

TEST REPORT

Test Report #	23H-004955	Date of Report Issue:	July 10, 2023
Date of Sample Received:	June 26, 2023	Pages:	Page 1 of 32

CLIENT INFORMATION:

Company:	Boston Industrial Solutions, Inc.
Recipient:	Ephraim Wahiga
Recipient Email:	info@bostonindustrialsolutions.com



SAMPLE INFORMATION:

Description:	Natron® MG Series inks		
Assortment:	-	Purchase Order Number:	-
SKU/style No.:	-	Toy Co./Agency:	-
Factory/Supplier/Vendor:	Boston Industrial Solutions, Inc.	Country of Origin:	United States
Country of Distribution:	-	Labeled Age Grade:	-
Quantity Submitted:	1 lot	Recommended Age Grade:	-
Testing Period:	06/29/2023 – 07/05/2023 07/06/2023 – 07/10/2023	Tested Age Grade:	-

OVERALL RESULT:



Refer to page 2 for test result summary and appropriate notes.

QIMA Testing (HK) Limited



Loska Yeung Lok Ka
Assistant Manager, Chemical Laboratory

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TEST RESULTS SUMMARY:

At the request of the client, the following tests were conducted:

CONCLUSION	TEST(S) CONDUCTED
PASS	CPSIA Section 106 & ASTM F963-17 Toy Safety, Clause 4.3.5 Soluble Elements in Paints and Similar Surface Coatings
PASS	ASTM F2923-20 Consumer Product Safety for Children’s Jewelry, Clause 8 Soluble Elements in Paint and Surface Coatings
PASS	CPSIA Section 101 & 16 CFR 1303, Total Lead in Paints and Surface Coatings
PASS	The Illinois Lead Poisoning Prevention Act (LPPA) (410 ILCS 45/6), Total Lead in Paints and Surface Coatings of Children’s Jewelry and Childcare Articles
PASS	Connecticut Public Act 10-113 (Substituted House Bill 5314), Total Cadmium Content in Children's Jewelry
PASS	Maryland Chapter 578 (House Bill 145), Total Cadmium in Children’s Jewelry
PASS	Minnesota Chapter 347-S.F. No. 2510, Total Cadmium Screening in Children’s Jewelry
PASS	California Proposition 65, Phthalates (DBP, BBP, DEHP, DINP, DIDP, DnHP)
PASS	16 CFR 1307 Prohibition of Children’s Toys and Child Care Articles Containing Specified Phthalates (DBP, BBP, DEHP, DINP, DHEXP / DnHP, DCHP, DIBP, DPENP)
PASS	Washington Revised Code Section 70.240.020, Phthalates in Children’s Product
PASS	Canadian Toys Regulations SOR/2011-17 as Amended, Item 23 – Leachable Elements in Stickers, Films and Surface Coating Materials
PASS	Canadian Toys Regulations SOR/2011-17 as Amended, Item 23 – Total Lead and Mercury in Stickers, Films and Surface Coating Materials
PASS	Canadian Surface Coating Materials Regulations SOR/2016-193, Total Lead in Stickers, Films and Surface Coating Materials
PASS	Canadian Surface Coating Materials Regulations SOR/2016-193, Total Mercury in Paints and Surface Coatings
PASS	Mexican Environmental Health NOM-252-SSA1-2011, Soluble Elements from Toys and School Supplies

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DETAILED RESULTS:

CPSIA Section 106 & ASTM F963-17 Toy Safety, Clause 4.3.5 Soluble Elements in Paints and Similar Surface Coatings

Test Method: ASTM F963-17 Clause 8.3.2
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry and/or Inductively Coupled Plasma-Mass Spectrometry

Specimen No.	1	2	3	4	5	Soluble Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Soluble Antimony (Sb)	ND	ND	ND	ND	ND	60
Soluble Arsenic (As)	ND	ND	ND	ND	ND	25
Soluble Barium (Ba)	36	ND	23	16	47	1000
Soluble Cadmium (Cd)	ND	ND	ND	ND	ND	75
Soluble Chromium (Cr)	ND	ND	ND	ND	ND	60
Soluble Lead (Pb)	ND	ND	ND	ND	ND	90
Soluble Mercury (Hg)	ND	ND	ND	ND	ND	60
Soluble Selenium (Se)	ND	ND	ND	ND	ND	500
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:

ppm (Parts per million) = mg/kg (Milligrams per kilogram)

LT = Less than

NA = Not applicable

ND = Not detected (Reporting Limit = 5 ppm)

Results are adjusted according to ASTM F963-17 Toy Safety, Clause 8.3.4.3. Materials are deemed to conform with the requirements if the adjusted analytical result for the migrated element is less than or equal to the permissible limit.

The decision rule for stating conformity is based on ASTM F963-17 Toy Safety.

