



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Report No. : WTF26F07215383C
Job No. : FSW2607221367CJ
Applicant : Mid Ocean Brands B.V.
Address : Unit 711-716, 7/F., Tower A, 83 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.
Manufacturer : 118966
Sample Name : 5 panel LED cotton cap
Sample Model : MO2439
Test Requested : With reference to EU RoHS Directive 2011/65/EU and its amendment Directive EU 2015/863, to determine the Pb, Cd, Hg, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP content in the submitted sample.
Test Method : Refer to next page (s)
Test Conclusion : **Pass**
Date of Receipt Sample : 2026-07-22
Testing Period : 2026-07-22 to 2026-07-31
Date of Issue : 2026-07-31
Test Result : Refer to next page (s)

Prepared By:

Waltek Testing Group (Foshan) Co., Ltd.

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

Swing Liang



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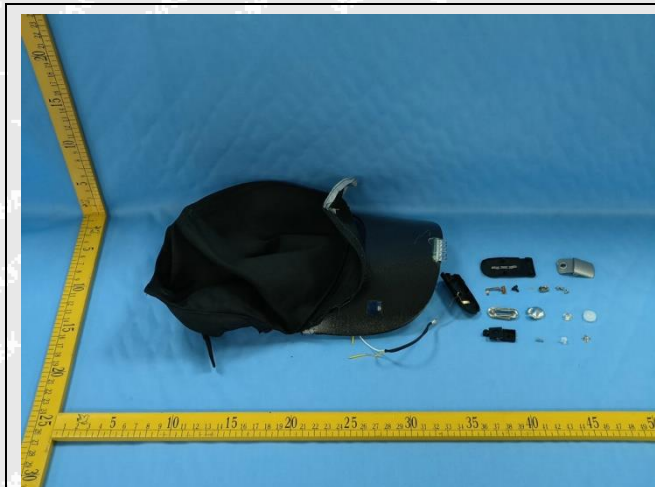
Swing Liang
Waltek Testing Group (Foshan) Co., Ltd.
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Sample Photo:



MO2439



MO2439

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

Test Method/Equipment:

- 1) Disassembly, disjunction and mechanical sample preparation
- 2) With reference to IEC 62321-3-1:2026, screening –Lead, mercury, cadmium, 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 62321-12:2023, 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	Silvery metal rivet	BL	BL	BL	BL	--	NA
2	White plastic gasket	BL	BL	BL	BL	BL	NA
3	Silvery metal shell	BL	BL	BL	BL	--	NA
4	Silvery metal eyelet	BL	BL	BL	BL	--	NA
5	Silvery metal rivet	BL	BL	BL	BL	--	NA
6	Silvery metal buckle	BL	BL	BL	BL	--	NA
7	Silvery metal screw	BL	BL	BL	IN	--	Cr(VI): Negative
8	Black plastic shell	BL	BL	BL	BL	BL	NA
9	Coppery metal sheet	BL	BL	BL	BL	--	NA
10	Black plastic cap (button)	BL	BL	BL	BL	BL	NA
11	Silvery metal shell (button)	BL	BL	BL	BL	--	NA
12	Silvery metal sheet (button)	BL	BL	BL	BL	--	NA
13	Solder	BL	IN	BL	BL	--	Pb: 204



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Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
14	Brown plastic base (button)	BL	BL	BL	BL	BL	NA
15	Silvery metal pin (button)	BL	BL	BL	BL	--	NA
16	Silvery metal pin (button)	BL	BL	BL	BL	---	NA
17	Black plastic shell (button)	BL	BL	BL	BL	IN	PBDEs: ND PBBS: ND
18	White plastic part (button)	BL	BL	BL	BL	BL	NA
19	Silvery metal sheet (button)	BL	BL	BL	BL	--	NA
20	Silvery metal spring (button)	BL	BL	BL	IN	--	Cr(VI): Negative
21	Black heat-shrinkable tube	BL	BL	BL	BL	BL	NA
22	Yellow plastic wire covering	BL	BL	BL	BL	BL	NA
23	Coppery metal wire	BL	BL	BL	BL	--	NA
24	White plastic wire covering	BL	BL	BL	BL	BL	NA
25	Transparent LED	BL	BL	BL	BL	IN	PBDEs: ND PBBS: ND
26	Green PCB	BL	BL	BL	BL	BL	NA
27	Transparent dry glue	BL	BL	BL	BL	BL	NA
28	Black plastic shell	BL	BL	BL	BL	BL	NA
29	Silvery-grey fabric rim	BL	BL	BL	BL	BL	NA
30	Black main fabric	BL	BL	BL	BL	BL	NA
31	Black sweatband	BL	BL	BL	BL	BL	NA



