



TEST REPORT

Reference No.: WTF18F08121596A1R1C
Applicant: Mid Ocean Brands B.V

Address: 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon,

Hong Kong

Manufacturer : 114276

Sample Name...... : Thumb up keyring with LED light

Model No. : MO8940

amendment (EU) No. 2015/863.

Test Method : 1) With Reference to IEC 62321-2:2013, disassembly, disjointment and

mechanical sample preparation

2) With Reference to IEC 62321-3-1:2013, screening - Lead, mercury

 With Reference to IEC 62321-3-1:2013, screening - Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry

 With reference to IEC 62321-4:2013+AMD1:2017 CSV, determination of Mercury by ICP-OES

4) With reference to IEC 62321-5:2013, determination of Lead and Cadmium by ICP-OES

5) With reference to IEC 62321-7-2: 2017 and IEC 62321-7-1: 2015, determination of Hexavalent Chromium by UV-Vis

6) With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS

7) With reference to IEC 62321-8:2017, determination of Phthalates content by GC-MS.

Test Conclusion.....: Based on the performed tests on the submitted samples, the results

comply with the RoHS Directive 2011/65/EU and its amendment (EU)

No. 2015/863

Date of Receipt sample... : 2018-08-20 & 2019-03-05 & 2019-03-19

Date of Issue : 2019-03-22

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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Compiled by:

Humour . Wel

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Test Results:

1. Lead, Mercury, Cadmium, Hexavalent Chromium, PBBs and PBDEs

Part No.	Part Description	Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusior on RoHS
M	m m m	Cd Cd	BL	IT WILL WALL WALL	n,
	TEX LIER ALIER WILL A	Pb	BL	t the	
1	Red plastic sheet	∠ Hg.↓	BL (NA NA	Comply
	TEX TEX STEX STER INV	Cr	BL	_ 'n, ' ', ' ', ' ', ' ', ', ', ', ', ', ',	
	in me me m	Br	BL O	LIER WILLIAMITE A	
	t let tex iter alte	Cd of	BL	et tet stiet	Comply
	MULL AND AND AND	Pb	BL		
2	Silvery coating	Hg	SU BL S	NA	
	with whi we .	Cr	BL	er tex liex rife	
	The set of	Br	BL ₁	we me m	
JER	WILL MAIL MAIL MAIL MILL	Cd	BL	L LET JET JET	ALTE: ID
	Discharlandia del 115 in 15 in	Pb	BL	aur, Aur, Aur,	
3	Black plastic shell without silvery coating	Hg	BL	NA NA	Comply
	Coating	Cr	BL	an the water war an	
	t liet with wir will	Br	BL		
M	20 20 30	Cd	BL	NA NA	Comply
	TEX ITEX ALL PLIES	Pb	BL		
4	Silvery metal sheet	Hg	BL		
		Cr	BL		
		Br	BL		
	at at the state	Cd	BL	NA NA	Comply
	it will me me in	Pb	BL		
5	Silvery metal ring	Hg	ST BL		
		Cr	BL		
		Br	JULY BL		
JET	NITE IN THE PERSON NAMED I	Cd	BL	C A TEX TEX	LIE!
		Pb	BL	an in the	11/2 21
6	Silvery metal buckle	Hg	BL	NA NA	Comply
	'm' 'n' '	Cr	BL	The most more of	et les
	of the street outles and the	Br W	BL		
M	m m	Cd	BL	NA MITE	Comply
	Silvery metal ring	Pb	M BL		
7		⊬ Hg ⊬	BL		
		Cr	BL		
		Br	BL BL		
	White plastic button	Cd	BL	I WE WELL THE WAY	Comply
		Pb	BL		
8		Hg	BL		
	THE WALL WHILE WAS	Cr	BL	at tet tet it	
	10, 20, 1	Br	BL	" Wer Aur Mur	