Analytical correction								
Soluble Element(s)	Sb	As	Ba	Cd	Cr	Pb	Hg	Se
Analytical Correction (%)	60	60	30	30	30	30	50	60

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DETAILED RESULTS:

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Test Method: ASTM F963-17 Clause 8.3.2
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry and/or Inductively Coupled Plasma-Mass Spectrometry

Specimen No.	6	7	8	9	10	Soluble Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Soluble Antimony (Sb)	ND	ND	ND	ND	ND	60
Soluble Arsenic (As)	ND	ND	ND	ND	ND	25
Soluble Barium (Ba)	44	16	150	110	100	1000
Soluble Cadmium (Cd)	ND	ND	ND	ND	ND	75
Soluble Chromium (Cr)	ND	ND	ND	ND	ND	60
Soluble Lead (Pb)	ND	ND	ND	ND	ND	90
Soluble Mercury (Hg)	ND	ND	ND	ND	ND	60
Soluble Selenium (Se)	ND	ND	ND	ND	ND	500
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:

ppm (Parts per million) = mg/kg (Milligrams per kilogram)

LT = Less than

NA = Not applicable

ND = Not detected (Reporting Limit = 5 ppm)

Results are adjusted according to ASTM F963-17 Toy Safety, Clause 8.3.4.3. Materials are deemed to conform with the requirements if the adjusted analytical result for the migrated element is less than or equal to the permissible limit.

The decision rule for stating conformity is based on ASTM F963-17 Toy Safety.

Analytical correction								
Soluble Element(s)	Sb	As	Ba	Cd	Cr	Pb	Hg	Se
Analytical Correction (%)	60	60	30	30	30	30	50	60

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DETAILED RESULTS:

CPSIA Section 106 & ASTM F963-17 Toy Safety, Clause 4.3.5 Soluble Elements in Paints and Similar Surface Coatings

Test Method: ASTM F963-17 Clause 8.3.2
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry and/or Inductively Coupled Plasma-Mass Spectrometry

Specimen No.	11	12	13	---	---	Soluble Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Soluble Antimony (Sb)	ND	ND	ND	---	---	60
Soluble Arsenic (As)	ND	ND	ND	---	---	25
Soluble Barium (Ba)	21	8	ND	---	---	1000
Soluble Cadmium (Cd)	ND	ND	ND	---	---	75
Soluble Chromium (Cr)	ND	ND	ND	---	---	60
Soluble Lead (Pb)	ND	ND	ND	---	---	90
Soluble Mercury (Hg)	ND	ND	ND	---	---	60
Soluble Selenium (Se)	ND	ND	ND	---	---	500
Conclusion	PASS	PASS	PASS	---	---	

Note:

ppm (Parts per million) = mg/kg (Milligrams per kilogram)

LT = Less than

NA = Not applicable

ND = Not detected (Reporting Limit = 5 ppm)

Results are adjusted according to ASTM F963-17 Toy Safety, Clause 8.3.4.3. Materials are deemed to conform with the requirements if the adjusted analytical result for the migrated element is less than or equal to the permissible limit.

The decision rule for stating conformity is based on ASTM F963-17 Toy Safety.

Analytical correction								
Soluble Element(s)	Sb	As	Ba	Cd	Cr	Pb	Hg	Se
Analytical Correction (%)	60	60	30	30	30	30	50	60

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Remark:

The total heavy metals screening results of Specimen No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 13 exceeded the soluble heavy metal limits, therefore a separate soluble analysis was conducted.

Test portion of Specimen No. 1 found on single sample was 95.6 mg.
Test portion of Specimen No. 3 found on single sample was 96.8 mg.
Test portion of Specimen No. 4 found on single sample was 40.9 mg.
Test portion of Specimen No. 6 found on single sample was 84.3 mg.
Test portion of Specimen No. 7 found on single sample was 45.6 mg.
Test portion of Specimen No. 10 found on single sample was 50.6 mg.
Test portion of Specimen No. 11 found on single sample was 46.1 mg.
Test portion of Specimen No. 12 found on single sample was 20.7 mg.
Test portion of Specimen No. 13 found on single sample was 95.7 mg.

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DETAILED RESULTS:

ASTM F2923-20 Consumer Product Safety for Children’s Jewelry, Clause 8 Soluble Elements in Paint and Surface Coatings

Test Method: ASTM F963-17 Clause 8.3.2
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry and/or Inductively Coupled Plasma-Mass Spectrometry

Specimen No.	1	2	3	4	5	Soluble Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Soluble Antimony (Sb)	ND	ND	ND	ND	ND	60
Soluble Arsenic (As)	ND	ND	ND	ND	ND	25
Soluble Barium (Ba)	36	ND	23	16	47	1000
Soluble Cadmium (Cd)	ND	ND	ND	ND	ND	75
Soluble Chromium (Cr)	ND	ND	ND	ND	ND	60
Soluble Mercury (Hg)	ND	ND	ND	ND	ND	60
Soluble Selenium (Se)	ND	ND	ND	ND	ND	500
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:
 ppm (Parts per million) = mg/kg (Milligrams per kilogram)
 LT = Less than
 ND = Not detected (Reporting Limit = 5 ppm)

