

Test Report

Report No.: AGC-03507-19-09-04-001

Date: Sep.17, 2019

Page1 of 12

Applicant: MID OCEAN BRANDS B.V
Address: 7/F, Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Test site: 1,6/F.,Building 2,No. 1-4, Chaxi Sanwei Technical Industrial Park, Gushu, Xixiang, Baoan District, Shenzhen, Guangdong, China

Report on the submitted sample(s) said to be:

Sample Name: Tool pen with torch
Sample Model: MO9790
Supplier: 107978
Country of Origin: CHINA
Country of Destination: EUROPE
Sample Received Date: Sep.10, 2019
Testing Period: Sep.10, 2019 to Sep.17, 2019

Test Requested: Please refer to following page(s).

Test Method: Please refer to following page(s).

Test Result: Please refer to following page(s).

Approved by: 

Liulinwen, Lewis
Technical Director



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Test Report

Report No.: AGC-03507-19-09-04-001

Date: Sep.17, 2019

Page2 of 12

Test Requested:

1. As specified by client, to determine the Lead and Lead compounds content in the submitted sample(s) with reference to entry 63, Annex XVII of the REACH Regulation (EC) No 1907/2006.
2. As specified by client, to determine the Pb, Cd, Hg, Cr⁶⁺, PBBs, PBDEs, DBP, BBP, DEHP, DIBP content in the submitted sample in accordance with Directive 2011/65/EU (RoHS) and its amendment directive (EU) 2015/863 on XRF and Chemical Method.

Conclusion

Pass

Pass

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Test Report

Report No.: AGC-03507-19-09-04-001

Date: Sep.17, 2019

Page3 of 12

Test Result(s):
1. Test Result(s) of Lead and Lead compounds content

Unit: mg/kg

Test item(s)	Test Method/ Equipment	MDL	Result(s)			Limit
			1-1	1-2	1-3	
Lead (Pb)	IEC 62321-5:2013	10	N.D.	N.D.	25	500
Conclusion	ICP-OES	/	Pass	Pass	Pass	/

Unit: mg/kg

Test item(s)	Test Method/ Equipment	MDL	Result(s)			Limit
			1-4	1-5	1-6	
Lead (Pb)	IEC 62321-5:2013	10	29	N.D.	19	500
Conclusion	ICP-OES	/	Pass	Pass	Pass	/

Unit: mg/kg

Test item(s)	Test Method/ Equipment	MDL	Result(s)				Limit
			1-7	1-8	1-9	1-10	
Lead (Pb)	IEC 62321-5:2013	10	34	36	41	36	500
Conclusion	ICP-OES	/	Pass	Pass	Pass	Pass	/

- Note:**
1. MDL=Method Detection Limit
 2. N.D.=Not Detected(less than method detection limit)
 - 3.As specified by client, only test the designated sample

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Page4 of 12

2.Test Methods:

A:Screening by X-ray Fluorescence Spectrometry (XRF) :With reference to IEC 62321-3-1:2013 Screening – Lead, mercury, cadmium, total chromium and total bromine by X-ray fluorescence spectrometry

B:Chemical test:

Test Item	Test Method	Measuring Instrument	MDL
Cadmium (Cd)	IEC 62321-5:2013	ICP-OES	2 mg/kg
Lead (Pb)	IEC 62321-5:2013	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321-4: 2013+A1:2017	ICP-OES	2 mg/kg
Non-metal Hexavalent Chromium (Cr ⁶⁺)	IEC 62321-7-2:2017	UV-Vis	1 mg/kg
Metal Hexavalent Chromium (Cr ⁶⁺)	IEC 62321-7-1:2015	UV-Vis	/
PBBs/PBDEs	IEC 62321-6:2015	GC-MS	5 mg/kg
Di-iso-butyl phthalate (DIBP)	IEC 62321-8:2017	GC-MS	50 mg/kg
Dibutyl phthalate (DBP)		GC-MS	50 mg/kg
Butylbenzyl phthalate (BBP)		GC-MS	50 mg/kg
Di-(2-ethylhexyl) Phthalate (DEHP)		GC-MS	50 mg/kg

