TEST REPORT

Applicant : Mid Ocean Brands B.V.

Address: Unit 711-716, 7/F., Tower A, 83 King Lam Street Cheung Sha Wan, Kowloon, Hong Kong

The following sample(s) and sample information was/were submitted and identified by client as:

Sample Name: Dynamo torch

Model/Style/Item #: MO8235

Vendor code: 107978

Receiving Date: Sep 27,2025

Test Period: From Sep 27,2025 to Sep 30,2025

Add Information: -

Test Summary:

#	Test Item(s)	Conclusion
1	Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs, PBDEs, DBP, BBP, DEHP and DIBP EU RoHS Directive 2011/65/EU and its amendment directives (EU)2015/863,(EU)2017/2102,(EU)2022/1632 (RoHS 2.0)	**PASS**
2	Azo colorants content - Item 43 of Annex XVII of the REACH Regulation (EC) No 1907/2006 & amendment (EC) No 552/2009 and (EU) No 126/2013	**PASS**
3	Polycyclic-aromatic hydrocarbons (PAHs) content--Item 50 of Annex XVII of REACH Regulation (EC) 1907/2006 & amendment (EU) No 1272/2013	**PASS**
4	Client's requirement - Colour fastness to rubbing	**PASS**

**********Please refer to the following page for detailed results**********

Authorized Signatory

Mark Mai
(Technical Director)

广州市普华检测技术有限公司 GUANGZHOU DEPUHUA TEST SERVICES CO.,LTD. 检验检测专用章 Inspection & Testing Services

Result:

1.1 EU RoHS Directive 2011/65/EU and its amendment directives(EU)2015/863,(EU)2017/2102,(EU)2022/1632 (RoHS 2.0) on XRF

IEC 62321-3-1:2013, Screening by X-ray Fluorescence Spectroscopy (XRF)

Seq. No.	Tested Part(s)	Results				
		Pb	Cd	Hg	Cr	Br
1	Grey textile,belt	BL	BL	BL	BL	BL
2	Silvery metal,holder	BL	BL	BL	BL	NA
3	Black plastic,shell	BL	BL	BL	BL	BL
4	Grey plastic,shell	BL	BL	BL	BL	BL
5	Transparent plastic,LED cover	BL	BL	BL	BL	BL
6	Silvery metal,screw	BL	BL	BL	X	NA
7	White plastic,small gear	BL	BL	BL	BL	BL
8	Matt-black plastic,cover	BL	BL	BL	BL	BL
9	Black magnet,ring	BL	BL	BL	BL	NA
10	Silvery metal,axle	BL	BL	BL	BL	NA
11	Silvery metal,thin axle	BL	BL	BL	BL	NA
12	Matt-white plastic,gear	BL	BL	BL	BL	BL
13	Silvery metal,spring	BL	BL	BL	X	NA
14	Silvery metal,holder plate	BL	BL	BL	BL	NA
15	Coppery enamelled wire	BL	BL	BL	BL	BL
16	Silvery metal,contact plate	BL	BL	BL	BL	NA
17	Transparent plastic,LED	BL	BL	BL	BL	X
18	Silvery metal,lead	BL	BL	BL	BL	NA
19	Silvery coating,cover	BL	BL	BL	BL	BL
20	Black plastic,switch	BL	BL	BL	BL	BL
21	Silvery metal,switch cover	BL	BL	BL	BL	NA
22	Silvery metal,holder	BL	BL	BL	BL	NA
23	Brown plastic,base	BL	BL	BL	BL	BL
24	Silvery metal,lead	BL	BL	BL	BL	NA

25	Silvery metal,solder	X	BL	BL	BL	NA
26	White soft plastic,wire jacket	BL	BL	BL	BL	BL
27	Coppery metal,wire core	BL	BL	BL	BL	NA

Remark:

(1) Results were 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) are recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1:2013.

Element	Unit	Polymers	Metal	Composite material
Cd	mg/kg	BL≤70-3σ< X <130+3σ≤OL	BL≤70-3σ< X <130+3σ≤OL	BL≤50-3σ< X <150+3σ≤OL
Pb	mg/kg	BL≤700-3σ< X <1300+3σ≤OL	BL≤700-3σ< X <1300+3σ≤ OL	BL≤500-3σ< X <1500+3σ≤OL
Hg	mg/kg	BL≤700-3σ< X <1300+3σ≤OL	BL≤700-3σ< X <1300+3σ≤OL	BL≤500-3σ< X <1500+3σ≤OL
Cr	mg/kg	BL≤700-3σ< X	BL≤700-3σ< X	BL≤500-3σ< X
Br	mg/kg	BL≤300-3σ< X	--	BL≤250-3σ< X

Note:

BL = Below Limit

OL = Over Limit

X = Inconclusive

NA = Not Applicable

(2) The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.

