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Lab Location:	SHANG HAI

Royal Brush Test Report

Applicant:	Royal Brush Manufacturing, Inc.
Attention:	Michael C. Dovellos
Address:	515 West 45 th Street, Munster, IN 46321



SAMPLE INFORMATION			
Sample Description:	Iridescent & Pearl Craft Paint		
Style / Item No.:	See Attached for List	Quantity:	3
Buyer:	NA	Color:	NA
Vendor:	NA	SKN/SKU NO.:	NA
Manufacturer:	NA	Age Grading:	NA
Country of Destination:	Europe	Country of Origin:	CHINA

TEST INFORMATION			
Sample Submitted by:	Applicable		
Sample Status:	NA	Previous Report No.:	NA
Date of Submission:	May 11, 2018		
Test Performance Dates:	May 11, 2018 - May 17, 2018		

EXECUTIVE SUMMARY	
The submitted sample(s) MEET the following requirements requested by the client:	
- Migration of Certain Elements – EN 71-3:2013+A2:2017	

For and on behalf of
Modern Testing Services Co., Ltd.

Gao Jian, David
Assistant Manager, Toy Division

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COMPONENT BREAKDOWN LIST:

Test Item	Component Description
A	Iridescent & Pearl Craft Paint
A1	Iridescent Gold paint
A2	Iridescent Silver paint
A3	Pearl White paint
A4	Pearl Clown yellow paint
A5	Pearl Mid yellow paint
A6	Pearl Orange red paint
A7	Pearl Scarlet paint
A8	Pearl Rose paint
A9	Pearl Bamboo green paint
A10	Pearl viridan paint
A11	Pearl blue paint
A12	Pearl sapphire paint
A13	Pearl purple paint
A14	Pearl black paint
A15	Pearl wine red paint
A16	Iridescent red paint
A17	Iridescent green paint
A18	Iridescent blue paint
A19	Iridescent violet paint
A20	Iridescent gold paint
A21	Multicolor coating(on stick)
A22	Paper with glue(stick)
A23	White plastic(bottle)
A24	White plastic(bottle cap)
A25	White paper(gasket)

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TEST SUMMARY:

Migration of Certain Elements – EN 71-3:2013+A2:2017

Category II: Liquid or sticky materials

Extractable Elements	Result (mg/kg)						Migration Limit (mg/kg)
Test Item	A1	A2	A3	A4	A5	A6	-
Mass of Trace Amount (mg)	NA	NA	NA	NA	NA	NA	-
Aluminum (Al)	<10	<10	<10	<10	<10	<10	1406
Antimony (Sb)	<1	<1	<1	<1	<1	<1	11.3
Arsenic (As)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9
Barium (Ba)	<10	<10	<10	<10	<10	<10	375
Boron (B)	<100	<100	<100	<100	<100	<100	300
Cadmium (Cd)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3
Chromium (III) (Cr III)	<1	<1	<1	<1	<1	<1	9.4
Chromium (VI) (Cr VI)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005
Cobalt (Co)	<1	<1	<1	<1	<1	<1	2.6
Copper (Cu)	<10	<10	<10	<10	<10	<10	156
Lead (Pb)	<1	<1	<1	<1	<1	<1	3.4
Manganese (Mn)	<10	<10	<10	<10	<10	<10	300
Mercury (Hg)	<1	<1	<1	<1	<1	<1	1.9
Nickel (Ni)	<1	<1	<1	<1	<1	<1	18.8
Selenium (Se)	<1	<1	<1	<1	<1	<1	9.4
Strontium (Sr)	<10	<10	<10	<10	<10	<10	1125
Tin (Sn)	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	3750
Organic Tin	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2
Zinc (Zn)	<10	<10	<10	<10	<10	<10	938
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	-

