



# TEST REPORT

MID OCEAN BRANDS B.V.

**Technical Report:** (3222)189-0019REVISION

Jul.18,2022

This report is amendment of and supersedes the previous (3222)189-0019 dated Jul.18,2022 .

Date Received: Jul.08,2022

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Date Revision: Aug.05,2022

MID OCEAN BRANDS B.V.  
7/F., KINGS TOWER, 111 KING LAM STREET, CHEUNG SHA  
WAN, KOWLOON, HONG KONG

## SAMPLE INFORMATION:

<b>Sample Description:</b>	60PCS XMAS PUZZLE IN TIN BOX	<b>Sample Quantity:</b>	N/A
<b>Vendor:</b>	111041	<b>Style No(s):</b>	CX1507
<b>Manufacturer:</b>	N/A	<b>SKN/SKU No.:</b>	N/A
<b>Buyer:</b>	N/A	<b>PO No.:</b>	N/A
<b>Labeled Age Grade:</b>	NOT PROVIDED	<b>Ref #:</b>	N/A
<b>Appropriate Age Grade:</b>	N/A	<b>Country of Origin:</b>	N/A
<b>Client Specified Age Grade:</b>	OVER 3 YEARS OF AGE	<b>Assortment No.:</b>	N/A
<b>Tested Age Grade:</b>	OVER 3 YEARS OF AGE	<b>Country of Destination:</b>	N/A
<b>UPC Code:</b>	N/A	<b>Color :</b>	N/A

## EXECUTIVE SUMMARY:

TEST REQUESTED	CONCLUSION
The mechanical and physical properties requirements of the tested subclauses of the European Standard, "Safety of toys", EN71: Part 1:2014+A1:2018, clauses 1-7.	PASS See note 2&3
The flammability requirements of the European Standard "Safety of Toys", EN 71: Part 2: 2020	PASS
Formaldehyde Release from Wood	PASS
Total Lead Content – Reference to Regulation (EC) No. 1907/2006 Annex XVII Entry 63	PASS
Migration of Certain Elements - EN71-3:2019+A1:2021	PASS
Total Cadmium Content in Plastic Material and Paints on Painted Article - European Parliament and Council Regulation (EC) No. 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) with its Latest Amendment, Entry 23	PASS
Total Cadmium Content & As Client's requirement	PASS
Benzene Content & As Client's requirement	PASS

Revision reason: update the data.

Note:

1.The sample is tested as "Over 3 years of age" per the client's request .

2. No relevant packaging was provided with the submitted sample(s), consequently, evaluation of the labeling requirements of this European Standard, "Safety of toys", EN71: Part 1:2014+A1:2018, clauses 7, was not conducted.

3.The submitted sample **contains /releases** small part **as-received /after abuse**, thus,according to EN71: Part 1:2014+A1:2018,the following small part warning is required.

"Warning! Not suitable for children under 36 months.Small parts.Chocking hazard.

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**BVCPS (ZHEJIANG) GENERAL CONTACT INFORMATION FOR THIS REPORT**

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*Kimi .Zhu .*

*Jane Ye .*

Kimi Zhu  
LAB SUPERVISOR  
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Jane Ye  
TECHNICAL MANAGER

### APPROPRIATE AGE GRADE DETERMINATION

The Appropriate Age Grade is determined with reference to the EN71: Part 1:2014+A1:2018, European Union Guidance Documents, CEN ISO/TR 8124-8:2016 Safety of toys - Part 8: Age determination guidelines and Age Determination Guidelines: Relating Children's Ages to Toy Characteristics and Play Behavior, September, 2002	
Note :	The most stringent age grade from the Labeled Age Grade and the Appropriate Age Grade will be used for testing.
Note :	If the client does not specify an age grade for testing or request Bureau Veritas Consumer Products Services, Inc. to determine an appropriate age grade, the labeled age grade will be used for testing.

