



Test Report

Report No : TST20241103653E

Date:Dec.05, 2024

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Applicant : Mid Ocean Brands B.V.
Address : 7/F, Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.
Manufacturer : Mid Ocean Brands B.V.
Address : 7/F, Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong.

The following sample(s) was /were submitted and identified on behalf of the clients as :

Sample Name : Charging Cable
Model No. : MO2422
Sample Received Date : Nov.12, 2024
Testing Period : Nov.12, 2024 To Dec.05, 2024
Test requirements and conclusions : Please refer to next page(s).

Signed for and on behalf of

Andy

Andy Zheng
Technical Director



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Test Requested and Conclusion(s):

No.	Standard and Requirement	Conclusion(s)
1	RoHS Directive 2011/65 / EU - XRF scanning	PASS
2	RoHS Directive 2011/65/EU and its subsequent amendments (EU) 2015/863 - Pb/Cd/Hg/CrVI Content - Polybrominated diphenyl ethers(PBDEs) - Polybrominated biphenyls (PBBs) - Phthalates	PASS

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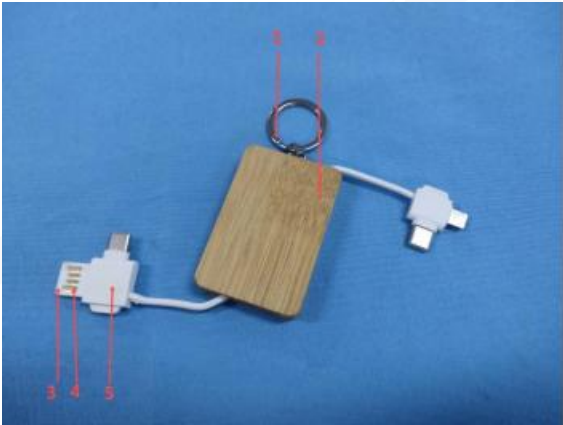
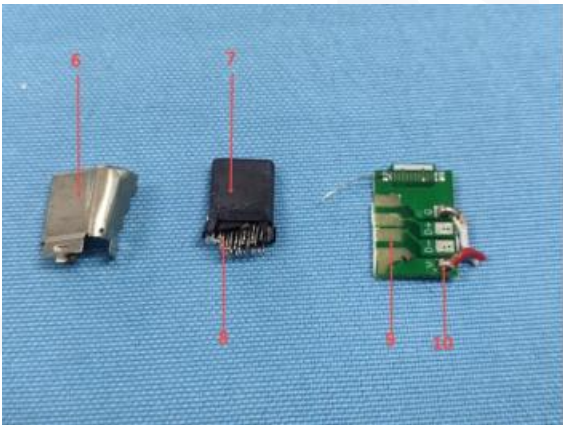
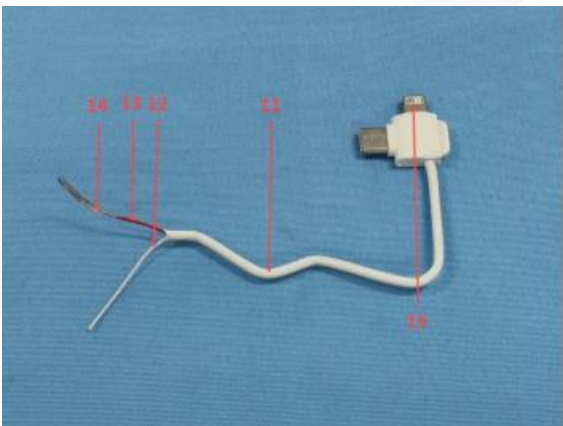
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Sample description

Sample No	Sample description	Test photo group
1	Silver metal	
2	Brown wood	
3	White plastic	
4	Silver metal with gold plating	
5	White soft plastic	
6	Silver metal (Type-C interface)	
7	Grey plastic	
8	Silver metal	
9	Green PCB	
10	Silver solder	
11	White soft plastic (cable sheath)	
12	White soft plastic (wire sheath)	
13	Red soft plastic (wire sheath)	
14	Copper colored metal (wire core)	
15	Silver metal	