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Extractable Elements	Result (mg/kg)						Migration Limit (mg/kg)
Test Item	A7	A8	A9	A10	A11	A12	-
Mass of Trace Amount (mg)	NA	NA	NA	NA	NA	NA	-
Aluminum (Al)	<10	<10	<10	<10	<10	<10	1406
Antimony (Sb)	<1	<1	<1	<1	<1	<1	11.3
Arsenic (As)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9
Barium (Ba)	<10	<10	<10	<10	<10	<10	375
Boron (B)	<100	<100	<100	<100	<100	<100	300
Cadmium (Cd)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3
Chromium (III) (Cr III)	<1	<1	<1	<1	<1	<1	9.4
Chromium (VI) (Cr VI)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005
Cobalt (Co)	<1	<1	<1	<1	<1	<1	2.6
Copper (Cu)	<10	<10	<10	<10	<10	<10	156
Lead (Pb)	<1	<1	<1	<1	<1	<1	3.4
Manganese (Mn)	<10	<10	<10	<10	<10	<10	300
Mercury (Hg)	<1	<1	<1	<1	<1	<1	1.9
Nickel (Ni)	<1	<1	<1	<1	<1	<1	18.8
Selenium (Se)	<1	<1	<1	<1	<1	<1	9.4
Strontium (Sr)	<10	<10	<10	<10	<10	<10	1125
Tin (Sn)	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	3750
Organic Tin	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2
Zinc (Zn)	<10	<10	<10	<10	<10	<10	938
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	-

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Extractable Elements	Result (mg/kg)						Migration Limit (mg/kg)
Test Item	A13	A14	A15	A16	A17	A18	-
Mass of Trace Amount (mg)	NA	NA	NA	NA	NA	NA	-
Aluminum (Al)	<10	<10	<10	<10	<10	<10	1406
Antimony (Sb)	<1	<1	<1	<1	<1	<1	11.3
Arsenic (As)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9
Barium (Ba)	<10	<10	<10	<10	<10	<10	375
Boron (B)	<100	<100	<100	<100	<100	<100	300
Cadmium (Cd)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3
Chromium (III) (Cr III)	<1	<1	<1	<1	<1	<1	9.4
Chromium (VI) (Cr VI)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005
Cobalt (Co)	<1	<1	<1	<1	<1	<1	2.6
Copper (Cu)	<10	<10	<10	<10	<10	<10	156
Lead (Pb)	<1	<1	<1	<1	<1	<1	3.4
Manganese (Mn)	<10	<10	<10	<10	<10	<10	300
Mercury (Hg)	<1	<1	<1	<1	<1	<1	1.9
Nickel (Ni)	<1	<1	<1	<1	<1	<1	18.8
Selenium (Se)	<1	<1	<1	<1	<1	<1	9.4
Strontium (Sr)	<10	<10	<10	<10	<10	<10	1125
Tin (Sn)	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	3750
Organic Tin	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2
Zinc (Zn)	<10	<10	<10	<10	<10	<10	938
Conclusion	PASS	PASS	PASS	PASS	PASS	PASS	-

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Extractable Elements	Result (mg/kg)			Migration Limit (mg/kg)
Test Item	A19	A20	A22	-
Mass of Trace Amount (mg)	NA	NA	NA	-
Aluminum (Al)	<10	<10	<10	1406
Antimony (Sb)	<1	<1	<1	11.3
Arsenic (As)	<0.5	<0.5	<0.5	0.9
Barium (Ba)	<10	<10	<10	375
Boron (B)	<100	<100	<100	300
Cadmium (Cd)	<0.1	<0.1	<0.1	0.3
Chromium (III) (Cr III)	<1	<1	<1	9.4
Chromium (VI) (Cr VI)	<0.005	<0.005	<0.005	0.005
Cobalt (Co)	<1	<1	<1	2.6
Copper (Cu)	<10	<10	<10	156
Lead (Pb)	<1	<1	<1	3.4
Manganese (Mn)	<10	<10	<10	300
Mercury (Hg)	<1	<1	<1	1.9
Nickel (Ni)	<1	<1	<1	18.8
Selenium (Se)	<1	<1	<1	9.4
Strontium (Sr)	<10	<10	<10	1125
Tin (Sn)	<0.8	<0.8	<0.8	3750
Organic Tin	<0.2	<0.2	<0.2	0.2
Zinc (Zn)	<10	<10	<10	938
Conclusion	PASS	PASS	PASS	-

Method: EN 71-3:2013+A2:2017. The heavy metals content was determined by Inductively Coupled Plasma Mass Spectrophotometer (ICP-MS). The content of Chromium (VI) was determined by Ion Chromatography Ultraviolet - Visible Spectrometer (IC-UV Vis). The content of Chromium (III) was determined by calculation. Organic tin content was determined according to Annex G of EN 71-3:2013+A2:2017 with analysis by Gas Chromatography Mass Spectrometer.