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Part No.	Part Description	Result of XRF					Result of Wet Chemical Testing (mg/kg)
		Cd	Pb	Hg	Cr	Br	
32	Black sponge	BL	BL	BL	BL	BL	NA
33	Black non-woven fabric	BL	BL	BL	BL	BL	NA
34	Black elastic band	BL	BL	BL	BL	BL	NA
35	Black plastic strip	BL	BL	BL	BL	BL	NA
36	Black binder on inner cap	BL	BL	BL	BL	BL	NA
37	White net fabric	BL	BL	BL	BL	BL	NA

2. Phthalates

Test Method/Equipment:

1) With reference to IEC 62321-12:2023, determination of DBP, BBP, DEHP, DIBP by GC-MS

Serial No.	Part No.	Result (mg/kg)			
		DBP	BBP	DEHP	DIBP
T01	2+8+10+14+17 [△]	ND	ND	ND	ND
T02	18+25+27+28+35 [△]	ND	ND	ND	ND
T03	21+22+24 [△]	ND	ND	ND	ND
T04	26+32+36 [△]	152	ND	ND	ND
T05	29+30+33 [△]	ND	ND	ND	ND
T06	31+34+37 [△]	ND	ND	ND	ND



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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 Cr(VI)) and GC-MS (for PBBs, PBDEs) is required to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1:2026 (unit: mg/kg)

Element	Plastics	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	$BL \leq (700-3\sigma) < IN$	--	$BL \leq (500-3\sigma) < IN$

BL= Below Limit

OL= Over Limit

LOD = Limit of Detection

- (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) -- = Not Regulated
- (8) LOQ = Limit of quantitation.

Test Items	Pb	Cd	Hg	Cr(VI)		PBB	PBDE	DBP	BBP	DEHP	DIBP
Units	mg/kg	mg/kg	mg/kg	mg/kg	$\mu\text{g}/\text{cm}^2$	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOQ	2	2	2	8	0.1	5	5	50	50	50	50

The LOQ for single compound of PBBs and PBDEs is 5mg/kg, LOQ of Cr(VI) for Plasticsand composite sample is 8mg/kg and LOQ of Cr(VI) for metal sample is 0.1 $\mu\text{g}/\text{cm}^2$.

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

Boiling water extraction:

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

Positive = Presence of Cr(VI) 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(VI) results represent status of the sample at the time of testing.



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(10)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(VI))	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)
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)

(11) 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.