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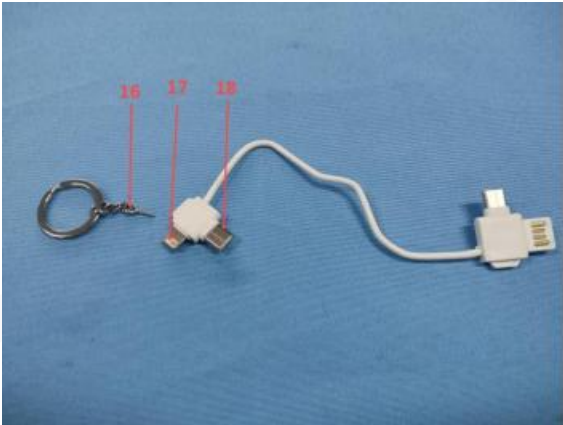
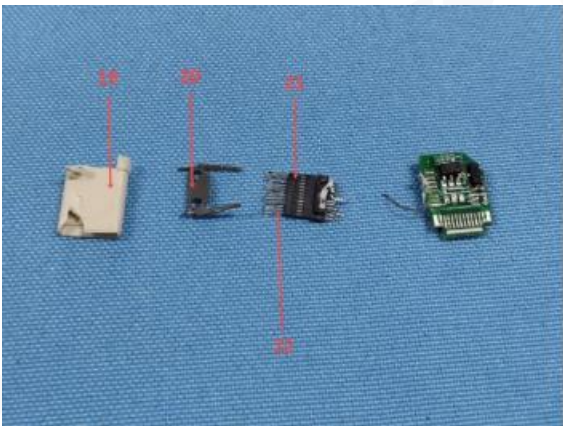
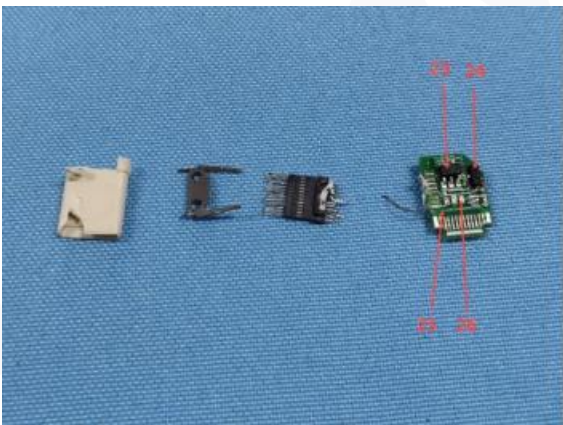


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Sample No	Sample description	Test photo group
16	Silver metal (zipper)	
17	Beige plastic	
18	Silver metal (Type-C interface)	
19	Beige plastic	
20	Silver metal	
21	Grey plastic	
22	Silver metal	
23	Black body	
24	Black body (IC)	
25	Green PCB	
26	Silver solder	

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1.Test results:

XRF Scanning - RoHS Directive 2011/65 / EU

Methods: IEC 62321-3-1:2013 analysis by X-ray fluorescence spectrometry (XRF).

No.	Results of XRF					Chemical confirmation results (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
1	BL	BL	BL	BL	---	---	Pass
2	BL	BL	BL	BL	BL	---	Pass
3	BL	BL	BL	BL	BL	---	Pass
4	BL	BL	BL	BL	---	---	Pass
5	BL	BL	BL	BL	BL	---	Pass
6	BL	BL	BL	BL	---	---	Pass
7	BL	BL	BL	BL	BL	---	Pass
8	BL	BL	BL	BL	---	---	Pass
9	BL	BL	BL	BL	X	PBBs:N.D. PBDEs:N.D.	Pass
10	BL	BL	BL	BL	---	---	Pass
11	BL	BL	BL	BL	BL	---	Pass
12	BL	BL	BL	BL	BL	---	Pass
13	BL	BL	BL	BL	BL	---	Pass
14	BL	BL	BL	BL	---	---	Pass
15	BL	BL	BL	BL	---	---	Pass
16	BL	BL	BL	BL	---	---	Pass
17	BL	BL	BL	BL	BL	---	Pass
18	BL	BL	BL	BL	---	---	Pass
19	BL	BL	BL	BL	BL	---	Pass
20	BL	BL	BL	BL	---	---	Pass