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Date: Sep.17, 2019

Page5 of 12

Test Results:
A、EU RoHS Directive 2011/65/EU and its amendment directives on XRF

Seq. No.	Tested Part(s)	Results(mg/kg)				
		Cd	Pb	Hg	Cr	Br
1	Silver magnet ring(lamp head)	BL	BL	BL	BL	N/A
2	Transparent plastic ring(lamp head)	BL	BL	BL	BL	BL
3	Silver metal shell(lamp head)	BL	BL	BL	BL	N/A
4	Metal spring(lamp head)	BL	BL	BL	BL	N/A
5	White LED(lamp head)	BL	BL	BL	BL	X*
6	Silvery metal ring(lamp head)	BL	BL	BL	BL	N/A
7	PCB(lamp head)	BL	BL	BL	BL	BL
8	Tin solder(lamp head)	BL	BL	BL	BL	N/A
9	Copper metal spring(lamp head)	BL	BL	BL	BL	N/A
10	Black rubber ring(lamp post)	BL	BL	BL	X*	BL
11	Silver metal rod(lamp post)	BL	BL	BL	BL	N/A
12	Black rubber button(lamp post)	BL	BL	BL	BL	BL
13	Milky plastic cover(lamp post)	BL	BL	BL	BL	BL
14	Silver metal sheet(lamp post)	BL	BL	BL	BL	N/A
15	Button battery(lamp post)	BL	BL	BL	BL	BL
16	Milk plastic shell(lamp post)	BL	BL	BL	BL	BL
17	Black metal clip button(lamp post)	BL	BL	BL	BL	N/A
18	Silver metal net pole(lamp post)	BL	BL	BL	BL	N/A
19	Silver metal screw head(lamp post)	BL	BL	BL	BL	N/A

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Test Report

Report No.: AGC-03507-19-09-04-001

Date: Sep.17, 2019

Page6 of 12

Element	Unit	Non-metal	Metal	Composite Material
Cd	mg/kg	$BL \leq 70 - 3\sigma < X$ $< 130 + 3\sigma \leq OL$	$BL \leq 70 - 3\sigma < X$ $< 130 + 3\sigma \leq OL$	$BL \leq 50 - 3\sigma < X$ $< 150 + 3\sigma \leq OL$
Pb	mg/kg	$BL \leq 700 - 3\sigma < X$ $< 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma < X$ $< 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma < X$ $< 1500 + 3\sigma \leq OL$
Hg	mg/kg	$BL \leq 700 - 3\sigma < X$ $< 1300 + 3\sigma \leq OL$	$BL \leq 700 - 3\sigma < X$ $< 1300 + 3\sigma \leq OL$	$BL \leq 500 - 3\sigma < X$ $< 1500 + 3\sigma \leq OL$
Cr	mg/kg	$BL \leq 700 - 3\sigma < X$	$BL \leq 700 - 3\sigma < X$	$BL \leq 500 - 3\sigma < X$
Br	mg/kg	$BL \leq 300 - 3\sigma < X$	N/A	$BL \leq 250 - 3\sigma < X$

Note: BL= Below Limit

OL= Over limited

X= Inconclusive

"N/A"= Not applicable

*= Scanning by XRF and detected by chemical method. The test results of chemical method please refer to next pages.

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Test Report

Report No.: AGC-03507-19-09-04-001

Date: Sep.17, 2019

Page7 of 12

Remark:

- i Results were obtained by XRF for primary scanning, and further chemical testing by ICP (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the above warning value according to IEC 62321-3-1:2013.
- ii The XRF scanning test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
- iii The maximum permissible limit is quoted from RoHS directive 2011/65/EU and its amendment directive (EU) 2015/863:

RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous materials)
Cadmium (Cd)	100
Lead (Pb)	1000
Mercury (Hg)	1000
Hexavalent Chromium (Cr(VI))	1000
Polybrominated biphenyls (PBBs)	1000
Polybrominateddiphenylethers (PBDEs)	1000
Di-iso-butyl phthalate (DIBP)	1000
Dibutyl phthalate (DBP)	1000
Butylbenzyl phthalate (BBP)	1000
Di-(2-ethylhexyl) Phthalate (DEHP)	1000

Disclaimers:

This XRF Scanning report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF screening report is sufficient for its/his/her purposes.

The result shown in this XRF scanning report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.