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DETAILED RESULTS:

ASTM F2923-20 Consumer Product Safety for Children’s Jewelry, Clause 8 Soluble Elements in Paint and Surface Coatings

Test Method: ASTM F963-17 Clause 8.3.2
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry and/or Inductively Coupled Plasma-Mass Spectrometry

Specimen No.	6	7	8	9	10	Soluble Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Soluble Antimony (Sb)	ND	ND	ND	ND	ND	60
Soluble Arsenic (As)	ND	ND	ND	ND	ND	25
Soluble Barium (Ba)	44	16	150	110	100	1000
Soluble Cadmium (Cd)	ND	ND	ND	ND	ND	75
Soluble Chromium (Cr)	ND	ND	ND	ND	ND	60
Soluble Mercury (Hg)	ND	ND	ND	ND	ND	60
Soluble Selenium (Se)	ND	ND	ND	ND	ND	500
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:
 ppm (Parts per million) = mg/kg (Milligrams per kilogram)
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DETAILED RESULTS:

ASTM F2923-20 Consumer Product Safety for Children’s Jewelry, Clause 8 Soluble Elements in Paint and Surface Coatings

Test Method: ASTM F963-17 Clause 8.3.2
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry and/or Inductively Coupled Plasma-Mass Spectrometry

Specimen No.	11	12	13	---	---	Soluble Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Soluble Antimony (Sb)	ND	ND	ND	---	---	60
Soluble Arsenic (As)	ND	ND	ND	---	---	25
Soluble Barium (Ba)	21	8	ND	---	---	1000
Soluble Cadmium (Cd)	ND	ND	ND	---	---	75
Soluble Chromium (Cr)	ND	ND	ND	---	---	60
Soluble Mercury (Hg)	ND	ND	ND	---	---	60
Soluble Selenium (Se)	ND	ND	ND	---	---	500
Conclusion	PASS	PASS	PASS	---	---	

Note:
 ppm (Parts per million) = mg/kg (Milligrams per kilogram)
 LT = Less than
 ND = Not detected (Reporting Limit = 5 ppm)

Remark:
 The total heavy metals screening results of Specimen No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 13 exceeded the soluble heavy metal limits, therefore a separate soluble analysis was conducted.

Test portion of Specimen No. 1 found on single sample was 95.6 mg.
 Test portion of Specimen No. 3 found on single sample was 96.8 mg.
 Test portion of Specimen No. 4 found on single sample was 40.9 mg.
 Test portion of Specimen No. 6 found on single sample was 84.3 mg.
 Test portion of Specimen No. 7 found on single sample was 45.6 mg.
 Test portion of Specimen No. 10 found on single sample was 50.6 mg.
 Test portion of Specimen No. 11 found on single sample was 46.1 mg.
 Test portion of Specimen No. 12 found on single sample was 20.7 mg.
 Test portion of Specimen No. 13 found on single sample was 95.7 mg.

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DETAILED RESULTS:

CPSIA Section 101 & 16 CFR 1303, Total Lead in Paints and Surface Coatings

Test Method: CPSC-CH-E-1003-09.1
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry

Specimen No.	1+2+3	4+5+6	7+8+9	10+11	12+13	Total Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Total Lead (Pb)	ND	ND	ND	ND	ND	90
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:
 ppm (Parts per million) = mg/kg (Milligrams per kilogram)
 LT = Less than
 ND = Not detected (Reporting Limit = 20 ppm)
 Composite results are based on specimen of least mass resulting in highest potential concentration.

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DETAILED RESULTS:**The Illinois Lead Poisoning Prevention Act (LPPA) (410 ILCS 45/6), Total Lead in Paints and Surface Coatings of Children’s Jewelry and Childcare Articles**

Test Method: CPSC-CH-E-1003-09.1
Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry

Specimen No.	1+2+3	4+5+6	7+8+9	10+11	12+13	Total Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Total Lead (Pb)	ND	ND	ND	ND	ND	40
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:

ppm (Parts per million) = mg/kg (Milligrams per kilogram)

LT = Less than

ND = Not detected (Reporting Limit = 20 ppm)

Composite results are based on specimen of least mass resulting in highest potential concentration.

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DETAILED RESULTS:

Connecticut Public Act 10-113 (Substituted House Bill 5314), Total Cadmium Content in Children's Jewelry

Test Method: ASTM F963-11 Clause 8.3.1
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry

Specimen No.	1+2+3	4+5+6	7+8+9	10+11	12+13	Total Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Total Cadmium (Cd)	ND	ND	ND	ND	ND	75
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:

ppm (Parts per million) = mg/kg (Milligrams per kilogram)

LT = Less than

ND = Not detected (Reporting Limit = 20 ppm)

Composite results are based on specimen of least mass resulting in highest potential concentration.

