



BTL DIFFUSION

Technical Report: (8820)007-0084

Jan 14, 2020

Date Received: Jan 7, 2020

Page 1 of 17

BTL DIFFUSION
16, RUE ANATOLE MOUSSU – ZA MÉRÉ NORD EST
78490 MÉRÉ, FRANCE

Sample Description:	ACTIVITY SPIRAL - JUNGLE , ACTIVITY SPIRAL - FARM, ACTIVITY ARCH – JUNGLE , ACTIVITY ARCH – FARM, ACTIVITY ARCH – FARM , PLAY MAT – FARM		
Vendor:	N/A	Sample Size:	26
Manufacturer:	N/A	Style No(s):	302856, 302863, 302832, 302849, 302818, 302825
Labeled Age Grade:	NOT RECORD	SKN/SKU No.:	NOT PROVIDE
Appropriate Age Grade:	NOT REQUESTED	PO No.:	NOT PROVIDE
Client Specified Age Grade:	0+	Ref #:	NOT PROVIDE
Tested Age Grade:	ALL AGES	Country of Origin:	BTL DIFFUSION
UPC Code:	N/A	Assortment No.:	NOT PROVIDE
Buyer:	BTL DIFFUSION	Country of Destination:	USA, EUROPE, CANADA
Test Starting Date:	JAN 7, 2020	Test Finished Date:	JAN 14, 2020

EXECUTIVE SUMMARY:

The tested component sample(s) MEETS the following requirement(s):

- The migration of certain tested elements in Category III - Scraped off toy material requirements of the European Standard, "Safety of Toys", EN 71 Part 3: 2019.
- The DBT, DOT and tri-substituted organostannic compound content requirements of the European Regulation (EC) No. 1907/2006 of the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), Annex XVII concerning the Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles, Item no. 20 (4, 5 & 6).

To be continued

BUREAU VERITAS SHENZHEN CO.,LTD
DONGGUAN BRANCH

Harvey Xue
Manager, Analytical Lab

RT/ Evie Lai/Sammy Du

REMARK

If there are questions or concerns on this report, please contact the following persons:

Report Enquiry: (86) 0769 89952999 Ext. 8175 CPSAnalytical.DG@cn.bureauveritas.com

Business Contact: (86) 0769 85893595

This report shall not be reproduced except in full, without the written approval of our laboratory.



BTL DIFFUSION
Technical Report: **(8820)007-0084**
Jan 14, 2020
Page 2 of 17



EXECUTIVE SUMMARY:

The tested component sample(s) MEETS the following requirement(s):

- The dimethyl fumarate (DMF) content requirement of the European Regulation (EC) No. 1907/2006 of the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Annex XVII concerning the Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles, Item no. 61.
- The listed aromatic amines (azocolourants) content requirement of the European Regulation (EC) No. 1907/2006 of the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Annex XVII concerning the Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles, Item no. 43, Points 1 and 2; together with 2,4-dimethylaniline and 2,6-dimethylaniline content requirement of the client's specification.
- The TCEP, TDCPP and TCPP content requirement of the European Council Directive 2009/48/EC (and its amendments), Annex II, Appendix C.
- The total lead content in substrate requirements of ASTM F963-17, "Standard consumer safety specification for toy safety", Section 4.3.5.2(2)(a).
- The soluble heavy metals content in substrate requirements of ASTM F963-17, "Standard Consumer Safety Specification for Toy Safety," Section 4.3.5.2(2)(b).
- The total lead content of 100ppm requirements in substrate materials (Consumer Products Safety Improvement Act (CPSIA) of 2008).
- The total lead content requirements of the Canada Consumer Product Safety Act, Consumer Products Containing Lead Regulations SOR/2018-83.
- The lead content in substrate materials requirement of the client's specification with reference to ASTM.
- The lead content in substrate materials requirement of the client's specification with reference to CPSIA.
- The lead content in substrate materials requirement of the client's specification with reference to CCPSA.
- The lead content in substrate materials requirement of the client's specification with reference to California proposition 65.