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Test Report

Report No.: AGC-03507-19-09-04-001

Date: Sep.17, 2019

Page8 of 12

B、The Test Results of Chemical Method:

1) The Test Results of non-metal Cr⁶⁺

Test Item(s)	Unit	Result(s)	Limit
		10	
Hexavalent Chromium(Cr ⁶⁺)	mg/kg	N.D.	1000

Note: N.D. = Not Detected or less than MDL
mg/kg = parts per million
MDL = Method Detection Limit

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Test Report

Report No.: AGC-03507-19-09-04-001
Date: Sep.17, 2019

Page9 of 12

2) The Test Results of PBBs & PBDEs

Unit: mg/kg

Item(s)	MDL	Result(s)	Limit
		5	
Polybrominated Biphenyls (PBBs)			
Monobromobiphenyl	5	N.D.	Total PBBs Content <1000
Dibromobiphenyl	5	N.D.	
Tribromobiphenyl	5	N.D.	
Tetrabromobiphenyl	5	N.D.	
Pentabromobiphenyl	5	N.D.	
Hexabromobiphenyl	5	N.D.	
Heptabromobiphenyl	5	N.D.	
Octabromobiphenyl	5	N.D.	
Nonabromodiphenyl	5	N.D.	
Decabromodiphenyl	5	N.D.	
Total content	/	N.D.	
PolybrominatedDiphenylethers (PBDEs)			
Monobromodiphenyl ether	5	N.D.	Total PBDEs Content <1000
Dibromodiphenyl ether	5	N.D.	
Tribromodiphenyl ether	5	N.D.	
Tetrabromodiphenyl ether	5	N.D.	
Pentabromodiphenyl ether	5	N.D.	
Hexabromodiphenyl ether	5	N.D.	
Heptabromodiphenyl ether	5	N.D.	
Octabromodiphenyl ether	5	N.D.	
Nonabromodiphenyl ether	5	N.D.	
Decabromodiphenyl ether	5	N.D.	
Total content	/	N.D.	
Conclusion	/	Pass	/

Note: N.D. = Not Detected or less than MDL
 mg/kg = parts per million
 MDL = Method Detection Limit

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Test Report

Report No.: AGC-03507-19-09-04-001

Date: Sep.17, 2019

Page10 of 12

3)Test result of DBP, BBP, DEHP, DIBP content

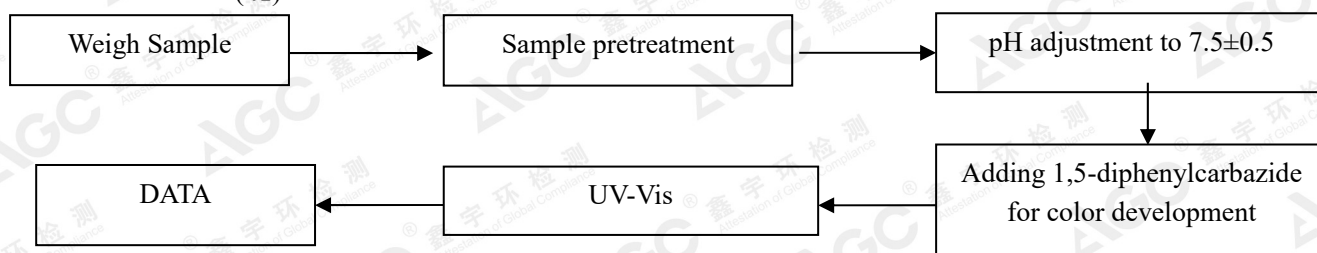
Unit: mg/kg

Seq. No.	Test item Limit	DIBP	DBP	BBP	DEHP	Conclusion
		1000	1000	1000	1000	
2		N.D.	N.D.	N.D.	N.D.	Pass
5		N.D.	N.D.	N.D.	N.D.	Pass
7		N.D.	N.D.	N.D.	N.D.	Pass
10		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
15		N.D.	N.D.	N.D.	N.D.	Pass
16		N.D.	N.D.	N.D.	N.D.	Pass

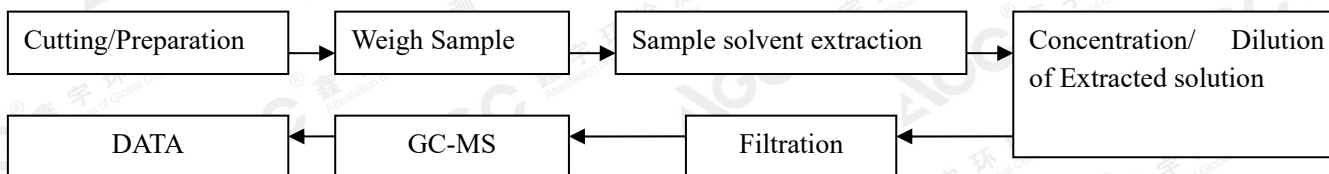
Note: 1. MDL=Method Detection Limit
2. N.D.=Not Detected(less than method detection limit)

