



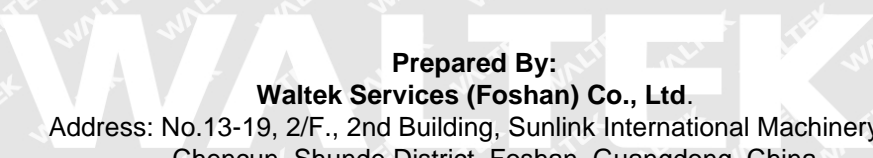
TEST REPORT

Reference No..... : WTF20F03010604C
 Applicant..... : Mid Ocean Brands B.V.
 Address..... : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
 Manufacturer..... : 113285
 Sample Name..... : Bubble solution
 Model No..... : MO8817, MO8818, MO8926
 Test Method..... : Please refer to next page (s)
 Test Conclusion..... : Please refer to next page (s)
 Date of Receipt sample : 2020-03-17
 Date of Test..... : 2020-03-17 to 2020-03-23
 Date of Issue..... : 2020-03-23
 Test Result..... : Please refer to next page (s)

Remarks:

The results shown in this test report refer only to the sample(s) tested; this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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Prepared By:

Waltek Services (Foshan) Co., Ltd.

Address: No.13-19, 2/F., 2nd Building, Sunlink International Machinery City, Chencun, Shunde District, Foshan, Guangdong, China

Tel:+86-757-23811398 Fax:+86-757-23811381 E-mail:info@waltek.com.cn

Compiled by:

Rena Chen

Rena.Chen / Project Engineer

Approved by:



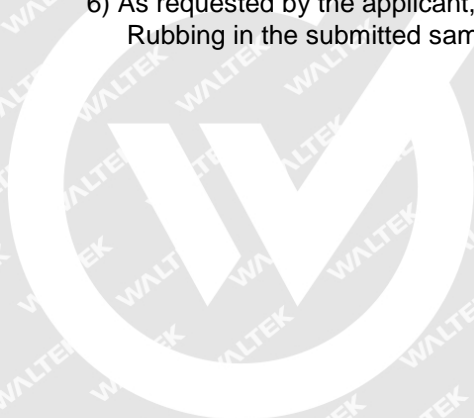
Swing Liang

Swing.Liang / Technical Manager



Test Requested..... :

- 1) Determination of Cadmium content in the submitted sample in accordance with REACH regulation Annex XVII Entries 23 (EC) No. 1907/2006 and the amendment No. 552/2009, No. 494/2011, No. 835/2012 and (EU) 2016/217
- 2) Determination of specified Phthalates content according to Annex XVII Items 51 & 52 of the REACH Regulation (EC) No. 1907/2006 & Amendment No. 552/2009 & No. 2018/2005
- 3) Determination of specified Polycyclic Aromatic Hydrocarbons (PAHs) content in submitted sample in accordance with Entries 50 of Annex XVII of REACH Regulation (EC) No 1907/2006 and its amendment Regulation (EU) No 1272/2013.
- 4) Determination of Benzene content in the submitted sample in accordance with Annex XVII Entries 5 of the REACH Regulation (EC) No. 1907/2006 and the Amendment (EU) No. 2015/1494
- 5) Determine the specified AZO Colorants contents in the submitted sample in according to the Entries 43 in Annex XVII of the REACH Regulation (EC) No.1907/2006 and the Amendment Regulation (EC) No.552/ 2009 & No.126/ 2013 (previously restricted under Directive 2002/61/EC).
- 6) As requested by the applicant, to test Colour Fastness to Rubbing in the submitted sample.