Part No.	Part Description Result of XRF		Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS	
UE	WILL WILL MALL MALL	Cd	BL	at let let li	NITER .
n.		Pb	BL	MULL MULL MAN	711. 7
9	Black plastic sleeve	Hg	BL	L NA	Comply
		→ Cr→	BL	MULL MULL MULL	mr m
et .		Br	BL	L at at	TEX J
1/1	111 111	Cd	BL	WITE WALL WALL OF	Ve Me
		Pb	BL		Comply
10	Black rubber cap	Hg	BL	NA	
-4-	EX TEX TEX STEE	Cr	M BL W	70, 7,	
Inlite.		Br	BL	E SITEK OLIEN WALTE	
	Transparent body of LED	Cd	on BL	24, 25,	.t
		Pb	BL	- JEH DDDIEN NDVIEW	White whi
11		Hg	BL	PBBs : ND PBDEs : ND	Comply
		Cr	BL		
211		Br	IN		
116.75	NITE MITE WALL WINE	Cd	BL	of the text of	Comply
Mr.		Pb	BL	ry mury mury man	
12	Silvery metal pin of LED	Hg	BL	NA -	
		Cr	BL	White Mail Wal.	Mr. M
EX	TEX LIEX NUTER OF MA	Br	BL	L A At	
13	The The A	Cd	BL	NITE WALL WALL V	Comply
		Pb	BL	, t	
	Silvery metal screw	Hg	BL	Cr ⁶⁺ : Negative	
		Cr. Cr.	WIN N		t et
	are the tar	Br	BL	TE LIFE CLIFE	MILITA

Remark:

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(1) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for Cr⁶⁺) and GC-MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1: 2013 (unit: mg/kg)

Element	Polymer	Metal	Composite Materials
Cd	BL \leq (70-3 σ) $<$ IN $<$ (130+3 σ) \leq OL	BL \leq (70-3 σ) $<$ IN $<$ (130+3 σ) \leq OL	LOD < IN < (150+3σ) ≤ OL
Pb	BL \leq (700-3 σ) < IN < (1300+3 σ) \leq OL	$BL \le (700-3\sigma) < IN < (1300+3\sigma) \le OL$	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Hg	BL ≤ $(700-3\sigma)$ < IN < $(1300+3\sigma)$ ≤ OL	$BL \le (700-3\sigma) < IN < (1300+3\sigma) \le OL$	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Cr	BL ≤ (700-3σ) < IN	BL ≤ (700-3σ) <in< td=""><td>BL ≤ (500-3σ) < IN</td></in<>	BL ≤ (500-3σ) < IN
Br	BL ≤ (300-3σ) < IN	The Me My M	BL ≤ (250-3σ) < IN

BL= Below Limit

OL= Over Limit

LOD = Limit of Detection

-- = Not Regulated

- (2) "IN" expresses the inconclusive region, and further chemical testing to confirm whether it complies with the requirement of RoHS Directive.
- (3) The XRF screening test for RoHS elements the reading may be different to the actual content in the sample be of non-uniformity composition.
- (4) mg/kg =milligram per kilogram=ppm, based on the dry weight of tested sample.
- (5) ND = Not Detected, less than the value of Method Detection Limit.
- (6) NA = Not Applicable, as the XRF screening test result was below the limit, it was not need to conduct the wet chemical testing.
- (7) MDL= Method Detection Limit in wet chemical test.

Test Items	Pb	Cd	Hg	C	6+	PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	μg/cm ²	mg/kg	mg/kg
MDL	2	2	2	2	0.1	5	5

The MDL for single compound of PBBs and PBDEs is 5mg/kg, MDL of Cr⁶⁺ for polymer and composite sample is 2mg/kg and MDL of Cr⁶⁺ for metal sample is 0.1µg/cm².

(8) According to IEC 62321-7-1:2015, determined of Cr⁶⁺ on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.

Boiling water extraction:

Negative = Absence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is less than 0.10ug/cm².

Positive = Presence of Cr⁶⁺ coating, the detected concentration in boiling water extraction solution is greater than 0.13ug/cm².

Information on storage conditions and production date of the tested sample is unavailable and thus Cr⁶⁺ results represent status of the sample at the time of testing.