### EXPLANATION OF THE ABBREVIATIONS FOR PART 1, 2

Symbol	Explanation				
NM	The samples are NOT IN COMPLIANCE WITH the requirement of this Subclause				
M	The samples are IN COMPLIANCE WITH the requirement of this Subclause				
N/A	Not Applicable				
NR	Not Requested				
NE	Not Evaluated				
NP	None Present				
P	Present				
R	Refer to Comment Section of this report				
Symbol	Language Present	Symbol	Language Present	Symbol	Language Present
B	Belgian language	G	German language	PR	Portuguese language
D	Danish language	GR	Greek language	S	Spanish language
E	English language	H	Dutch language	SD	Swedish language
F	Finnish language	I	Italian language	SZ	Swiss language
FR	French language	N	Norwegian language		

**MECHANICAL & PHYSICAL PROPERTIES  
(EN 71: PART 1:2014+A1 :2018)**

Subclause	Requirement	Result
4.1	Material cleanliness	M
4.2	Assembly	N/A
4.3	Flexible plastic sheeting	N/A
4.4	Toy Bags	N/A
4.5	Glass	N/A
4.6	Expanding materials	N/A
4.7 & 7.6	Edges	M
4.8 & 7.6	Points and metallic wires	M
4.8e	Splinters	M
4.9	Protruding parts	N/A
4.10.1	Folding and sliding mechanisms	N/A
4.10.2	Driving mechanisms	N/A
4.10.3	Hinges	N/A
4.10.4	Springs	N/A
4.11	Mouth actuated toys and other toys intended to be put in the mouth	N/A
4.12 & 7.3	Balloons	N/A
4.13 & 7.9	Cord of toy kites and other flying toys	N/A
4.14.1	Toys which a child can enter	N/A
4.14.2 & 7.8	Masks and helmets	N/A
4.15.1	Toys propelled by child	N/A
4.15.1.2 & 7.10.1 & 7.10.2 & 7.10.3 & 7.10.4 & 7.16	Toys propelled by child – Instructions for use	N/A
4.15.1.3	Toys propelled by child – Strength	N/A
4.15.1.4	Toys propelled by child – Stability	N/A
4.15.1.5	Toys propelled by child – Braking	N/A
4.15.1.6	Toys propelled by child - Transmission	N/A
4.15.1.7	Toys propelled by child – insertion mark	N/A
4.15.1.8	Electrically-driven ride-on toys	N/A
4.15.2	Toy bicycles	N/A
4.15.2.2 & 7.15	Toy bicycles – Warnings and instructions for use	N/A
4.15.2.3	Toy bicycles – Braking	N/A
4.15.3 & 7.16 & 7.19	Rocking horses and similar toys	N/A
4.15.4 & 7.16	Toys not propelled by child	N/A
4.15.5 & 7.18	Toy scooters	N/A
4.16	Heavy immobile toys	N/A
4.17.2	All projectiles	N/A
4.17.3 & 7.7	Projectile toys with stored energy	N/A
4.17.4 & 7.26	Certain projectile toys without stored energy	N/A
4.18 & 7.4	Aquatic toys and inflatable toys	N/A
4.19 & 7.13 & 7.14	Percussion caps	N/A
*4.20.2.1- 4.20.2.8, 4.20.2.10, 4.20.2.12	Acoustics	N/A