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DETAILED RESULTS:

Maryland Chapter 578 (House Bill 145), Total Cadmium in Children’s Jewelry

Test Method: ASTM F963-11 Clause 8.3.1
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry

Specimen No.	1+2+3	4+5+6	7+8+9	10+11	12+13	Total Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Total Cadmium (Cd)	ND	ND	ND	ND	ND	75
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:
 ppm (Parts per million) = mg/kg (Milligrams per kilogram)
 LT = Less than
 ND = Not detected (Reporting Limit = 20 ppm)
 Composite results are based on specimen of least mass resulting in highest potential concentration.

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DETAILED RESULTS:

Minnesota Chapter 347-S.F. No. 2510, Total Cadmium Screening in Children’s Jewelry

Test Method: ASTM F963-11 Clause 8.3.1
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry

Specimen No.	1+2+3	4+5+6	7+8+9	10+11	12+13	Soluble Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Total Cadmium (Cd)	ND	ND	ND	ND	ND	75
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:
 ppm (Parts per million) = mg/kg (Milligrams per kilogram)
 LT = Less than
 ND = Not detected (Reporting Limit = 20 ppm)
 Composite results are based on specimen of least mass resulting in highest potential concentration.

Remark:
 The total cadmium screening results did not exceed the soluble cadmium limit, therefore, further soluble analyses were not conducted.

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DETAILED RESULTS:

California Proposition 65, Phthalates (DBP, BBP, DEHP, DINP, DIDP, DnHP)

Test Method: CPSC-CH-C1001-09.4
 Test Instrument: Gas Chromatography with Mass Spectrometry

Specimen No.		1+2+3	4+5+6	7+8+9	10+11	Limit (% w/w)
Test Item	CAS No.	Result (% w/w)	Result (% w/w)	Result (% w/w)	Result (% w/w)	
Dibutyl phthalate (DBP)	84-74-2	ND	ND	ND	ND	0.1
Benzyl butyl phthalate (BBP)	85-68-7	ND	ND	ND	ND	0.1
Di-(2-ethylhexyl) phthalate (DEHP)	117-81-7	ND	ND	ND	ND	0.1
Diisononyl phthalate (DINP)	28553-12-0 68515-48-0	ND	ND	ND	ND	0.1
Diisodecyl phthalate (DIDP)	26761-40-0 68515-49-1	ND	ND	ND	ND	0.1
Di-n-hexyl phthalate (DnHP)	84-75-3	ND	ND	ND	ND	0.1
Conclusion		PASS	PASS	PASS	PASS	

Note:

% w/w = Percent by weight

LT = Less than

ND = Not detected (Reporting Limit = 0.015 % w/w)

Composite results are based on specimen of least mass resulting in highest potential concentration.

Remark:

The specification is quoted from client's requirement.

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DETAILED RESULTS:

California Proposition 65, Phthalates (DBP, BBP, DEHP, DINP, DIDP, DnHP)

Test Method: CPSC-CH-C1001-09.4
 Test Instrument: Gas Chromatography with Mass Spectrometry

Specimen No.		12+13	---	---	---	Limit (% w/w)
Test Item	CAS No.	Result (% w/w)	Result (% w/w)	Result (% w/w)	Result (% w/w)	
Dibutyl phthalate (DBP)	84-74-2	ND	---	---	---	0.1
Benzyl butyl phthalate (BBP)	85-68-7	ND	---	---	---	0.1
Di-(2-ethylhexyl) phthalate (DEHP)	117-81-7	ND	---	---	---	0.1
Diisononyl phthalate (DINP)	28553-12-0 68515-48-0	ND	---	---	---	0.1
Diisodecyl phthalate (DIDP)	26761-40-0 68515-49-1	ND	---	---	---	0.1
Di-n-hexyl phthalate (DnHP)	84-75-3	ND	---	---	---	0.1
Conclusion		PASS	---	---	---	

Note:

% w/w = Percent by weight

LT = Less than

ND = Not detected (Reporting Limit = 0.015 % w/w)

Composite results are based on specimen of least mass resulting in highest potential concentration.

Remark:

The specification is quoted from client's requirement.

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DETAILED RESULTS:

16 CFR 1307 Prohibition of Children’s Toys and Child Care Articles Containing Specified Phthalates (DBP, BBP, DEHP, DINP, DHEXP / DnHP, DCHP, DIBP, DPENP)

Test Method: CPSC-CH-C1001-09.4
 Test Instrument: Gas Chromatography with Mass Spectrometry

Specimen No.		1+2+3	4+5+6	7+8+9	10+11	Limit (% w/w)
Test Item	CAS No.	Result (% w/w)	Result (% w/w)	Result (% w/w)	Result (% w/w)	
Dibutyl phthalate (DBP)	84-74-2	ND	ND	ND	ND	0.1
Benzyl butyl phthalate (BBP)	85-68-7	ND	ND	ND	ND	0.1
Di-(2-ethylhexyl) phthalate (DEHP)	117-81-7	ND	ND	ND	ND	0.1
Diisononyl phthalate (DINP)	28553-12-0 68515-48-0	ND	ND	ND	ND	0.1
Di-n-hexyl phthalate (DHEXP / DnHP)	84-75-3	ND	ND	ND	ND	0.1
Dicyclohexyl phthalate (DCHP)	84-61-7	ND	ND	ND	ND	0.1
Diisobutyl phthalate (DIBP)	84-69-5	ND	ND	ND	ND	0.1
Di-n-pentyl phthalate (DPENP)	131-18-0	ND	ND	ND	ND	0.1
Conclusion		PASS	PASS	PASS	PASS	