Note: At the request of client, test(s) was conducted on the certain component(s) of the submitted samples(s) / submitted component(s).

Note: The composite test sample(s) of the submitted samples was prepared in the manner requested by the client, when subject to the test performed.



Tested Component(s) Description List:

Test Item(s)	Item / Component Description(s)	Location(s)	Style(s)
I001	Yellow plush	Plush	-
I002	Green plush	Plush	-
I003	Grey plush	Plush	-
I004	Multicolor printed white fabric	Fabric	-
I005	Brown fabric	Fabric	-
I006	Grey fabric	Fabric	-
I007	White fabric	Fabric	-
I008	Orange plush	Plush	-
I009	Light green plush	Plush	-
I010	Grey printed white fabric	Fabric	-
I011	Multicolor printed white fabric	Fabric	-
I012	Dark green plush	Plush	-
I013	White fabric	Fabric	-
I014	Dull green fabric	Fabric	-
I015	White plush	Plush	-
I016	White fabric	Fabric	-
I017	Brown plush	Plush	-
I018	Bright yellow plush	Plush	-
I019	Light green printed white fabric	Fabric	-
I020	Light grey fabric	Fabric	-
I021	Grass green fabric	Fabric	-
I022	Dull green plush	Plush	-
I023	Yellow/orange printed white fabric	Fabric	-
I024	Light yellow fabric	Fabric	-
I025	Dull grey fabric	Fabric	-

RESULTS:

Migration of Certain Elements –European Standard EN 71 Part 3: 2019

Test Method: European Standard EN 71 Part 3: 2019, Section 9.

Class: Category III - Scraped off toy material

Analyte	Requirement (mg/kg)	Result (mg/kg)			
		Test Item(s)			
	Category III	I008	I009	I010	I011
Aluminium (Al)	70000	5	6	3	68
Arsenic (As)	47	LT 2	LT 2	LT 2	LT 2
Boron (B)	15000	LT 2	LT 2	LT 2	LT 2
Barium (Ba)	18750	LT 2	LT 2	LT 2	LT 2
Cadmium (Cd)	17	LT 2	LT 2	LT 2	LT 2
Cobalt (Co)	130	LT 2	LT 2	LT 2	LT 2
Chromium III (Cr III)	460	LT 0.053	LT 0.053	LT 0.053	LT 0.053
Chromium VI (Cr VI)	0.053				
Copper (Cu)	7700	LT 2	LT 2	3	5
Mercury (Hg)	94	LT 2	LT 2	LT 2	LT 2
Manganese (Mn)	15000	2	3	4	3
Nickel (Ni)	930	LT 2	LT 2	LT 2	LT 2
Lead (Pb)	23	LT 2	LT 2	LT 2	LT 2
Antimony (Sb)	560	LT 2	LT 2	4	21
Selenium (Se)	460	LT 2	LT 2	LT 2	LT 2
Tin (Sn)	180000	LT 2	LT 2	LT 2	LT 2
Organic tin	12	LT 2	LT 2	LT 2	LT 2
Strontium (Sr)	56000	LT 2	LT 2	8	LT 2
Zinc (Zn)	46000	LT 2	LT 2	11	7
Mass of trace amount (gram)		-	-	-	-
Conclusion		PASS	PASS	PASS	PASS



RESULTS:

Analyte	Requirement (mg/kg)	Result (mg/kg)			
		Test Item(s)			
	Category III	I012	I013	I014	-
Aluminium (Al)	70000	4	6	6	-
Arsenic (As)	47	LT 2	LT 2	LT 2	-
Boron (B)	15000	LT 2	LT 2	LT 2	-
Barium (Ba)	18750	LT 2	LT 2	LT 2	-
Cadmium (Cd)	17	LT 2	LT 2	LT 2	-
Cobalt (Co)	130	LT 2	LT 2	LT 2	-
Chromium III (Cr III)	460	LT 0.053	LT 0.053	LT 0.053	-
Chromium VI (Cr VI)	0.053				
Copper (Cu)	7700	3	3	2	-
Mercury (Hg)	94	LT 2	LT 2	LT 2	-
Manganese (Mn)	15000	2	2	3	-
Nickel (Ni)	930	LT 2	LT 2	LT 2	-
Lead (Pb)	23	LT 2	LT 2	LT 2	-
Antimony (Sb)	560	LT 2	2	LT 2	-
Selenium (Se)	460	LT 2	LT 2	LT 2	-
Tin (Sn)	180000	LT 2	LT 2	LT 2	-
Organic tin	12	LT 2	LT 2	LT 2	-
Strontium (Sr)	56000	LT 2	LT 2	LT 2	-
Zinc (Zn)	46000	18	5	4	-
Mass of trace amount (gram)		-	-	-	-
Conclusion		PASS	PASS	PASS	-

mg/kg = milligrams per kilogram (ppm=parts per million)

LT = Less Than

Organic tin = migration of total organic tin is expressed as tributyl tin cation content in mg/kg

= Verified results (see note)

Remark:

- Results of Cr III and Cr VI were reported as sum of soluble Chromium content unless specified.
- Result(s) of organic tin was (were) calculated while assuming the tin content wholly contributed from tributyltin cation unless specified.

Note:

If soluble chromium content or soluble tin content exceeded the screening limits of soluble chromium (VI) or organic tin content, the results were verified by below method

- Chromium VI: EN71 part 3:2019, Annex H by Gas Chromatography – Mass Spectroscopy analysis.
- Organic tin: EN71 part 3:2019, Annex G by Gas Chromatography – Mass Spectroscopy analysis.



RESULTS:

**DBT, DOT and TRI-Substituted Organostannic Compound – European Regulation (EC) No. 1907/2006
REACH Annex XVII, Item no. 20 (4, 5 & 6)**

Test Method : In house test method (ICP screening / GC-MS analysis)

Test Parameter:	Tri-substituted Organotin compound	DBT	DOT	
Limit (% by weight of tin):	0.1	0.1	0.1	
Test Item(s)	Result (%)			Conclusion
Type I & II & III:				
I002+I015+I016	ND	ND	ND	PASS

Detection Limit :

DBT = Dibutyltin (0.01% by weight of tin)
DOT = Dioctyltin (0.01% by weight of tin)

Results reported in percentage

LT = Less than
ND = None detected

Remark:

- This list of Organotin compound is summarized in table of appendix.

RESULTS:

APPENDIX:

List of Organotin compound			
Type	Name of Analyte	Type	Name of Analyte
I	Tri-substituted Organotin compound - Tripropyltin(TPT) - Tributyltin (TBT) - Trioctyl tin(TOT) - Triphenyltin (TPhT) - Tricyclohexyltin(TcyT)	III	Diocetyl tin
II	Dibutyltin (DBT)	-	-

List of sample type	
Type	Description
I	Articles, or part thereof, placed on the market after 1 July 2010
II	Mixtures of articles, or part thereof, placed on the market after 1 January 2012, except materials and articles regulated under Regulation (EC) No 1935/2004; and For the following mixtures or articles, or part thereof, placed on the market after 1 January 2015, - one-component and two-component room temperature vulcanization sealants (RTV-1 and RTV-2 sealants) and adhesives - paints and coatings containing DBT compounds as catalysts when applied on articles, - soft polyvinyl chloride (PVC) profiles whether by themselves or coextruded with hard PVC, - fabrics coated with PVC containing DBT compounds as stabilisers when intended for outdoor application, - outdoor rainwater pipes, gutters and fittings, as well as covering material for roofing and facades.
III	Articles, or part thereof, placed on the market after 1 January 2012, - textile articles intended to come into contact with the skin, - gloves, - footwear or part of footwear intended to come into contact with the skin, - wall and floor coverings, - childcare articles, - female hygiene products, - nappies, - two-component room temperature vulcanization moulding kits (RTV-2 moulding kits)