**MECHANICAL & PHYSICAL PROPERTIES  
(EN 71: PART 1:2014+A1 :2018)**

Subclause	Requirement	Result
4.20.2.9, 4.20.2.11 & 7.14	Acoustics – percussion toys & cap-firing toys	N/A
4.21	Toys containing a non-electrical heat source	N/A
4.22 & 7.2	Small balls	N/A
4.23	Magnet	
4.23.2 a, b & c	Toy other than magnetic / electrical experimental sets intended for children over 8 years	N/A
4.23.3 & 7.20	Magnetic / electrical experimental sets intended for children over 8 years	N/A
4.24	Yo-yo ball	N/A
4.25	Toys attached to food	N/A
4.26	Toy Disguise Costumes	N/A
4.27.1	Flying toys – General	N/A
4.27.2 & 7.25.1	Rotors and propellers on flying toys	N/A
4.27.3 & 7.25.2	Rotors and propellers on remote controlled flying toys	N/A
<b>FOR TOYS INTENDED FOR CHILDREN UNDER 36 MONTHS</b>		
5.1	General	N/A
5.1a	Small parts – as received	N/A
5.1b	Small parts, sharp points, sharp edges – after tests	N/A
5.1c	Cross section <2mm metal points & wires	N/A
5.1e	Toys contain glue	N/A
5.1f	Casing of toys	N/A
5.2	Fillings, coverings and seams	N/A
5.3	Adhesion of plastic sheeting	N/A
5.4.2	Cords and chains in toys intended for children under 18 months	N/A
5.4.3 & 7.22	Cords and chains in toys intended for children of 18 months or over but under 36 months	N/A
5.4.4	Fixed loops, tangled loops and nooses	N/A
5.4.5	Cords and chains on pull along toys	N/A
5.4.6 & 7.21	Electrical cables	N/A
5.4.7	Cross-sectional dimension of certain cords	N/A
5.4.8	Self-retracting cords	N/A
5.4.9 & 7.11 & 7.23	Toys attached to or intended to be strung across a cradle, cot or perambulator	N/A
5.5 & 7.12	Liquid filled toys	N/A
5.6	Electrically driven toys	N/A
5.7	Glass and porcelain	N/A
5.8	Shape and size	N/A
5.9 & 7.17	Monofilament fibres	N/A
5.10	Small balls	N/A
5.11	Play figures	N/A
5.12	Hemispheric shaped toys	N/A
5.13	Suction cups	N/A
5.14	Straps intended to be worn fully or partially around the neck	N/A
5.15 & 7.24	Sledges with cords for pulling	N/A
6	Packaging	N/A



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**MECHANICAL & PHYSICAL PROPERTIES  
(EN 71: PART 1:2014+A1 :2018)**

Subclause	Requirement	Result
	<b>WARNINGS, INSTRUCTIONS FOR USE</b>	
7.1	General	SEE NOTE 2
7.2	Toys not intended for children under 36 months	SEE NOTE 2&3
7.5	Functional toys	SEE NOTE 2

**REQUIREMENTS & TEST METHODS CROSS REFERENCE TABLE FOR PART 1**

Sub-clause	Test Method	Sub-clause	Test Method	Sub-clause	Test Method	Sub-clause	Test Method
4.3	8.25.1	4.14.2	8.3, 8.4.2.1, 8.5, 8.7, 8.8, 8.11, 8.12	4.17.3	8.24.1	5.3	8.4.2.1, 8.25
4.5	8.5, 8.7, 8.11, 8.12	4.15.1.3	8.11, 8.12, 8.21, 8.22	4.17.4	8.24.2	5.4	8.20, 8.36, 8.38, 8.39, 8.40
4.6	8.2, 8.3, 8.4.2.1, 8.5, 8.7, 8.8, 8.14	4.15.1.4	8.23.1	4.18	8.2, 8.3, 8.4.2.1	5.5	8.15
4.7	8.11	4.15.1.5	8.26.1	4.20	8.28	5.6	8.29
4.8	8.12, 8.13	4.15.1.8	8.29	4.21	8.30	5.8	8.16
4.9	8.4.2.3, 8.11, 8.12	4.15.2.4	8.26.2	4.22	8.3, 8.4.2.1, 8.5, 8.6, 8.7, 8.8, 8.32	5.10	8.3, 8.4.2.1, 8.5, 8.6, 8.7, 8.8, 8.9, 8.32
4.10.1	8.18.2, 8.18.3	4.15.3	8.21, 8.23.1	4.23	8.2, 8.3, 8.4.2.1, 8.4.2.2, 8.5, 8.6, 8.7, 8.8, 8.34, 8.35	5.11	8.33
4.10.2	8.5, 8.6, 8.7, 8.11, 8.12	4.15.4	8.21, 8.23.1	4.24	8.37	5.12	8.3, 8.4.2.1, 8.5, 8.6, 8.7, 8.8, 8.9,
4.11	8.2, 8.3, 8.4.2.1, 8.9, 8.17	4.15.5	8.11, 8.12, 8.21, 8.22, 8.26.3, 8.27	4.25	8.2, 8.3, 8.4.2.1, 8.5, 8.7, 8.8, 8.32.1	5.13	8.3, 8.4.2.1, 8.5, 8.7, 8.8, 8.32
4.13	8.19	4.16	8.23.2	5.1	8.2, 8.3, 8.4.2.1, 8.5, 8.7, 8.8, 8.9, 8.11, 8.12		
4.14.1	8.31.1, 8.31.2	4.17.1	8.4.2.3				