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Category III: Scraped-off materials

Extractable Elements	Result (mg/kg)				Migration Limit (mg/kg)
Test Item	A21	A23	A24	A25	-
Mass of Trace Amount (mg)	NA	NA	NA	NA	-
Aluminum (Al)	<10	<10	<10	<10	70000
Antimony (Sb)	<10	<10	<10	<10	560
Arsenic (As)	<10	<10	<10	<10	47
Barium (Ba)	<10	<10	<10	<10	18750
Boron (B)	<100	<100	<100	<100	15000
Cadmium (Cd)	<5	<5	<5	<5	17
Chromium (III) (Cr III)	<10	<10	<10	<10	460
Chromium (VI) (Cr VI)	<0.15	<0.15	<0.15	<0.15	0.2
Cobalt (Co)	<10	<10	<10	<10	130
Copper (Cu)	<10	<10	<10	<10	7700
Lead (Pb)	<10	<10	<10	<10	160
Manganese (Mn)	<10	<10	<10	<10	15000
Mercury (Hg)	<10	<10	<10	<10	94
Nickel (Ni)	<10	<10	<10	<10	930
Selenium (Se)	<10	<10	<10	<10	460
Strontium (Sr)	<10	<10	<10	<10	56000
Tin (Sn)	<0.8	<0.8	<0.8	<0.8	180000
Organic Tin	<3	<3	<3	<3	12
Zinc (Zn)	<10	<10	<10	<10	46000
Conclusion	PASS	PASS	PASS	PASS	-

Method: EN 71-3:2013+A2:2017. The heavy metals content was determined by Inductively Coupled Plasma Mass Spectrophotometer (ICP-MS).

For samples of migrated chromium content lower than migration limit of Chromium (VI), no speciation test for Chromium (III) and chromium (VI) were conducted. The results were derived from that of total chromium.

For samples of migrated tin content calculated as tributyl tin lower than migration limit of organic tin, no organic tin test was conducted. The results were derived from that of Tin.

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Remark: 1. The material categories of tested item(s) are classified as below per clause 4.1 of this standard.

Category I: Dry, brittle, power like or pliable materials
Compressed paint tablets, materials intended to leave a trace or similar materials in solid form appearing as such in the toy (e.g. the cores of colouring pencils, chalk, crayons)
Pliable modelling materials, including modelling clays and plaster
Category II: Liquid or sticky materials
Liquid paints, including finger paints, varnishes, lacquers, liquid ink in pens and similar materials in liquid form appearing as such in the toy (e.g. slimes, bubble solution)
Glue sticks
Category III: Scraped-off materials
Coatings of paints, varnishes, lacquers, printing inks, polymers, foams and similar coatings
Polymeric and similar materials, including laminates, whether textile reinforced or not, but excluding other textiles
Paper and paper board
Textiles, whether natural or synthetic
Glass, ceramic, metallic materials
Other materials whether mass coloured or not (e.g. wood, fibre board, hard board, bone and leather)

2. Result(s) of organic tin reported was / were the sum of Methyltin (MeT), Butyltin (BuT), Dibutyltin (DBT), Tributyltin (TBT), Tetrabutyltin (TeBT), Monooctyltin (MOT), Di-n-octyltin (DOT), Di-n-propyltin (DProT), Diphenyltin (DPHT) and Triphenyltin (TPHT) expressed as TBT.
3. The accessibility of the submitted sample is verified according to EN71-1 before and after abuse.
4. The received sample(s) contained component(s) of less than 10mg on one single sample, therefore such component(s) was not tested for extractable heavy metals content as specified in clause 7.1 of this standard.

Note: mg/kg = milligram per kilogram
mg = milligram
"<" = less than

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

NOTE:

If there is question or concern regarding the above results, please contact us via email iyang@mts-global.com

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