	7700	-
Total Manganese (Mn)	ND	-	15000	-
Total Nickel (Ni)	ND	10000	930	-

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Test Report

Date : 2017-06-14
No. : DP17060552

Page 7 of 8

<u>Element</u>	<u>Result (ppm)</u>	<u>Total Limit (ppm)</u>	<u>Soluble limit For method 1 (ppm)</u>	<u>Soluble limit For method 2 (ppm)</u>
	(1)			
Total Strontium (Sr)	ND	-	56000	-
Total Tin (Sn)	ND	-	180000	-
Total Zinc (Zn)	ND	-	46000	-
Chromium VI(Cr VI)	--	-	0.2	-
Organic tin	--	-	12	-

- Note(s):
- (1) ppm = parts per million
 - (2) ND= Not detected (method detection limit for Total Sb, As, Ba, Cd, Cr, Pb, Se, Al, B, Co, Cu, Mn, Ni, Sr, Sn, Zn = 5ppm, and Total Hg = 2ppm).
 - (3) Soluble method 1 testing of tin was not required as the total Sn result exceeded 12ppm accordance with the Specification

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



Test Report

Date : 2017-06-14
No. : DP17060552

Page 8 of 8

Appendix for Photos of the Submitted Sample(s)



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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.
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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. The Company will take reasonable care of samples submitted for testing whilst in the Company’s possession. However, no liability is accepted for loss or damage howsoever caused, to goods and/or samples whilst in the possession or under the control of the Company. Mutilation of samples submitted for the purpose of testing is inevitable. The Company will return, on the Client’s written request, only what remains of the samples after testing. The Clients agree that any samples, of retained by the Company may be destroyed after one month, unless the Company has been specifically instructed otherwise.
10. Sample which are in the Company’s reasonable opinion too small to afford an adequate examination or test to be made, may nevertheless, subject to the Company’s entire discretion, be accepted for test but the relevant report may be accordingly qualified.