**FLAMMABILITY (EN 71 PART 2: 2020 )**

Subclause	Requirement	Result
4.1	Cellulose nitrate	NP
4.1	Highly flammable solids	NP
4.1	Surface flash on a piled surface	N/A
4.1	Flammable gases	N/A



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**FLAMMABILITY (EN 71 PART 2: 2020 )**

Subclause	Requirement	Result
4.1	Extremely flammable liquids, highly flammable liquids, flammable liquids and flammable gels	N/A
4.2	Toys to be worn on the head	N/A
4.3	Toy disguise costumes and toys intended to be worn by child in play	N/A
4.3	warning on product and packaging (10 - 30 mm/s)	N/A
4.4	Toys intended to be entered by a child	N/A
4.4	warning on product and packaging (10 – 30 mm/s)	N/A
4.5	Soft-filled toys	N/A

REQUIREMENTS & TEST METHODS CROSS REFERENCE TABLE FOR PART 2

Sub-clause	Test Method	Sub-clause	Test Method	Sub-clause	Test Method	Sub-clause	Test Method
4.2.2	5.2	4.2.4	5.3	4.3	5.4	4.5	5.5
4.2.3	5.3	4.2.5	5.4	4.4	5.4	-	-

**Tested Component(s) Breakdown List**

Test Item	Description	Location	Style
1	Multicolor coating	Box	-
2	White coating	Box	-
3	Multicolor film	Jigsaw puzzle	-
4	Brown MDF	Jigsaw puzzle	-
5	Silver metal	Box	-

**Formaldehyde Release from Wood**

**Test Method** : EN 717-3: 1996

Parameter	Unit	Result	Maximum Allowable Limit
		4	
Average Formaldehyde	mg/kg	ND	-
Moisture Content	%	6.8	-
<b>Conclusion</b>	-	DATA	-

Note / Key:

ND = Not detected      % = percent

mg/kg = milligram(s) formaldehyde per kilogram oven-dry board

Detection Limit (mg/kg) : 10

**Total Lead Content – Reference to Regulation (EC) No. 1907/2006 Annex XVII Entry 63**

**Test Method** : The sample is digested with acid, then analyzed by ICP-OES/AAS

<b>Maximum Limit:</b>	<b>500 mg/kg</b>
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Test Item(s)	Result	Unit	Conclusion
1	ND	mg/kg	PASS
2	ND	mg/kg	PASS
3	ND	mg/kg	PASS
4	ND	mg/kg	PASS
5	ND	mg/kg	PASS

Note / Key:

ND = Not Detected      mg/kg = milligram per kilogram

MDL = Method Detection Limit

Detection Limit(mg/kg): 10



**Migration of Certain Elements - EN71-3:2019+A1:2021**

**Test Method:** European Standard EN71-3:2019+A1:2021

Analyte	Limit: (mg/kg)	Result (mg/kg)			
		Sample ID			
		1	2	3	4
Boron (B)	15000	<1500	<1500	<1500	<1500
Aluminium (Al)	28130	<2813	<2813	<2813	<2813
Chromium III (Cr III)	460	<46	<46	<46	<46
Chromium VI (Cr VI)	0.053	<0.02	<0.02	<0.02	<0.02
Manganese (Mn)	15000	<1500	<1500	<1500	<1500
Cobalt (Co)	130	<13	<13	<13	<13
Nickel (Ni)	930	<93	<93	<93	<93
Copper (Cu)	7700	<770	<770	<770	<770
Zinc (Zn)	46000	<4600	<4600	<4600	<4600
Arsenic (As)	47	<4.7	<4.7	<4.7	<4.7
Selenium (Se)	460	<46	<46	<46	<46
Strontium (Sr)	56000	<5600	<5600	<5600	<5600
Cadmium (Cd)	17	<1.7	<1.7	<1.7	<1.7
Tin (Sn)	180000	<18000	<18000	<18000	<18000
Organic tin	12	<1.2	<1.2	<1.2	<1.2
Antimony (Sb)	560	<56	<56	<56	<56
Barium (Ba)	18750	<1875	<1875	<1875	<1875
Mercury (Hg)	94	<9.4	<9.4	<9.4	<9.4
Lead (Pb)	23	<2.3	<2.3	<2.3	<2.3
Conclusion		Pass	Pass	Pass	Pass