Note:

% w/w = Percent by weight

LT = Less than

ND = Not detected (Reporting Limit = 0.015 % w/w)

Composite results are based on specimen of least mass resulting in highest potential concentration.

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DETAILED RESULTS:

16 CFR 1307 Prohibition of Children’s Toys and Child Care Articles Containing Specified Phthalates (DBP, BBP, DEHP, DINP, DHEXP / DnHP, DCHP, DIBP, DPENP)

Test Method: CPSC-CH-C1001-09.4
 Test Instrument: Gas Chromatography with Mass Spectrometry

Specimen No.		12+13	---	---	---	Limit (% w/w)
Test Item	CAS No.	Result (% w/w)	Result (% w/w)	Result (% w/w)	Result (% w/w)	
Dibutyl phthalate (DBP)	84-74-2	ND	---	---	---	0.1
Benzyl butyl phthalate (BBP)	85-68-7	ND	---	---	---	0.1
Di-(2-ethylhexyl) phthalate (DEHP)	117-81-7	ND	---	---	---	0.1
Diisononyl phthalate (DINP)	28553-12-0 68515-48-0	ND	---	---	---	0.1
Di-n-hexyl phthalate (DHEXP / DnHP)	84-75-3	ND	---	---	---	0.1
Dicyclohexyl phthalate (DCHP)	84-61-7	ND	---	---	---	0.1
Diisobutyl phthalate (DIBP)	84-69-5	ND	---	---	---	0.1
Di-n-pentyl phthalate (DPENP)	131-18-0	ND	---	---	---	0.1
Conclusion		PASS	---	---	---	

Note:

% w/w = Percent by weight

LT = Less than

ND = Not detected (Reporting Limit = 0.015 % w/w)

Composite results are based on specimen of least mass resulting in highest potential concentration.

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DETAILED RESULTS:

Washington Revised Code Section 70.240.020, Phthalates in Children’s Product

Test Method: CPSC-CH-C1001-09.4
 Test Instrument: Gas Chromatography with Mass Spectrometry

Specimen No.		1+2+3	4+5+6	7+8+9	10+11	Limit (% w/w)
Test Item	CAS No.	Result (% w/w)	Result (% w/w)	Result (% w/w)	Result (% w/w)	
Dibutyl phthalate (DBP)	84-74-2	ND	ND	ND	ND	0.1
Benzyl butyl phthalate (BBP)	85-68-7	ND	ND	ND	ND	0.1
Di-(2-ethylhexyl) phthalate (DEHP)	117-81-7	ND	ND	ND	ND	0.1
Di-n-octyl phthalate (DnOP)	117-84-0	ND	ND	ND	ND	0.1
Diisononyl phthalate (DINP)	28553-12-0 68515-48-0	ND	ND	ND	ND	0.1
Diisodecyl phthalate (DIDP)	26761-40-0 68515-49-1	ND	ND	ND	ND	0.1
Sum		ND	ND	ND	ND	0.1
Conclusion		PASS	PASS	PASS	PASS	

Note:

% w/w = Percent by weight

LT = Less than

ND = Not detected (Reporting Limit = 0.015 % w/w)

Composite results are based on specimen of least mass resulting in highest potential concentration.

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DETAILED RESULTS:

Washington Revised Code Section 70.240.020, Phthalates in Children’s Product

Test Method: CPSC-CH-C1001-09.4
 Test Instrument: Gas Chromatography with Mass Spectrometry

Specimen No.		12+13	---	---	---	Limit (% w/w)
Test Item	CAS No.	Result (% w/w)	Result (% w/w)	Result (% w/w)	Result (% w/w)	
Dibutyl phthalate (DBP)	84-74-2	ND	---	---	---	0.1
Benzyl butyl phthalate (BBP)	85-68-7	ND	---	---	---	0.1
Di-(2-ethylhexyl) phthalate (DEHP)	117-81-7	ND	---	---	---	0.1
Di-n-octyl phthalate (DnOP)	117-84-0	ND	---	---	---	0.1
Diisononyl phthalate (DINP)	28553-12-0 68515-48-0	ND	---	---	---	0.1
Diisodecyl phthalate (DIDP)	26761-40-0 68515-49-1	ND	---	---	---	0.1
Sum		ND	---	---	---	0.1
Conclusion		PASS	---	---	---	

Note:

% w/w = Percent by weight

LT = Less than

ND = Not detected (Reporting Limit = 0.015 % w/w)

Composite results are based on specimen of least mass resulting in highest potential concentration.