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**Test Result:****1) Cadmium (Cd)**

Test Method: With reference to IEC 62321-5:2013, the analysis was performed by ICP-OES.

| Test Item | MDL (mg/kg) | Results (mg/kg) | |
|-------------------|----------------|-----------------|-------------|
| | | No.1+No.3 | No.2+No.5 |
| Cadmium(Cd) | 2 | ND* | ND* |
| Conclusion | -- | Pass | Pass |

Note:

- (1) mg/kg = milligram per kilogram
- (2) ND = Not Detected (lower than MDL)
- (3) MDL = Method Detection Limit
- (4) Limit of Cadmium according to REACH regulation Annex XVII Item 23 (EC) No. 1907/2006 and the amendment No. 552/2009, No. 494/2011 and No. 835/2012 and (EU) 2016/217.

| Category | Limit (mg/kg) |
|---|---------------|
| Wet paint | 100 |
| Surface coating | 1000 |
| Plastic | 100 |
| Metal parts of jewellery and hair accessories | 100 |

- (5) "*" = Results are calculated by the minimum weight of mixed components.

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2) Phthalates

Test Method: With reference to EN14372:2004, by Gas Chromatographic-Mass Spectrometric (GC-MS) analysis.

| Test Items | MDL (%) | Results (%) | | Limit (%) |
|--------------------------------------|---------|-------------|-------------|-------------------------------|
| | | No.1+No.3 | No.2+No.5 | |
| Benzyl butyl phthalate (BBP) | 0.005 | ND* | ND* | sum of four phthalates < 0.1 |
| Di (2-ethyl hexyl)- phthalate (DEHP) | 0.005 | ND* | ND* | |
| Dibutyl phthalate (DBP) | 0.005 | ND* | ND* | |
| Diisobutyl phthalate (DIBP) | 0.005 | ND* | ND* | |
| Diisodecyl phthalate (DIDP) | 0.01 | ND* | ND* | sum of three phthalates < 0.1 |
| Diisononyl phthalate (DINP) | 0.01 | ND* | ND* | |
| Di-n-octyl phthalate (DNOP) | 0.005 | ND* | ND* | |
| Conclusion | -- | Pass | Pass | -- |

Note:

DBP= Dibutyl phthalate

BBP= Benzyl butyl phthalate

DEHP= Bis-(2-ethylhexyl)- phthalate

DINP= Di-isononyl phthalate

DNOP= Di-n-octyl phthalate

DIDP= Di-isodecyl phthalate

DIBP= Diisobutyl phthalate

(1) % = percentage by weight

(2) ND = Not detected or Less than the method detection limit

(3) MDL=Method Detection Limit

(4) "<" = less than

(5) The above limit was quoted according to Annex XVII Items 51 & 52 of the REACH Regulation (EC) No. 1907/2006 & Amendment No. 552/2009 & No. 2018/2005 (formerly known as Directive 2005/84/EC) for phthalate content in toys and child care articles.

(6) "*" = Results are calculated by the minimum weight of mixed components.



3) Polycyclic Aromatic Hydrocarbons (PAHs)

Test Method: With reference to AFPS GS 2014:01 PAK method, analysis was performed by Gas Chromatographic Mass Spectrometry (GC-MS).

| Test Items | Unit | Results | | MDL | Limit |
|--------------------------------|-------|-------------|-------------|-----|-------|
| | | No.1+No.3 | No.2+No.5 | | |
| Benzo(a)anthracene (BaA) | mg/kg | ND* | ND* | 0.2 | 0.5 |
| Chrysene (CHR) | mg/kg | ND* | ND* | 0.2 | 0.5 |
| Benzo[b]fluoranthene (BbFA) | mg/kg | ND* | ND* | 0.2 | 0.5 |
| Benzo[k]fluoranthene (BkFA) | mg/kg | ND* | ND* | 0.2 | 0.5 |
| Benzo(a)pyrene (BaP) | mg/kg | ND* | ND* | 0.2 | 0.5 |
| Dibenzo[a,h]anthracene (DBAhA) | mg/kg | ND* | ND* | 0.2 | 0.5 |
| Benzo[j]fluoranthene (BjFA) | mg/kg | ND* | ND* | 0.2 | 0.5 |
| Benzo[e]Pyrene (BeP) | mg/kg | ND* | ND* | 0.2 | 0.5 |
| Conclusion | -- | Pass | Pass | -- | -- |

