



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No. : WTF24F11272709C
Job No. : FSW2411210875CJ
Applicant : Mid Ocean Brands B.V.
Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha
Wan, Kowloon, Hong Kong
Manufacturer : 114628
Sample Name : Key finder device in bamboo
Sample Model : MO6897
Test Requested : Refer to next page (s)
Test Method : Refer to next page (s)
Test Conclusion : Refer to next page (s)
Date of Receipt sample : 2024-11-21
Testing period : 2024-11-21 to 2024-11-29
Date of Issue : 2024-11-29
Test Result : Refer to next page (s)

Prepared By:

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Signed for and on behalf of
Waltek Testing Group (Foshan) Co., Ltd.

Swing Liang

Swing.Liang



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Summary:

Test Requested	Test Conclusion
In accordance with the RoHS Directive 2011/65/EU and its amendment (EU) No. 2015/863, to determine the 10 restricted substances content in the submitted sample.	Pass (Please refer to next pages for details)

Sample Photo(s):



**Test Results:****1. Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs and PBDEs**

Test method:

- 1) With reference to IEC 62321-2:2021, disassembly, disjunction and mechanical sample preparation
- 2) With reference to IEC 62321-3-1:2013, screening –Lead, cadmium, mercury, total chromium and total bromine by X-ray fluorescence spectrometry
- 3) 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

Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
1	Brown wooden sheet with black surface	BL	BL	BL	BL	BL	NA
2	Black drawstring	BL	BL	BL	BL	BL	NA
3	Silvery metal ring	BL	BL	BL	BL	--	NA
4	Silvery metal cord anchorage	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
5	Silvery metal screws with black plating	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
6	Black soft plastic cap	BL	BL	BL	BL	BL	NA
7	Golden metal cap (button)	BL	BL	BL	BL	--	NA
8	Silvery metal shell (button)	BL	BL	BL	IN	--	Cr ⁶⁺ : Negative
9	Grey plastic base (button)	BL	BL	BL	BL	BL	NA
10	Silvery metal pin (button)	BL	BL	BL	BL	--	NA
11	Chip crystal oscillator	BL	BL	BL	BL	BL	NA
12	Chip IC	BL	BL	BL	BL	BL	NA
13	Chip resistor	BL	IN	BL	IN	BL	Cr ⁶⁺ : ND Pb :204
14	Yellow transparent plastic adhesive tape	BL	BL	BL	BL	BL	NA
15	Silvery metal sheet	BL	BL	BL	BL	--	NA



Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
16	Dark grey plastic shell (buzzer)	BL	BL	BL	BL	BL	NA
17	Silvery metal sheet (buzzer)	BL	BL	BL	BL	--	NA
18	Black magnetic ring (buzzer)	BL	BL	BL	IN	--	Cr ⁶⁺ : ND
19	Coppery varnished wire (buzzer)	BL	BL	BL	BL	BL	NA
20	Silvery metal pin (buzzer)	BL	BL	BL	BL	--	NA
21	Chip audion	BL	BL	BL	BL	BL	NA
22	Chip capacitor	BL	BL	BL	BL	BL	NA
23	Chip EC	BL	IN	BL	BL	BL	Pb :579
24	Chip LED	BL	BL	BL	BL	BL	NA
25	Chip diode	BL	BL	BL	BL	BL	NA
26	Green PCB	BL	BL	BL	IN	BL	PBBs : ND PBDEs : ND
27	Transparent double faced adhesive tape	BL	BL	BL	BL	BL	NA



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Remark:

- (1) Results are obtained by XRF 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	$BL \leq (70-3\sigma) < IN < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < IN < (130+3\sigma) \leq OL$	$LOD < IN < (150+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < IN < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < IN < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < IN < (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < IN < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < IN < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < IN < (1500+3\sigma) \leq OL$
Cr	$BL \leq (700-3\sigma) < IN$	$BL \leq (700-3\sigma) < IN$	$BL \leq (500-3\sigma) < IN$
Br	$BL \leq (300-3\sigma) < IN$	--	$BL \leq (250-3\sigma) < IN$

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, $\mu\text{g}/\text{cm}^2$ = Micrograms per square centimetre.
- (5) ND = Not Detected or lower than limit of quantitation.
- (6) NA = Not Applicable, as the XRF screening test result was below the limit or as the XRF screening directly determine that test result was over the limit, it was not need to conduct the wet chemical testing.
- (7) LOQ = Limit of quantitation.