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

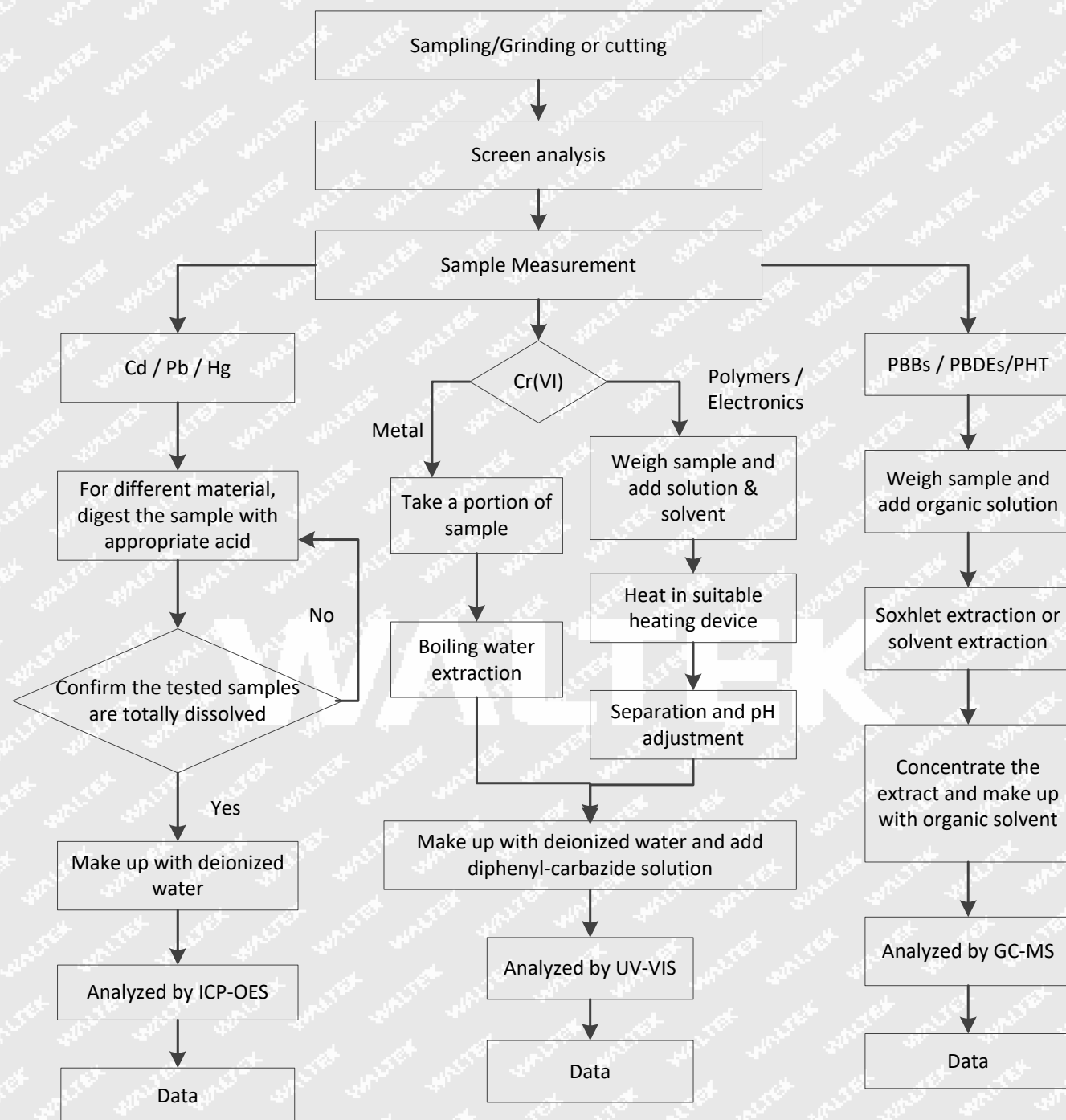
(12) “△”=As per applicant's requirement, the testing was conducted based on mixed components by weight in equal ratio, results are calculated by the minimum weight of mixed components.



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Testing Flow chart:

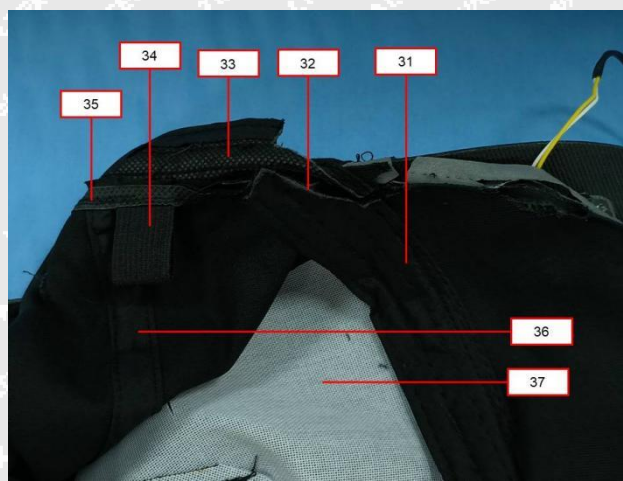
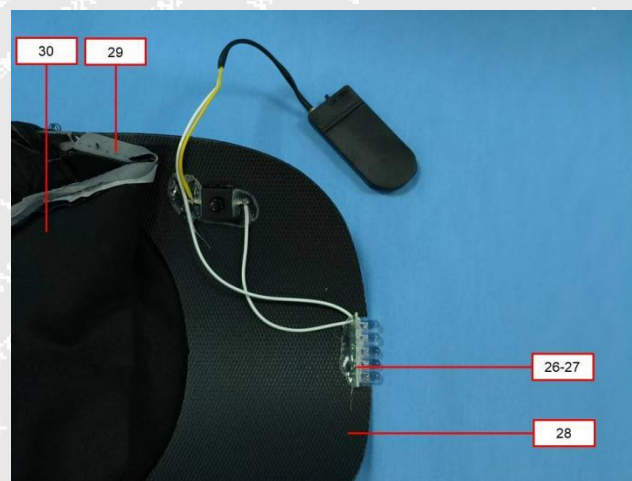
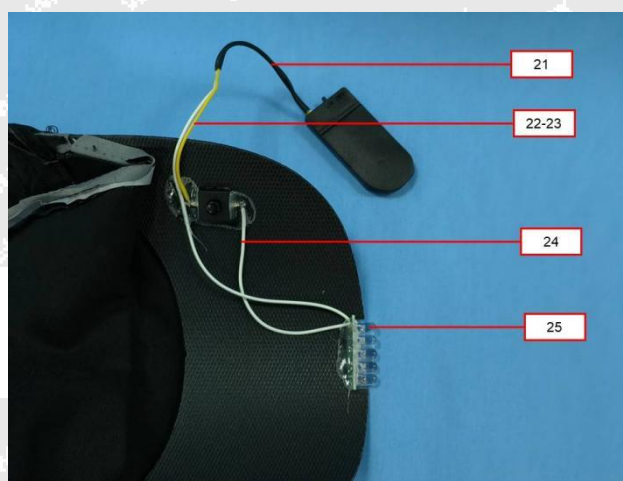
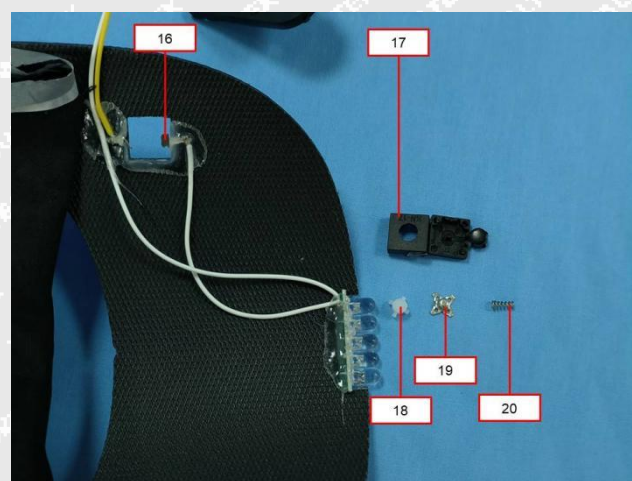
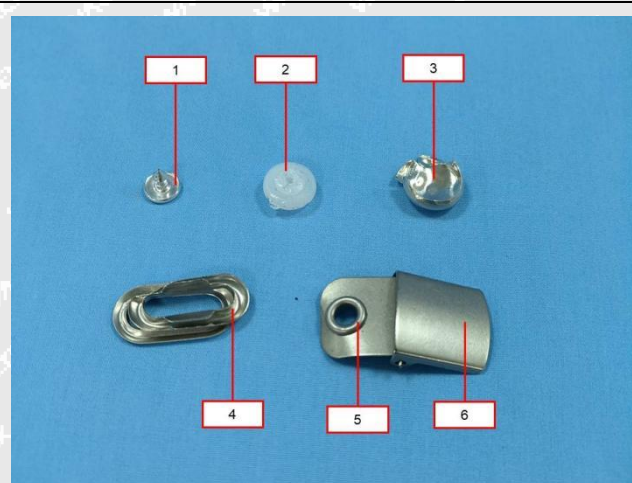




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Photograph of parts tested:





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Remarks:

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