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DETAILED RESULTS:

Canadian Toys Regulations SOR/2011-17 as Amended, Item 23 – Leachable Elements in Stickers, Films and Surface Coating Materials

Test Method: ASTM F963-17
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry and/or Inductively Coupled Plasma-Mass Spectrometry

Specimen No.	1	2	3	4	5	Leachable Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Leachable Antimony (Sb)	ND	ND	ND	ND	ND	1000
Leachable Arsenic (As)	ND	ND	ND	ND	ND	1000
Leachable Barium (Ba)	ND	ND	ND	ND	ND	1000
Leachable Cadmium (Cd)	ND	ND	ND	ND	ND	1000
Leachable Selenium (Se)	ND	ND	ND	ND	ND	1000
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:
 ppm (Parts per million) = mg/kg (Milligrams per kilogram)
 LT = Less than
 ND = Not detected (Reporting Limit = 50 ppm)

Results are adjusted according to ASTM F963-17 Toy Safety, Section 8.3.4.3. Materials are deemed to conform with the requirements if the adjusted analytical result for the migrated element is less than or equal to the permissible limit.

The decision rule for stating conformity is based on ASTM F963-17 Toy Safety.

Analytical correction					
Soluble Element(s)	Sb	As	Ba	Cd	Se
Analytical Correction (%)	60	60	30	30	60

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DETAILED RESULTS:

Canadian Toys Regulations SOR/2011-17 as Amended, Item 23 – Leachable Elements in Stickers, Films and Surface Coating Materials

Test Method: ASTM F963-17
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry and/or Inductively Coupled Plasma-Mass Spectrometry

Specimen No.	6	7	8	9	10	Leachable Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Leachable Antimony (Sb)	ND	ND	ND	ND	ND	1000
Leachable Arsenic (As)	ND	ND	ND	ND	ND	1000
Leachable Barium (Ba)	ND	ND	150	110	100	1000
Leachable Cadmium (Cd)	ND	ND	ND	ND	ND	1000
Leachable Selenium (Se)	ND	ND	ND	ND	ND	1000
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:
 ppm (Parts per million) = mg/kg (Milligrams per kilogram)
 LT = Less than
 ND = Not detected (Reporting Limit = 50 ppm)

Results are adjusted according to ASTM F963-17 Toy Safety, Section 8.3.4.3. Materials are deemed to conform with the requirements if the adjusted analytical result for the migrated element is less than or equal to the permissible limit.

The decision rule for stating conformity is based on ASTM F963-17 Toy Safety.

Analytical correction					
Soluble Element(s)	Sb	As	Ba	Cd	Se
Analytical Correction (%)	60	60	30	30	60

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Test(s) marked with ‘ϕ’ was subcontracted to external laboratory.

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DETAILED RESULTS:

Canadian Toys Regulations SOR/2011-17 as Amended, Item 23 – Leachable Elements in Stickers, Films and Surface Coating Materials

Test Method: ASTM F963-17
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry and/or Inductively Coupled Plasma-Mass Spectrometry

Specimen No.	11	12	13	---	---	Leachable Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Leachable Antimony (Sb)	ND	ND	ND	---	---	1000
Leachable Arsenic (As)	ND	ND	ND	---	---	1000
Leachable Barium (Ba)	ND	ND	ND	---	---	1000
Leachable Cadmium (Cd)	ND	ND	ND	---	---	1000
Leachable Selenium (Se)	ND	ND	ND	---	---	1000
Conclusion	PASS	PASS	PASS	---	---	

Note:
 ppm (Parts per million) = mg/kg (Milligrams per kilogram)
 LT = Less than
 ND = Not detected (Reporting Limit = 50 ppm)

Results are adjusted according to ASTM F963-17 Toy Safety, Section 8.3.4.3. Materials are deemed to conform with the requirements if the adjusted analytical result for the migrated element is less than or equal to the permissible limit.

The decision rule for stating conformity is based on ASTM F963-17 Toy Safety.

Analytical correction					
Soluble Element(s)	Sb	As	Ba	Cd	Se
Analytical Correction (%)	60	60	30	30	60

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Remark:

The total heavy metals screening results of Specimen No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 13 exceeded the soluble heavy metal limits, therefore a separate soluble analysis was conducted.

Test portion of Specimen No. 1 found on single sample was 95.6 mg.
Test portion of Specimen No. 3 found on single sample was 96.8 mg.
Test portion of Specimen No. 4 found on single sample was 40.9 mg.
Test portion of Specimen No. 6 found on single sample was 84.3 mg.
Test portion of Specimen No. 7 found on single sample was 45.6 mg.
Test portion of Specimen No. 10 found on single sample was 50.6 mg.
Test portion of Specimen No. 11 found on single sample was 46.1 mg.
Test portion of Specimen No. 12 found on single sample was 20.7 mg.
Test portion of Specimen No. 13 found on single sample was 95.7 mg.