Test Items	Pb	Cd	Hg	Cr ⁶⁺		PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	$\mu\text{g}/\text{cm}^2$	mg/kg	mg/kg
LOQ	2	2	2	8	0.1	5	5

The LOQ for single compound of PBBs and PBDEs is 5 mg/kg, LOQ of Cr⁶⁺ for polymer and composite sample is 8 mg/kg and LOQ of Cr⁶⁺ for metal sample is 0.1 $\mu\text{g}/\text{cm}^2$.

- (8) RoHS Requirement

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr ⁶⁺)	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)



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- (9) According to IEC 62321-7-1:2015, determined of Cr^{6+} on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.

Boiling water extraction:

Negative = Absence of Cr^{6+} coating, the detected concentration in boiling water extraction solution is less than $0.10 \mu\text{g}/\text{cm}^2$.

Positive = Presence of Cr^{6+} coating, the detected concentration in boiling water extraction solution is greater than $0.13 \mu\text{g}/\text{cm}^2$.

Information on storage conditions and production date of the tested sample is unavailable and thus Cr^{6+} results represent status of the sample at the time of testing.

- (10) Abbreviation:

"Pb" denotes Lead, "Cd" denotes Cadmium, "Hg" denotes Mercury, "Cr" denotes Chromium, "Cr (VI)" denotes Hexavalent Chromium, "Br" denotes Bromine, "PBBs" denotes Total Polybrominated Biphenyls, "PBDEs" denotes Total Polybrominated Diphenyl Ethers.

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**2. Phthalates:**

Test method:

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

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	1+2+6 [△]	ND	ND	ND	ND
T02	3	--	--	--	--
T03	4	--	--	--	--
T04	5	--	--	--	--
T05	7	--	--	--	--
T06	8	--	--	--	--
T07	9+16 [△]	ND	ND	ND	ND
T08	10	--	--	--	--
T09	11+12+13+21+22 [△]	ND	ND	ND	ND
T10	14+27 [△]	ND	ND	ND	ND
T11	15	--	--	--	--
T12	17	--	--	--	--
T13	18	--	--	--	--
T14	19	ND	ND	ND	ND
T15	20	--	--	--	--
T16	23+24+25 [△]	ND	ND	ND	ND
T17	26	ND	ND	ND	ND

**Note:**

- (1) mg/kg = milligram per kilogram= ppm
- (2) ND = Not Detected or lower than limit of quantitation.
- (3) -- = Not Regulated.
- (4) LOQ = Limit of quantitation.

Test Items	DBP	BBP	DEHP	DIBP
Units	mg/kg	mg/kg	mg/kg	mg/kg
LOQ	50	50	50	50

- (5) Abbreviation:

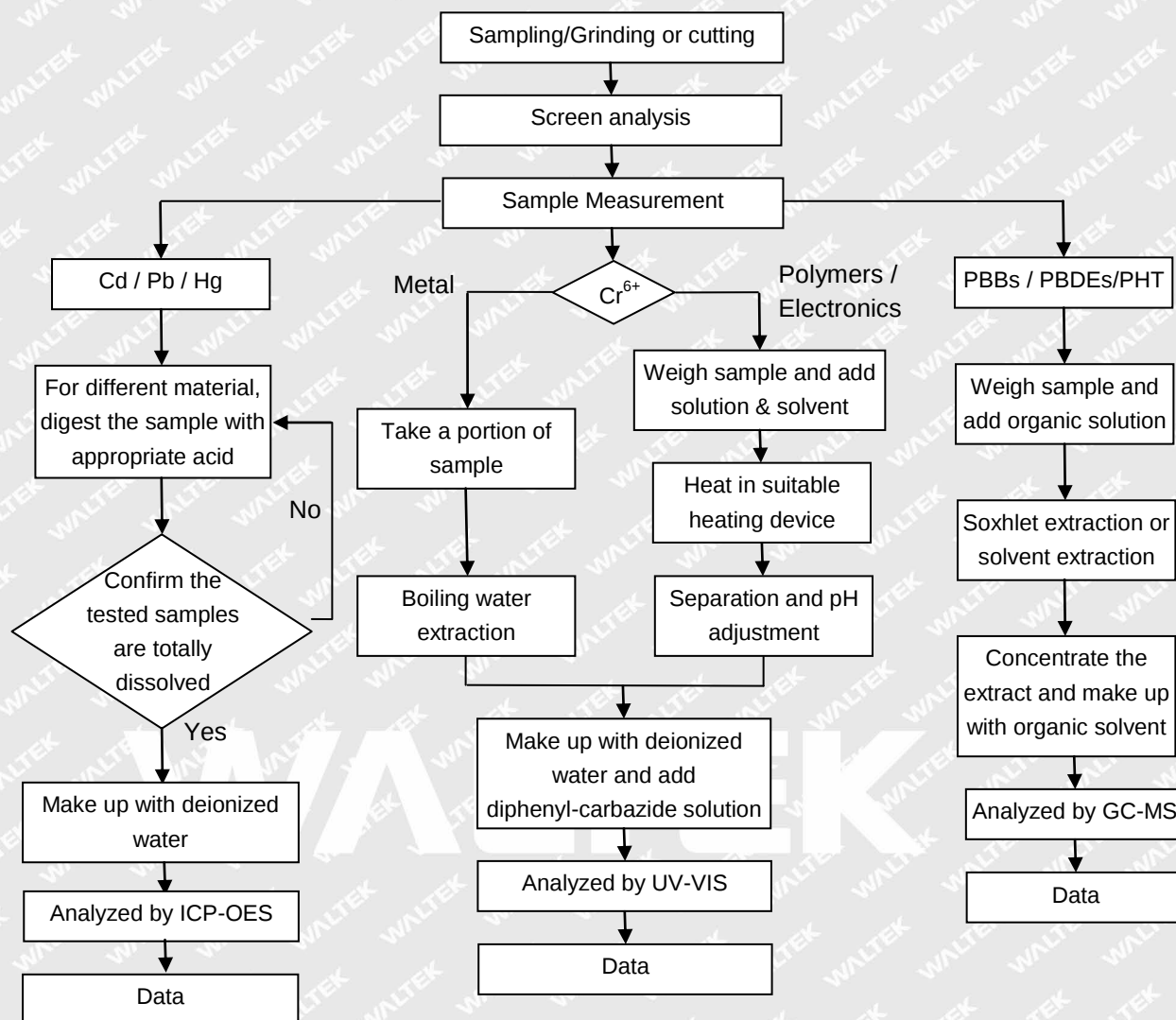
“DBP” denotes Dibutyl phthalate, “BBP” denotes Benzyl butyl phthalate (BBP), “DEHP” denotes Bis(2-ethylhexyl)-phthalate, “DIBP” denotes Diisobutyl phthalate, “PHT” denotes Phthalates.