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No.	Results of XRF					Chemical confirmation results (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
21	BL	BL	BL	BL	BL	---	Pass
22	BL	BL	BL	BL	---	---	Pass
23	BL	BL	BL	BL	BL	---	Pass
24	BL	BL	BL	BL	BL	---	Pass
25	BL	BL	BL	BL	X	PBBs:N.D. PBDEs:N.D.	Pass
26	BL	BL	BL	BL	---	---	Pass

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Remark:

- It is the result on total Br while test item on restricted substances is PBBs/PBDEs. It is the result on total Cr while test item on restricted substances is Cr(VI).
- The XRF screening test for RoHS elements-The reading may be different to the actual content in the sample be of non-uniformity composition.
- Results are obtained by EDXRF for primary screening, and further chemical testing by ICP-OES (for Pb, Cd, Hg), UV-VIS for Cr(VI) 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.

XRF Screening limits for different matrices :

Materials	Concentration (mg/kg)				
	Cd	Cr	Pb	Hg	Br
Polymeric	$BL \leq 60 < X < 140 \leq OL$	$BL \leq 640 < X$	$BL \leq 670 < X < 1330 \leq OL$	$BL \leq 660 < X < 1340 \leq OL$	$BL \leq 290 < X$
Metallic	$BL \leq 60 < X < 140 \leq OL$	$BL \leq 640 < X$	$BL \leq 670 < X < 1330 \leq OL$	$BL \leq 660 < X < 1340 \leq OL$	---
Composite materials	$BL \leq 40 < X < 160 \leq OL$	$BL \leq 440 < X$	$BL \leq 470 < X < 1530 \leq OL$	$BL \leq 460 < X < 1540 \leq OL$	$BL \leq 240 < X$

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Note:

- BL= Below Limit
- OL=Over Limit
- X = inconclusive, the region where need further chemical testing by ICP-OES (for Pb, Cd, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs).
- --- = Not Applicable
- mg/kg=milligrams per kilogram
- N.D.=Not Detected(<MDL)
- MDL= Method Detection Limit
- Negative = Absence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.02 mg/kg with 50cm² sample surface area used.
- *=According to 2011/65/EU Annex,point *Lead as an alloying element is steel containing up to 0.35% lead by weight, aluminum containing up to 0.4% lead by weight and as a copper alloy, containing up to 4% lead by weight can be exempted.

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2.Pb, Cd, Cr(VI), Hg, PBBs&PBDEs

Test Method:

A.Disassembly, disjointment and mechanical sample preparation

—Ref. to IEC 62321-2:2021, Disassembly, disjointment and mechanical sample preparation.

B.With reference to IEC 62321-1:2013, tests were performed for the samples indicated by the photos in this report.

(1)Screening – Lead, mercury, cadmium, total chromium and total bromine

—Ref. to IEC 62321-3-1:2013, Screening for Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry.

(2)Wet chemical test method

Test Item(s)	Test Method	Test Equipment	Unit	MDL	Limit
Pb	IEC62321-5:2013	ICP-OES	mg/kg	10	1000
Cd	IEC62321-5:2013	ICP-OES	mg/kg	10	100
Hg	IEC 62321-4:2013/AMD1:2017	ICP-OES	mg/kg	10	1000
Cr(VI) (Metal)	IEC62321-7-1:2015	UV-Vis	µg/cm ²	0.10	0.13
Cr(VI) (Nonmetal)	IEC62321-7-2:2017	UV-Vis	mg/kg	10	1000
PBBs	IEC62321-6:2015	GC-MS	mg/kg	10	1000
PBDEs	IEC62321-6:2015	GC-MS	mg/kg	10	1000