RESULTS:

Dimethyl Fumarate Content – European Regulation (EC) No. 1907/2006 REACH, Annex XVII, Item no. 61

Test Method : Sample was extracted with organic solvent and then analyzed by Gas Chromatograph Mass Spectrometer

Maximum Allowable Limit :	0.1 mg/kg
---------------------------	-----------

Test Item(s)	Result	Unit	Conclusion
	Dimethyl Fumarate		
I017+I018+I019	ND	mg/kg	PASS
I006+I020+I021	ND	mg/kg	PASS

Note / key:

ND = Not detected
mg/kg = milligram(s) per kilogram
Detection Limit (mg/kg) : 0.05



RESULTS:

24 AROMATIC AMINES (AZOCOLOURANTS) CONTENT (European Regulation (EC) No. 1907/2006 REACH, Annex XVII, Item no. 43, Points 1 and 2; together with client's specification for 2,4-dimethylaniline and 2,6-dimethylaniline content)

Test Method: Quantification by Gas Chromatography/Mass Spectrometry (GC/MS)
Additional chromatographic technique employed to confirm positive result by HPLC/TLC

Test Parameter:		Aromatic Amines (Azocolourants)		
Requirement:		30 mg/kg		
Test Item(s)	Test Method	Detected Amine Number	Concentration (mg/kg (ppm))	Conclusion
I001+I008+I022	II	-	ND	PASS
I023	II	-	ND	PASS
I024+I025	II	-	ND	PASS

ND = Not Detected (Detection Limit = 10 mg/kg (ppm))

ppm = parts per million

mg/kg = milligrams per kilogram

NR = Not Requested

* = The specimen is a minor component. As only a reduced mass (< 0.5 g) could be used for the test the result may have a greater uncertainty due to lower material homogeneity

Amine No. = Refer to List of Banned Amines for the description of the detected Amine.

Test Method I = European Standard EN 14362-1: 2017, Clauses 9, 10.2 and afterwards.

Test Method II = European Standard EN 14362-1: 2017, Clauses 9, 10.1, 10.3 and afterwards.

Test Method III = International Standard ISO 17234-1: 2015.

Remark:

The list of aromatic amines in azo colorants is summarized in table of Appendix.

The CAS-number 97-56-3 (no. 5) and 99-55-8 (no. 6) are further reduced to CAS-number 95-53-4 (no. 18) and 95-80-7 (no. 19), respectively.

The colorant(s) of Test Item(s), that are able to form 4-aminoazobenzene, is (are) able to generate aniline and 1,4-phenylenediamine under the condition of Test Method.

The absence of 4-aminoazobenzene is inferred by the absence of aniline and 1,4-phenylenediamine under the condition of Test Method.



RESULTS:

LIST OF BANNED AMINES		
Specified Amines		
Number	Chemical Name	CAS Number
1.	4-aminobiphenyl	92-67-1
2.	Benzidine	92-87-5
3.	4-chloro-o-toluidine	95-69-2
4.	2-naphthylamine	91-59-8
5.	o-aminoazotoluene	97-56-3
6.	5-nitro-o-toluidine	99-55-8
7.	4-chloroaniline	106-47-8
8.	4-methoxy-m-phenylenediamine	615-05-4
9.	4,4'-diaminodiphenylmethane	101-77-9
10.	3,3'-dichlorobenzidine	91-94-1
11.	3,3'-dimethoxybenzidine	119-90-4
12.	3,3'-dimethylbenzidine	119-93-7
13.	4,4'-methylenedi-o-toluidine	838-88-0
14.	p-cresidine	120-71-8
15.	4,4'-methylene-bis-(2-chloro-aniline)	101-14-4
16.	4,4'-oxydianiline	101-80-4
17.	4,4'-thiodianiline	139-65-1
18.	o-toluidine	95-53-4
19.	4-methyl-m-phenylenediamine	95-80-7
20.	2,4,5-trimethylaniline	137-17-7
21.	o-anisidine	90-04-0
22.	4-amino azobenzene	60-09-3
23.	2,4-Xylidine	95-68-1
24.	2,6-Xylidine	87-62-7