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Test(s) marked with 'φ' was subcontracted to external laboratory.

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DETAILED RESULTS:**Canadian Toys Regulations SOR/2011-17 as Amended, Item 23 – Total Lead and Mercury in Stickers, Films and Surface Coating Materials**

Test Method: ASTM F963-17 Clause 8.3.1

Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry

Specimen No.	1+2+3	4+5+6	7+8+9	10+11	12+13	Total
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Limit (ppm)
Total Lead (Pb)	ND	ND	ND	ND	ND	90
Total Mercury (Hg)	ND	ND	ND	ND	ND	10
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:

ppm (Parts per million) = mg/kg (Milligrams per kilogram)

LT = Less than

ND = Not detected (Reporting Limit = 10 ppm)

Composite results are based on specimen of least mass resulting in highest potential concentration.

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DETAILED RESULTS:

Canadian Surface Coating Materials Regulations SOR/2016-193, Total Lead in Stickers, Films and Surface Coating Materials

Test Method: CPSC-CH-E-1003-09.1
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry

Specimen No.	1+2+3	4+5+6	7+8+9	10+11	12+13	Total Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Total Lead (Pb)	ND	ND	ND	ND	ND	90
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:

ppm (Parts per million) = mg/kg (Milligrams per kilogram)

LT = Less than

ND = Not detected (Reporting Limit = 20 ppm)

Composite results are based on specimen of least mass resulting in highest potential concentration.

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DETAILED RESULTS:

Canadian Surface Coating Materials Regulations SOR/2016-193, Total Mercury in Paints and Surface Coatings

Test Method: ASTM F963-17 Clause 8.3.1
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry

Specimen No.	1+2+3	4+5+6	7+8+9	10+11	12+13	Total Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Total Mercury (Hg)	ND	ND	ND	ND	ND	10
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:
 ppm (Parts per million) = mg/kg (Milligrams per kilogram)
 LT = Less than
 ND = Not detected (Reporting Limit = 10 ppm)
 Composite results are based on specimen of least mass resulting in highest potential concentration.

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DETAILED RESULTS:

Mexican Environmental Health NOM-252-SSA1-2011, Soluble Elements from Toys and School Supplies

Test Method: NOM-252-SSA1-2011 Appendix A
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry and/or Inductively Coupled Plasma-Mass Spectrometry

Toy Material except Modelling Clay

Specimen No.	1	2	3	4	5	Soluble Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Soluble Antimony (Sb)	ND	ND	ND	ND	ND	60
Soluble Arsenic (As)	ND	ND	ND	ND	ND	25
Soluble Barium (Ba)	36	ND	23	16	47	1000
Soluble Cadmium (Cd)	ND	ND	ND	ND	ND	75
Soluble Chromium (Cr)	ND	ND	ND	ND	ND	60
Soluble Lead (Pb)	ND	ND	ND	ND	ND	90
Soluble Mercury (Hg)	ND	ND	ND	ND	ND	60
Soluble Selenium (Se)	ND	ND	ND	ND	ND	500
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:
 mg/kg = Milligrams per kilogram
 LT = Less than
 ND = Not detected (Reporting Limit = 5 mg/kg)

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DETAILED RESULTS:

Mexican Environmental Health NOM-252-SSA1-2011, Soluble Elements from Toys and School Supplies

Test Method: NOM-252-SSA1-2011 Appendix A
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry and/or Inductively Coupled Plasma-Mass Spectrometry

Toy Material except Modelling Clay

Specimen No.	6	7	8	9	10	Soluble Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Soluble Antimony (Sb)	ND	ND	ND	ND	ND	60
Soluble Arsenic (As)	ND	ND	ND	ND	ND	25
Soluble Barium (Ba)	44	16	150	110	100	1000
Soluble Cadmium (Cd)	ND	ND	ND	ND	ND	75
Soluble Chromium (Cr)	ND	ND	ND	ND	ND	60
Soluble Lead (Pb)	ND	ND	ND	ND	ND	90
Soluble Mercury (Hg)	ND	ND	ND	ND	ND	60
Soluble Selenium (Se)	ND	ND	ND	ND	ND	500
Conclusion	PASS	PASS	PASS	PASS	PASS	

Note:
 mg/kg = Milligrams per kilogram
 LT = Less than
 ND = Not detected (Reporting Limit = 5 mg/kg)

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DETAILED RESULTS:

Mexican Environmental Health NOM-252-SSA1-2011, Soluble Elements from Toys and School Supplies

Test Method: NOM-252-SSA1-2011 Appendix A
 Analytical Method: Inductively Coupled Plasma-Optical Emission Spectrometry and/or Inductively Coupled Plasma-Mass Spectrometry