PBBs		PBDEs	
Monobromobiphenyl	Hexabromobiphenyl	Monobromodiphenyl ether	Hexabromodiphenyl ether
Dibromobiphenyl	Heptabromobiphenyl	Dibromodiphenyl ether	Heptabromodiphenyl ether
Tribromobiphenyl	Octabromobiphenyl	Tribromodiphenyl ether	Octabromodiphenyl ether
Tetrabromobiphenyl	Nonabromobiphenyl	Tetrabromodiphenyl ether	Nonabromodiphenyl ether
Pentabromobiphenyl	Decabromobiphenyl	Pentabromodiphenyl ether	Decabromodiphenyl ether

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3. Phthalates—DBP, BBP, DEHP & DIBP

Test Item(s)	Test Method	Test Equipment	Unit	MDL	Limit
Dibutyl Phthalate(DBP)	IEC62321-8:2017	GC-MS	mg/kg	30	1000
Benzylbutyl Phthalate (BBP)	IEC62321-8:2017	GC-MS	mg/kg	30	1000
Di-(2-ethylhexyl)Phthalate (DEHP)	IEC62321-8:2017	GC-MS	mg/kg	30	1000
Diisobutyl phthalate(DIBP)	IEC62321-8:2017	GC-MS	mg/kg	30	1000

Test result(s):

Part No.	Test Item (mg/kg)				Conclusion
	DBP	BBP	DEHP	DIBP	
3+5+7	N.D.	N.D.	N.D.	N.D.	Pass
9	N.D.	N.D.	N.D.	N.D.	Pass
11	N.D.	N.D.	N.D.	N.D.	Pass
12	N.D.	N.D.	N.D.	N.D.	Pass
13	N.D.	N.D.	N.D.	N.D.	Pass
17+19+21	N.D.	N.D.	N.D.	N.D.	Pass
23+24	N.D.	N.D.	N.D.	N.D.	Pass
25	N.D.	N.D.	N.D.	N.D.	Pass

Note: - mg/kg=milligrams per kilogram
-N.D.=Not Detected(<MDL)

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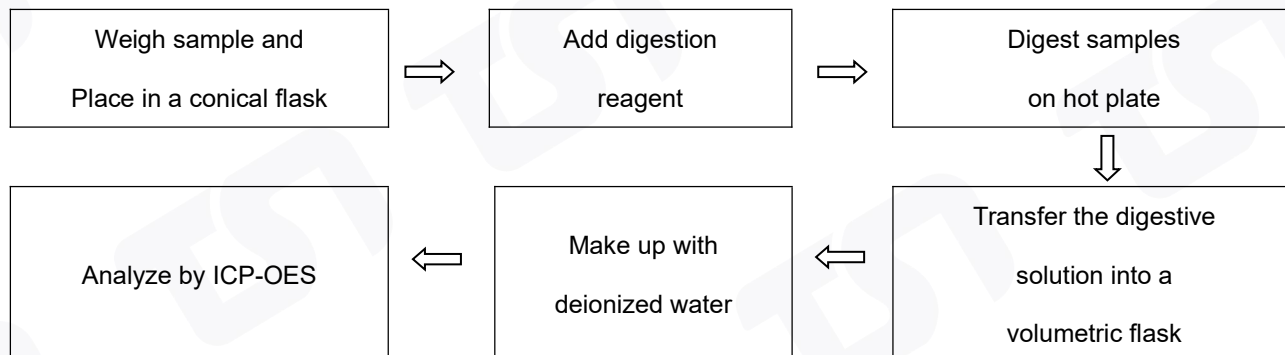
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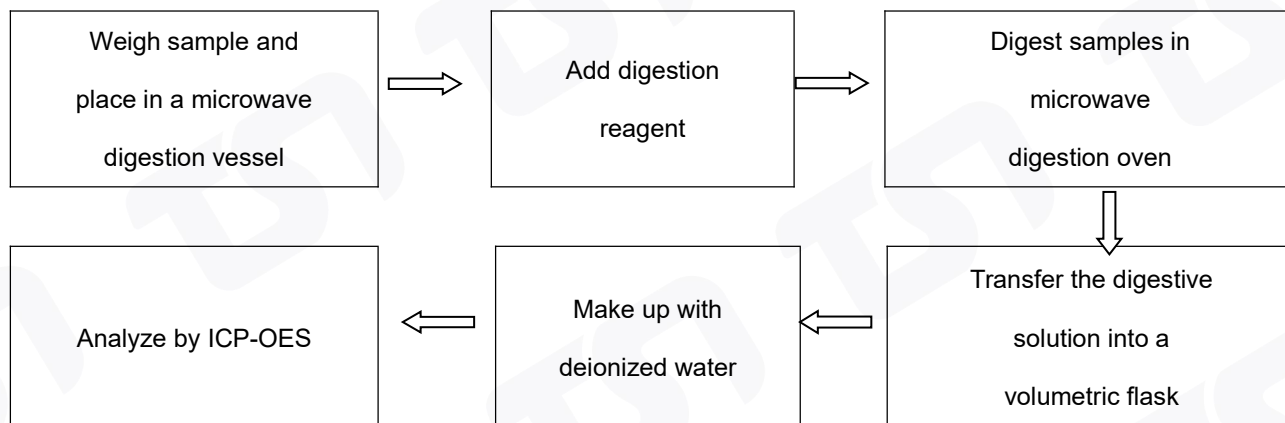
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Chemical Test Process:

1.Test for Cd/Pb Content



2. Test for Hg Content



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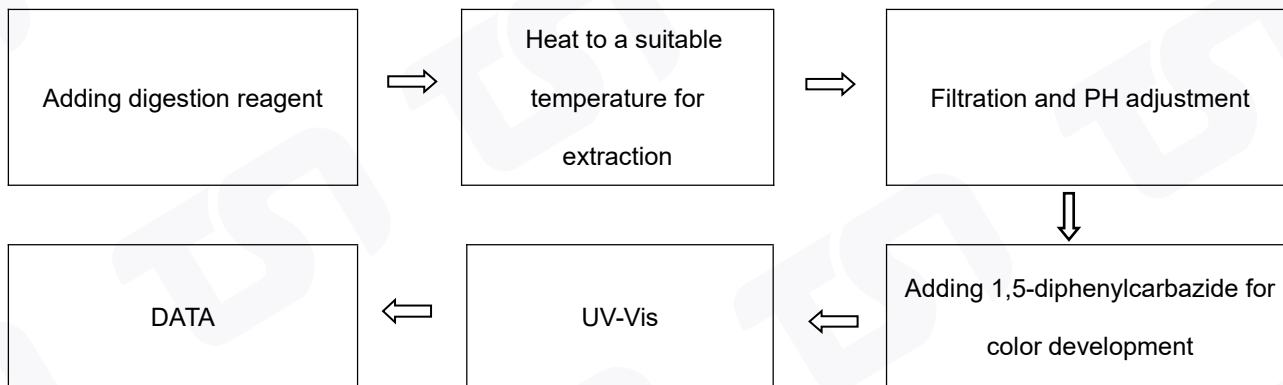
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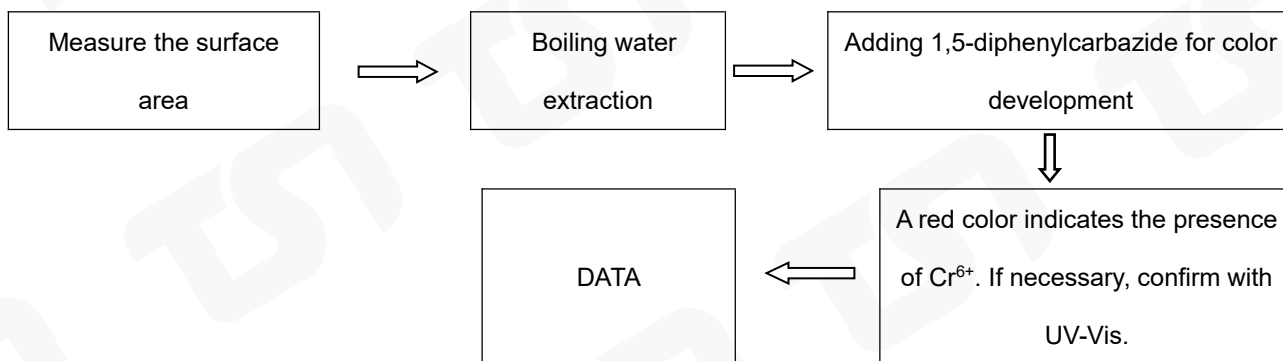
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3. Test for Chromium (VI) Content