RESULTS:

TCEP/ TDCPP/ TCPH CONTENT (2009/48/EC(and its amendments) Annex II, Appendix C)

Test Method : Sample was extracted with organic solvent and then analyzed by Gas Chromatograph Mass Spectrometer and Liquid Chromatograph Mass Spectrometer..

Limit(mg/kg)	5
--------------	---

Test Parameter:	TCEP	TDCPP	TCPH	-
Test Item(s)	Result (mg/kg)			Conclusion
I001	ND	ND	ND	PASS
I010	ND	ND	ND	PASS
I015	ND	ND	ND	PASS

Note / key:

TCEP = Tris(2-chloroethyl)phosphate
 TDCPP = Tris(1,3-dichloro-2-propyl)phosphate
 TCPH = Tris(1-chloro-2-propyl)phosphate
 ND = Not detected % = percent 10000 mg/kg = 1 %
 mg/kg = milligram(s) per kilogram
 Detection Limit (mg/kg) : Each 5

Total Lead Content in Substrate – ASTM International Standard ASTM F963-17, Section 4.3.5.2(2)(a)

Test Method : ASTM International Standard ASTM F963-17, Section 8.3.1 and Annex A7.

Maximum Allowable Limit :	100 mg/kg
---------------------------	-----------

Test Item(s)	Result	Unit	Conclusion
	Total Lead (Pb)		
I004	ND	mg/kg	PASS

Note / key:

ND = Not detected
 mg/kg = milligram(s) per kilogram
 Detection Limit (mg/kg) : 10



RESULTS:

Soluble Heavy Metals Content in Substrate –ASTM F963-17, Section 4.3.5.2(2)(b)

Test Method : ASTM International Standard ASTM F963-17, Section 8.3.5 (Excluding 8.3.5.5(3))

Analyte	As	Ba	Cd	Cr	Hg	Pb	Sb	Se
Max. Limit Type I (mg/kg)	25	1000	75	60	60	90	60	500
Max. Limit Type II (mg/kg)	25	250	50	25	25	90	60	500
Analytical Correction (%)	60	30	30	30	50	30	60	60

Analyte	As	Ba	Cd	Cr	Hg	Pb	Sb	Se	Mass of Trace Amount	Conclusion
Test Item(s)	Result (mg/kg)								(g)	
Type I: Substrate other than modeling clay										
I008	ND	ND	ND	ND	ND	ND	ND	ND	-	PASS
I009	ND	ND	ND	ND	ND	ND	ND	ND	-	PASS
I010	ND	ND	ND	ND	ND	ND	ND	ND	-	PASS
I011	ND	ND	ND	ND	ND	ND	21	ND	-	PASS
I012	ND	ND	ND	ND	ND	ND	ND	ND	-	PASS
I013	ND	ND	ND	ND	ND	ND	ND	ND	-	PASS
I014	ND	ND	ND	ND	ND	ND	ND	ND	-	PASS

Note / key:

As = Arsenic Ba = Barium Cd = Cadmium Cr = Chromium
 Hg = Mercury Pb = Lead Sb = Antimony Se = Selenium
 ND = Not detected g = gram(s) % = percent
 mg/kg = milligram(s) per kilogram (ppm=parts per million)
 Detection Limit (mg/kg) :
 For Type I – As : 2.5; Ba : 100; Cd : 7.5; Each (Cr, Hg, & Sb) : 6.0; Pb : 9.0; Se : 50
 For Type II – Each (As, Cr & Hg) : 2.5; Ba : 25; Cd : 5.0; Sb : 6.0; Pb : 9.0; Se : 50

Remark:

- Textiles (natural or synthetic) are exempted for lead content requirement according to clarification of Toy Industry Association for ASTM F963-17. The lead content analysis result of corresponding material herein is for client's reference only.