*Note / Key:*

*Req. = Requirement      mg/kg = milligram per kilogram*

**Remark:**

- Test Item(s) was (were) tested according to European Standard EN 71-3: 2019 + A1: 2021, Section 8.
  - Results of Cr III and Cr VI were reported as sum of soluble chromium content unless further verified.
  - \*Result(s) of organic tin was (were) calculated by assuming the soluble tin content was wholly contributed from tributyltin (TBT) cation unless further specified.
  - The pH measured shall be reported after migration if it was outside the range of 1.1 to 1.3.
  - European Standard EN 71 Part 3: 2019 is currently harmonized under European Parliament and Council Directive 2009/48/EC and will be superseded when European Standard EN 71 Part 3: 2019 + A1: 2021 is harmonized.
  - Test Item(s) < Example : I005 > was (were) de-waxed by isooctane before testing.
  - The received sample(s) contained accessible component(s) of less than 10 milligrams by weight on one single sample, therefore such component(s) was (were) not subject to migration of certain elements of European Standard, "Safety of Toys, EN 71 Part 3: 2019 + A1: 2021", as specified in Section 7.1 - Selection of test portions.
  - Cr VI is very likely to be present in Test Item(s) < Example : I003 >, client is strongly advised to review its (their) chemical formulation.
  - Organic tin is very likely to be present in Test Item(s) < Example : I003 >, client is strongly advised to review its (their) chemical formulation.
  - \* denotes as result(s) was (were) verified by :
- For organic tin content - Test method with reference to European Standard EN 71-3: 2019 + A1: 2021 and reported



as tributyltin (TBT) cation.

For Cr VI content - In house ion chromatography analysis.

**Total Cadmium Content in Plastic Material and Paints on Painted Article - European Parliament and Council Regulation (EC) No. 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) with its Latest Amendment, Entry 23**

**Test Method** : EN 1122: 2001, Method B  
The sample is digested with acid, then analyzed by AAS and OES.

<b>Maximum Limit:</b>	<b>100 mg/kg</b>
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Test Item(s)	Result	Unit	Conclusion
1	ND	mg/kg	PASS
2	18.1	mg/kg	PASS
3	ND	mg/kg	PASS

Note / Key:

ND = Not Detected

mg/kg = milligram per

MDL = Method Detection Limit

kilogram

Detection Limit (mg/kg): 10

**Total Cadmium Content & As Client's requirement**

**Test Method** : Refer to US EPA 3052:1996 & US EPA 6010D:2014  
The sample is digested with acid, then analyzed by ICP-OES and AAS .

Parameter	Unit	Result		Maximum Allowable Limit
		4	5	
Cadmium (Cd)	mg/kg	ND	ND	100
<b>Conclusion</b>	-	PASS	PASS	-

Note / Key:

ND = Not Detected

mg/kg = milligram per

MDL = Method Detection Limit

kilogram

Detection Limit (mg/kg): 10

**Benzene Content & As Client's requirement**

Test Method: Samples were heated in the headspace vials and analyzed with Gas Chromatography Mass Spectrometer (HS-GC-MS).

Parameter	Unit	MDL	Result				Client's Limit
			1	2	3	4	
Benzene	mg/kg	1	ND	ND	ND	ND	5
<b>Conclusion</b>	-	-	PASS	PASS	PASS	PASS	-

SAMPLE REFERENCE PHOTO:





-- END OF REPORT --