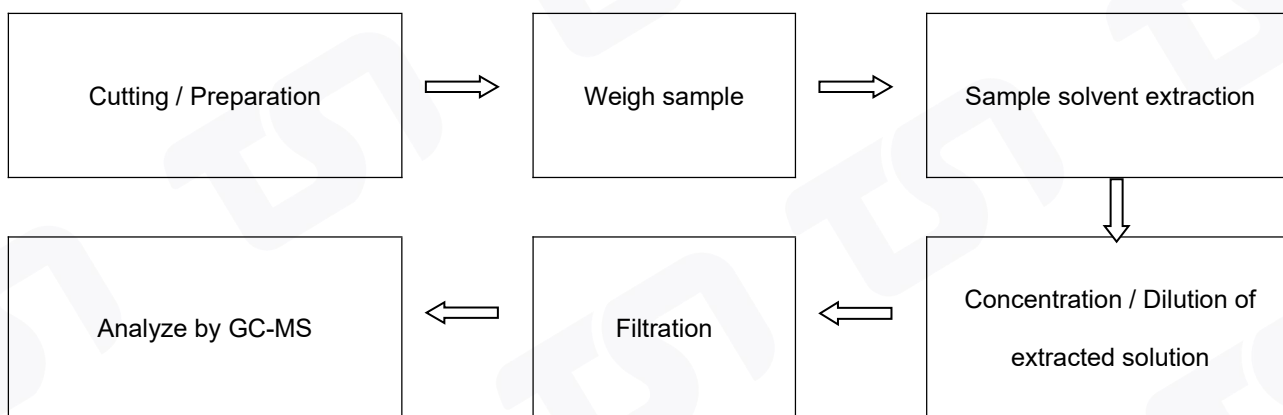
Nonmetal material



Metal material



4. Test for DBP, BBP, DEHP, DIBP, PBB, PBDE Content



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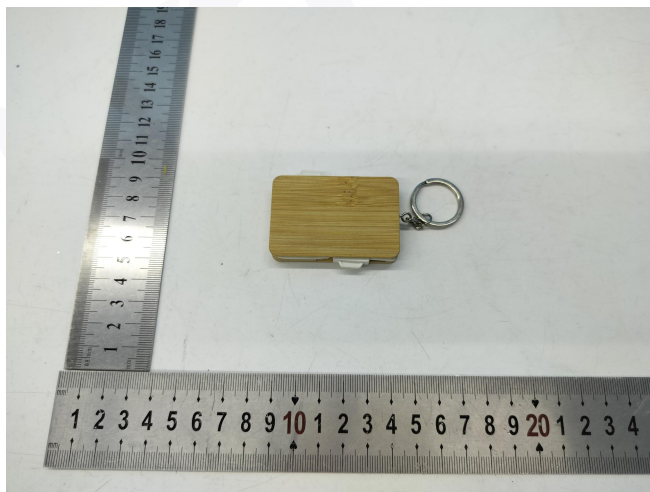
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Sample pictures:



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