RESULTS:

Total Lead Content in Substrate Materials – Consumer Product Safety Improvement Act (CPSIA) of 2008 Sec. 101(a)(2)

Test Method : U.S. CPSC-CH-E1002-08.3:2012 and U.S. CPSC-CH-E1001-08.3:2012

Maximum Allowable Limit :	100 mg/kg
---------------------------	-----------

Test Item(s)	Result	Unit	Conclusion
	Total Lead (Pb)		
I004	ND	mg/kg	PASS

Note / key:

- ND = Not detected
- mg/kg = milligram(s) per kilogram
- Detection Limit (mg/kg) : 10

TOTAL LEAD CONTENT (Canada Consumer Product Safety Act – Consumer Products Containing Lead Regulations SOR/2018-83)

Test Method : Health Canada, Product Safety Laboratory, Reference Manual, Book 5-Laboratory Policies and Procedures, Method C-02.2(2016)

Maximum Allowable Limit :	90 mg/kg
---------------------------	----------

Test Item(s)	Result	Unit	Conclusion
	Total Lead (Pb)		
I004	ND	mg/kg	PASS

Note / key:

- ND = Not detected
- mg/kg = milligram(s) per kilogram
- Detection Limit (mg/kg) :10



RESULTS:

Total Lead Content in Substrate Materials – Client’s Specification refer ASTM

Test Method : Acid digestion followed by Atomic Absorption Spectrophotometry or Inductively Coupled Plasma Spectrometry.

Client's Limit :	100 mg/kg
------------------	-----------

Test Item(s)	Result	Unit	Conclusion
	Total Lead (Pb)		
I001+I002+I003	ND	mg/kg	PASS
I005+I006+I007	ND	mg/kg	PASS

Note / key:

- ND = Not detected
- mg/kg = milligram(s) per kilogram
- Detection Limit (mg/kg) : 10

Total Lead Content in Substrate Materials – Client’s Specification refer CPSIA

Test Method : Acid digestion followed by Atomic Absorption Spectrophotometry or Inductively Coupled Plasma Spectrometry.

Client's Limit :	100 mg/kg
------------------	-----------

Test Item(s)	Result	Unit	Conclusion
	Total Lead (Pb)		
I001+I002+I003	ND	mg/kg	PASS
I005+I006+I007	ND	mg/kg	PASS

Note / key:

- ND = Not detected
- mg/kg = milligram(s) per kilogram
- Detection Limit (mg/kg) : 10



RESULTS:

Total Lead Content in Substrate Materials – Client’s Specification refer CCPSA

Test Method : Acid digestion followed by Atomic Absorption Spectrophotometry or Inductively Coupled Plasma Spectrometry.

Client's Limit :	90 mg/kg
------------------	----------

Test Item(s)	Result	Unit	Conclusion
	Total Lead (Pb)		
I001+I002+I003	ND	mg/kg	PASS
I005+I006+I007	ND	mg/kg	PASS

Note / key:

- ND = Not detected
- mg/kg = milligram(s) per kilogram
- Detection Limit (mg/kg) : 10

Total Lead Content in Substrate Materials – Client’s Specification with reference to California proposition 65

Test Method : Acid digestion followed by Atomic Absorption Spectrophotometry or Inductively Coupled Plasma Spectrometry.

Client's Limit :	90 mg/kg
------------------	----------

Test Item(s)	Result	Unit	Conclusion
	Total Lead (Pb)		
I001+I002+I003	ND	mg/kg	PASS
I004	ND	mg/kg	PASS
I005+I006+I007	ND	mg/kg	PASS

Note / key:

- ND = Not detected
- mg/kg = milligram(s) per kilogram
- Detection Limit (mg/kg) : 10

RESULTS:



END OF REPORT