Toy Material except Modelling Clay

Specimen No.	11	12	13	---	---	Soluble Limit (ppm)
Test Item	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	Result (ppm)	
Soluble Antimony (Sb)	ND	ND	ND	---	---	60
Soluble Arsenic (As)	ND	ND	ND	---	---	25
Soluble Barium (Ba)	21	8	ND	---	---	1000
Soluble Cadmium (Cd)	ND	ND	ND	---	---	75
Soluble Chromium (Cr)	ND	ND	ND	---	---	60
Soluble Lead (Pb)	ND	ND	ND	---	---	90
Soluble Mercury (Hg)	ND	ND	ND	---	---	60
Soluble Selenium (Se)	ND	ND	ND	---	---	500
Conclusion	PASS	PASS	PASS	---	---	

Note:
 mg/kg = Milligrams per kilogram
 LT = Less than
 ND = Not detected (Reporting Limit = 5 mg/kg)

Remark:
 The total heavy metals screening results of Specimen No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 13 exceeded the soluble heavy metal limits, therefore a separate soluble analysis was conducted.

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SPECIMEN DESCRIPTION:

Specimen No.	Specimen Description	Location
1	Black ink	Raw material (MG300 Black)
2	White ink	Raw material (MG310 White)
3	Yellow ink	Raw material (MG315 Yellow)
4	Golden yellow ink	Raw material (MG317 Gold Yellow)
5	Orange ink	Raw material (MG324 Orange)
6	Blue ink	Raw material (MG330 Light Blue)
7	Dark blue ink	Raw material (MG336 Reflex Blue)
8	Bluish green ink	Raw material (MG346 Emerald)
9	Green ink	Raw material (MG348 Green)
10	Red ink	Raw material (MG352 Red)
11	Reddish orange ink	Raw material (MG358 Vermilion)
12	Brown ink	Raw material (MG363 Brown)
13	Translucent ink	Raw material (MG370 Transparent)

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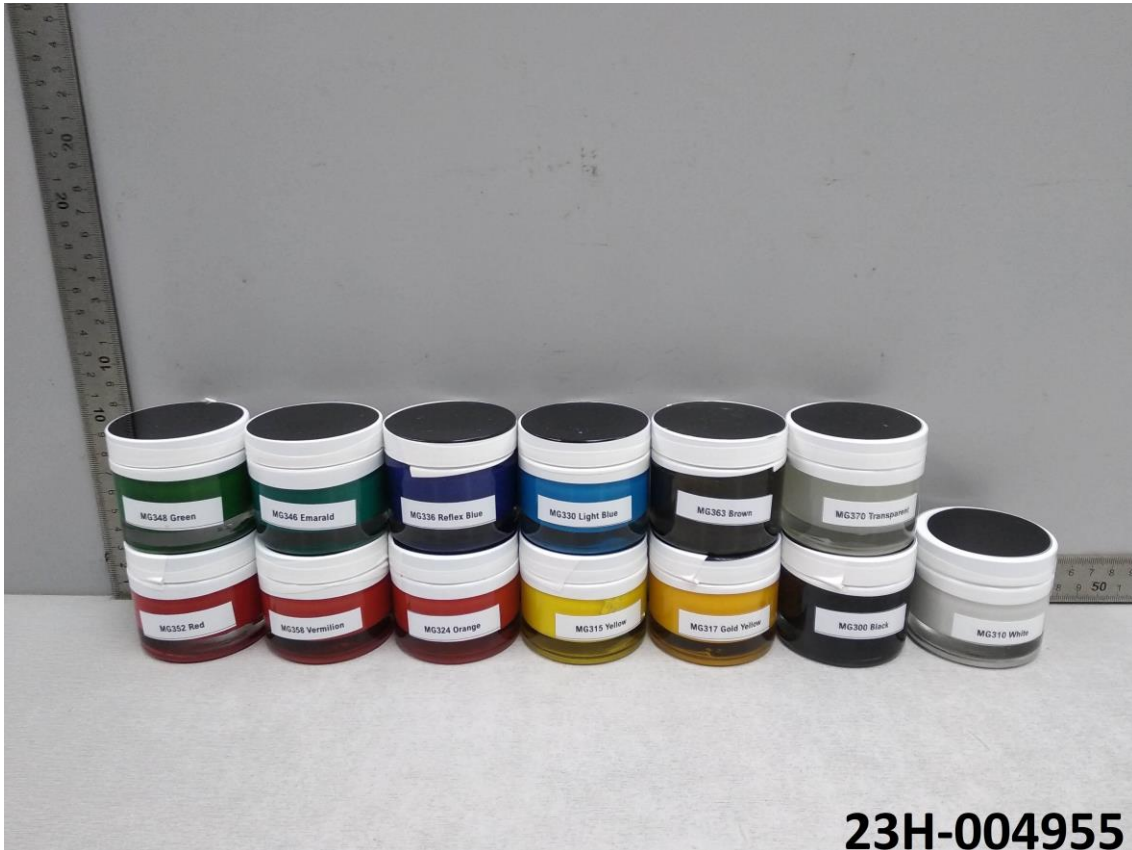
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SAMPLE PHOTO:



-End Report-

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