



## Test Report

Date : 2017-06-02  
No. : DP17051971

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**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.:BLUE BGH (438)  
COLOR: BLUE  
LOT NO.: INB5162

**Date Samples Received** : 2017-05-26

**Date Tested** : 2017-05-26 to 2017-06-02

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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- 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: blue

### 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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<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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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)	77	--	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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Sample Elements	Result in ppm	Limit in ppm ACTION	Limit in ppm REQUIRED
	(1)		
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 ACTION	Limit in ppm REQUIRED
	(1)		
Soluble Chromium (Cr)	ND	0.21	--

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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<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)	11	--	70000
Boron (B)	ND	--	15000
Cobalt (Co)	ND	--	130
Copper (Cu)	8.62×10 <sup>4</sup>	--	7700
Manganese (Mn)	ND	--	15000
Nickel (Ni)	ND	10000	930
Strontium (Sr)	13	--	56000
Tin (Sn)	ND	--	180000
Zinc (Zn)	23	--	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).

### Soluble 1 content analysis

<u>Element</u>	<u>Result Sample(1)</u>	<u>Soluble limit for method 1</u>
Copper (Cu)	77	7700ppm

Note(s): (1) ppm = parts per million  
(2) ND= Not detected (method detection limit for for Cu =5ppm).

## 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	-



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<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 Lead (Pb)	ND	40	46	-
Total Mercury (Hg)	ND	10	60	-
Total Selenium (Se)	ND	-	460	1000
Total Aluminum (Al)	11	-	70000	-
Total Boron (B)	ND	-	15000	-
Total Cobalt (Co)	ND	-	130	-
Total Copper (Cu)	8.62×10 <sup>4</sup>	-	7700	-
Total Manganese (Mn)	ND	-	15000	-
Total Nickel (Ni)	ND	10000	930	-
Total Strontium (Sr)	13	-	56000	-
Total Tin (Sn)	ND	-	180000	-
Total Zinc (Zn)	23	-	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

Soluble 1 content analysis

<u>Element</u>	<u>Result Sample(1)</u>	<u>Soluble limit for method 1</u>
Copper (Cu)	77	7700ppm

Note(s): (1) ppm = parts per million  
 (2) ND= Not detected (method detection limit for for Cu =5ppm).

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

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### Appendix for Photos of the Submitted Sample(s)



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