- (6) RoHS requirement

Restricted Substances	Limits
Dibutyl phthalate (DBP)	0.1% (1000 mg/kg)
Benzyl butyl phthalate (BBP)	0.1% (1000 mg/kg)
Di(2-ethylhexyl) phthalate (DEHP)	0.1% (1000 mg/kg)
Di-iso-butyl phthalate (DIBP)	0.1% (1000 mg/kg)

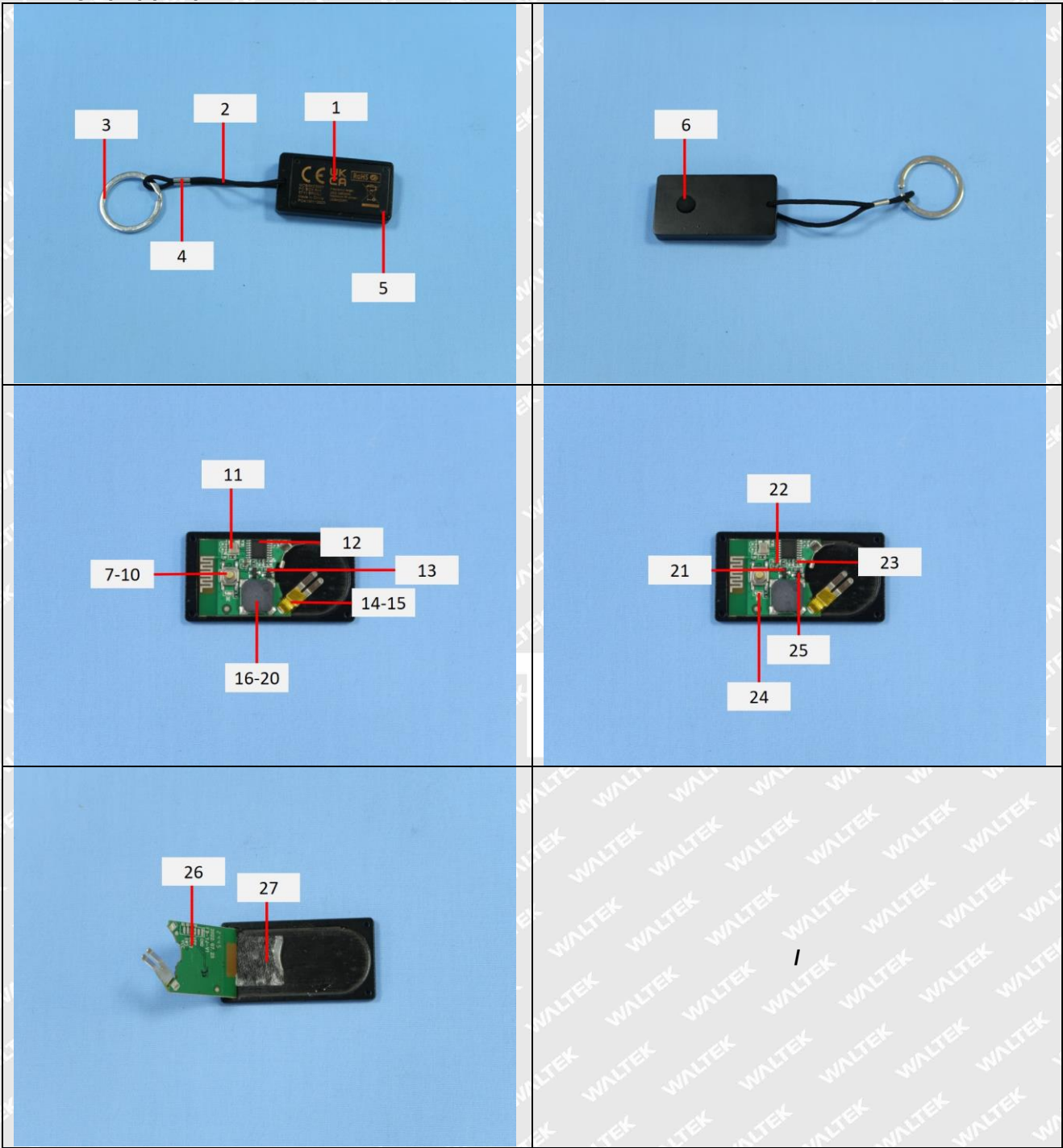
- (7) “△”= As client’s requirement, the testing was conducted based on mixed components. Results are calculated by the minimum weight of mixed components.

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**Measurement Flowchart:**



Photograph(s) of parts tested:





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Remarks:

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

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