Test Flow Chart

1.For non-metal Cr(VI)



2.For PBBs, PBDEs, DBP, BBP, DEHP, DIBP



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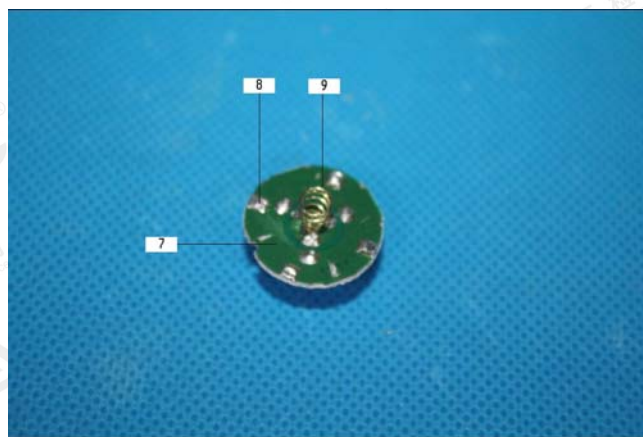
Date: Sep.17, 2019

Page11 of 12

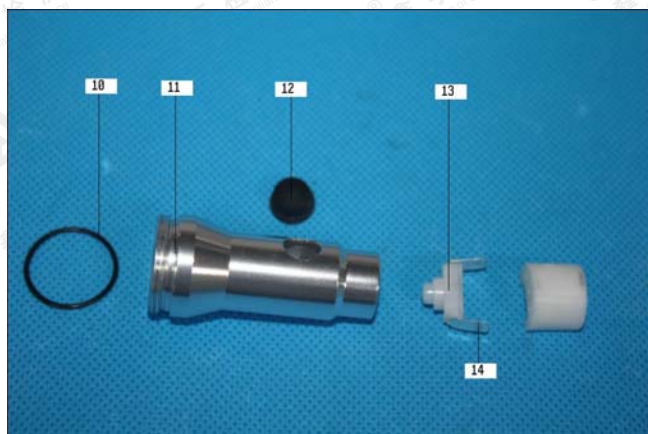
The photo of the sample



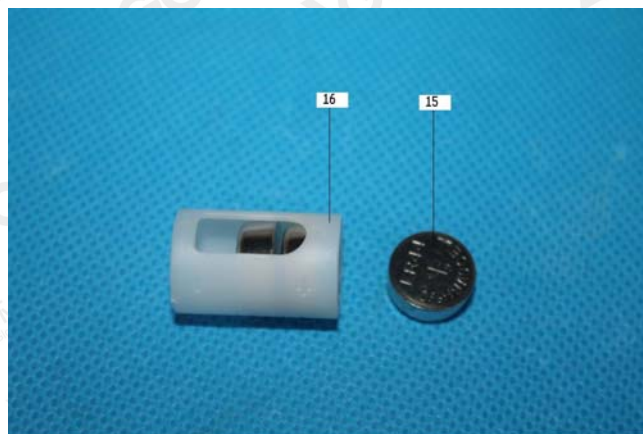
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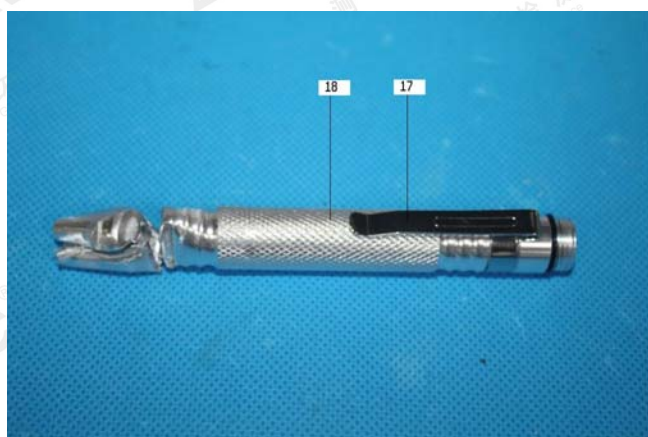
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6

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Page12 of 12



7



8

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