Note:

- (1) ND = Not Detected or less than method detection limit
- (2) mg/kg=milligram per kilogram=ppm
- (3) MDL = Method Detection Limit
- (4) As per Entries 50 of Annex XVII of REACH Regulation (EC) No 1907/2006 and its amendment Regulation (EU) No 1272/2013, Articles shall not be placed on the market for supply to the general public, if any of their rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use, contain more than 1 mg/kg (0,0001 % by weight of this component) of any of the listed PAHs.
- (5) As per Entries 50 of Annex XVII of REACH Regulation (EC) No 1907/2006 and its amendment Regulation (EU) No 1272/2013, Toys, including activity toys, and childcare articles, shall not be placed on the market, if any of their rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use, contain more than 0,5 mg/kg (0,00005 % by weight of this component) of any of the listed PAHs.
- (6) "*" = Results are calculated by the minimum weight of mixed components.



4) Benzene

Test Method: With reference to US EPA 3550C:2007& US EPA 8270D: 2014, analysis was performed by GC-MS

| Test Item | MDL (mg/kg) | Results (mg/kg) | | Limit (mg/kg) |
|------------|----------------|-----------------|-----------|------------------|
| | | No.1+No.3 | No.2+No.5 | |
| Benzene | 1 | ND* | ND* | 5 |
| Conclusion | -- | Pass | Pass | -- |

Note:

(1) mg/kg = milligram per kilogram

(2) ND = Not Detected (lower than MDL)

(3) MDL = Method Detection Limit

(4) As per Annex XVII Items 5 of the REACH Regulation (EC) No. 1907/2006 and the Amendment (EU) No. 2015/1494, benzene shall not be used in toys or parts of toys where the concentration of benzene in the free state is greater than 5 mg/kg (0,0005 %) of the weight of the toy or part of toy.

(5) "*" = Results are calculated by the minimum weight of mixed components.



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5) AZO

Test Method: With reference to BS EN ISO 14362-1: 2017 and BS EN ISO 14362-3: 2017, analysis was performed by Gas Chromatographic Mass Spectrometry (GC-MS)

| No. | Amines Substances | CAS No. | Limit (mg/kg) | Result (mg/kg) |
|-------------------|---|----------|---------------|----------------|
| | | | | No.4 |
| 1 | 4-Aminobiphenyl | 92-67-1 | 30 | ND |
| 2 | Benzidine | 92-87-5 | 30 | ND |
| 3 | 4-chloro-o-Toluidine | 95-69-2 | 30 | ND |
| 4 | 2-Naphthylamine | 91-59-8 | 30 | ND |
| 5 | o-Aminoazotoluene | 97-56-3 | 30 | ND |
| 6 | 2-Amino-4-nitrotoluene | 99-55-8 | 30 | ND |
| 7 | p-Chloroaniline | 106-47-8 | 30 | ND |
| 8 | 2,4-diaminoanisol | 615-05-4 | 30 | ND |
| 9 | 4,4'-Diaminodiphenylmethane | 101-77-9 | 30 | ND |
| 10 | 3,3'-Dichlorobenzidine | 91-94-1 | 30 | ND |
| 11 | 3,3'-Dimethoxybenzidine | 119-90-4 | 30 | ND |
| 12 | 3,3'-Dimethylbenzidine | 119-93-7 | 30 | ND |
| 13 | 3,3'-Dimethyl-4,4'-diaminodiphenylmethane | 838-88-0 | 30 | ND |
| 14 | p-cresinin | 120-71-8 | 30 | ND |
| 15 | 4,4'-Methylen-bis-(2-chloroaniline) | 101-14-4 | 30 | ND |
| 16 | 4,4'-Oxydianiline | 101-80-4 | 30 | ND |
| 17 | 4,4'-Thiodianiline | 139-65-1 | 30 | ND |
| 18 | o-Toluidine | 95-53-4 | 30 | ND |
| 19 | 2,4-Toluylendiamine | 95-80-7 | 30 | ND |
| 20 | 2,4,5 – Trimethylaniline | 137-17-7 | 30 | ND |
| 21 | o-anisidine | 90-04-0 | 30 | ND |
| 22 | 4-aminoazobenzene | 60-09-3 | 30 | ND |
| 23 | 2,4-Xylidin | 95-68-1 | 30 | ND |
| 24 | 2,6-Xylidin | 87-62-7 | 30 | ND |
| Conclusion | | -- | -- | Pass |