(9) As per client's requirement, all results of specimen are extracted from report No. WTF18F08121596C

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2. Phthalates (DEHP, BBP, DBP, DIBP)

Test items	Result (mg/kg	Limit	
LIER WILL WILL MALL AND	No.1+No.3 [△]	No.2	(mg/kg)
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	1 1 1 85 W V	1000
Dibutyl phthalate (DBP)	<50	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000

Test items	Result (mg/kg	Limit	
	No.8	No.9	(mg/kg)
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	<50	w <50 w	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000

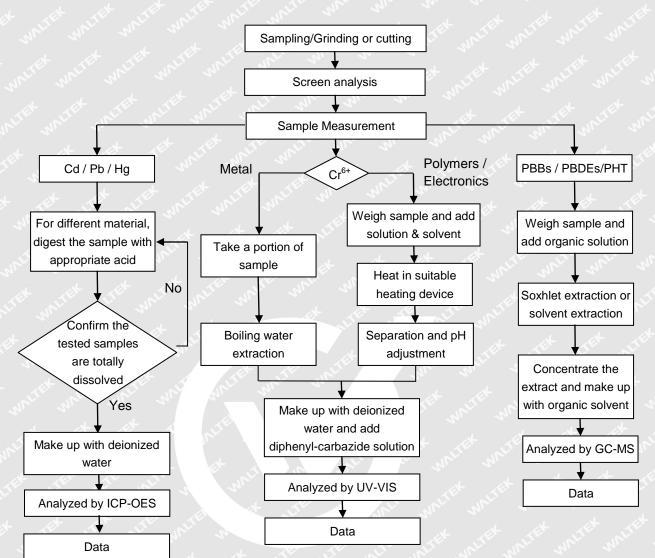
Test items	Resul (mg/k	Limit	
White Muri Muri Mus And	No.10	No.11	(mg/kg)
Bis(2-ethylhexyl)-phthalate (DEHP)	<50	<50	1000
Dibutyl phthalate (DBP)	<50	<50	1000
Benzylbutyl phthalate (BBP)	<50	<50	1000
Diisobutyl phthalate (DIBP)	<50	<50	1000

Note:

- (1) "<" = less than
- (2) mg/kg = milligram per kilogram= ppm
- (3) " \triangle " = As client's requirement, the testing was conducted based on mixed components, the test result is for reference only.

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Measurement Flowchart:



Sample Photo:

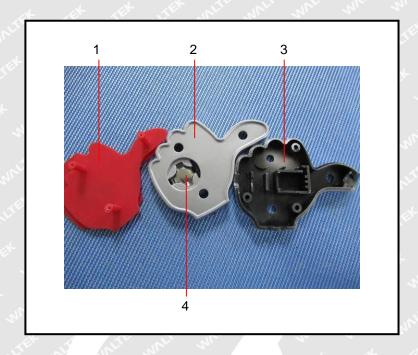


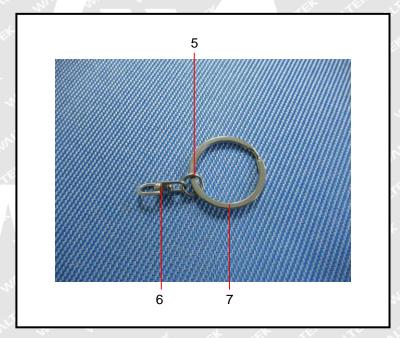




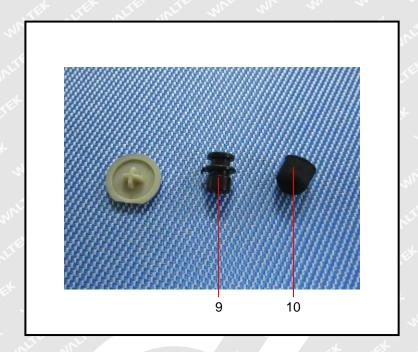
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Photograph of parts tested:



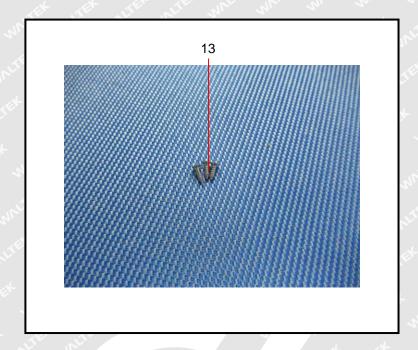


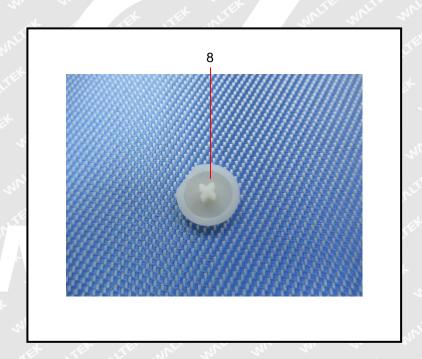












===== End of Report =====