Note:

- ND = Not detected or less than the method detection limit
- mg/kg=Milligram per kilogram
- Method Detection Limit (mg/kg): Each 5mg/kg
- The CAS-numbers 97-56-3 and 99-55-8 are further reduced to CAS-numbers 95-53-4 and 95-80-7.
- AZO colorants that are able to form 4-aminoazobenzene, generate under the condition of this method aniline and 1,4-phenylenediamine. The presence of these colorants cannot be reliably ascertained without additional information, e.g. the chemical structure of the colorant used.
- The CAS-numbers 95-68-1 and 87-62-7 are not proscribed under REACH Regulation (EC) No 1907/2006

**6) Colour Fastness to Rubbing**

| Colour Fastness to Rubbing | | |
|--|-------------|-----------------------|
| (ISO 105 X12: 2001/Cor 2002; Size of rubbing finger: 16mm diameter.) | | |
| | No.4 | Client's Limit |
| Dry staining | 4 | 2-3 |
| Wet staining | 4 | 2-3 |
| Conclusion | Pass | -- |

Note:

(1) Grey Scale Rating is based on the 5-step scale of 1 to 5, where 1 is bad and 5 is good.

Test Specimen Description:

No.1: Red plastic lid

No.2: White plastic stick

No.3: Red plastic shell

No.4: Red nylon rope

No.5: Red plastic buckle


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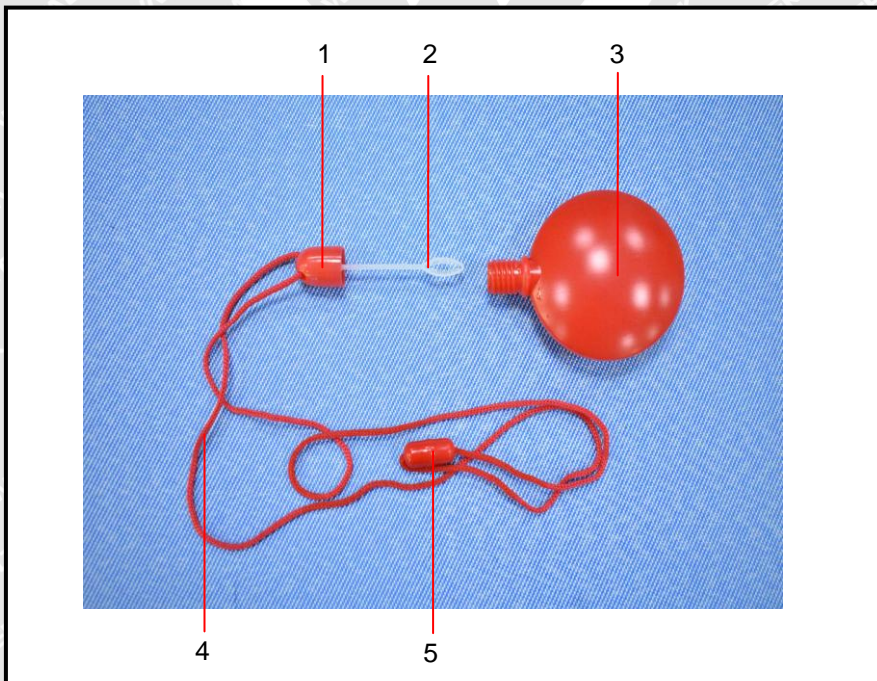


Sample photo:





Photographs of parts tested:



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