(3) The maximum permissible limit is quoted from the document 2011/65/EU and its amendment directives(EU)2015/863,(EU)2017/2102,(EU)2022/1632 (RoHS 2.0):

RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous Results)
Cadmium (Cd)	100
Lead (Pb)	1000
Mercury (Hg)	1000
Hexavalent Chromium (Cr(VI))	1000
Polybrominated biphenyls (PBBs)	1000

Polybrominated diphenyl ethers (PBDEs)	1000

(4) Disclaimers:

This XRF Screening 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 screening 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.

(5) The selection of test portions was recommended by the client and the conclusion of chemical test is only for the selected portions.

1.2 Hexavalent Chromium (Cr(VI))

Metal: IEC 62321-7-1:2015, extracted by boiling water and analyzed by UV-Vis
Non-metal: IEC 62321-7-2:2017, alkaline digested and analyzed by UV-Vis

Test Item(s)		Result		Limit	MDL
		6	13		
1	Hexavalent Chromium (Cr(VI))	Negative	Negative	#	-
-	**Conclusion**	**PASS**	**PASS**	-	-

Remark(s) (a) ug/cm^2: microgram per square centimeter
(b) MDL: Method detected limit
(c) Negative = Sample Cr(VI) concentration is less than 0.10 ug/cm^2
Positive = Sample Cr(VI) concentration is greater than 0.13 ug/cm^2
(d) # = Positive indicates the presence of Cr(VI) on the tested areas and result be regarded as conflict with RoHS requirement.
Negative indicates the absence of Cr(VI) on the tested areas and result be regarded as no conflict with RoHS requirement.

1.3 Lead Content (Pb)

IEC62321-5:2013, acid digested and determined by AAS

Test Item(s)		Result	Limit (mg/kg)	MDL (mg/kg)
		25		
1	Lead (Pb)	848	1000	10
-	**Conclusion**	**PASS**	-	-

Remark(s): (a) mg/kg: milligrams per kilogram
(b) MDL: Method detected limit
(c) N.D.: Not detected (result is less than MDL)

1.4 Polybrominated Biphenyls and Polybrominated Diphenyl Ethers (PBBs and PBDEs)

IEC 62321-6:2015, solvent extract and determined by GC-MS

Test Item(s)		Result	Limit (mg/kg)	MDL (mg/kg)
		17		
1	Monobromo biphenyl	N.D.	-	50
2	Dibromo biphenyl	N.D.	-	50
3	Tribromo biphenyl	N.D.	-	50
4	Tetrabromo biphenyl	N.D.	-	50
5	Pentabromo biphenyl	N.D.	-	50
6	Hexabromo biphenyl	N.D.	-	50
7	Heptabromo biphenyl	N.D.	-	50
8	Octabromo biphenyl	N.D.	-	50
9	Nonabromo biphenyl	N.D.	-	50
10	Decabromo biphenyl	N.D.	-	50
11	Monobromo diphenyl ether	N.D.	-	50
12	Dibromo diphenyl ether	N.D.	-	50
13	Tribromo diphenyl ether	N.D.	-	50
14	Tetrabromo diphenyl ether	N.D.	-	50
15	Pentabromo diphenyl ether	N.D.	-	50
16	Hexabromo diphenyl ether	N.D.	-	50
17	Heptabromo diphenyl ether	N.D.	-	50
18	Octabromo diphenyl ether	N.D.	-	50
19	Nonabromo diphenyl ether	N.D.	-	50
20	Decabromo diphenyl ether	N.D.	-	50
-	Sum of PBBs	N.D.	1000	-
-	Sum of PBDEs	N.D.	1000	-
-	**Conclusion**	**PASS**	-	-

Remark(s): (a) mg/kg: milligram per kilogram
(b) MDL: Method detected limit
(c) N.D.: Not detected (result is less than MDL)

1.5 Phthalates – (DBP, BBP, DEHP, DIBP)

IEC 62321-8:2017, Solvent extract and determined by GC-MS

Test Item(s)			Result				Limit (%)	MDL(%)
			1	3+4+5	17	26		
1	DBP	Dibutylphthalate CAS# 84-74-2	N.D.	N.D.	N.D.	N.D.	0.1	0.005
2	BBP	Benzylbutylphthalate CAS# 85-68-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
3	DEHP	Diethylhexylphthalate CAS# 117-81-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
4	DIBP	Diisobutyl phthalate CAS# 84-69-5	N.D.	N.D.	N.D.	N.D.	0.1	0.005
-	**Conclusion**		**PASS**	**PASS**	**PASS**	**PASS**	-	-

Test Item(s)			Result				Limit (%)	MDL(%)
			7+8+12	15	19	20+23		
1	DBP	Dibutylphthalate CAS# 84-74-2	N.D.	N.D.	N.D.	N.D.	0.1	0.005
2	BBP	Benzylbutylphthalate CAS# 85-68-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
3	DEHP	Diethylhexylphthalate CAS# 117-81-7	N.D.	N.D.	N.D.	N.D.	0.1	0.005
4	DIBP	Diisobutyl phthalate CAS# 84-69-5	N.D.	N.D.	N.D.	N.D.	0.1	0.005
-	**Conclusion**		**PASS**	**PASS**	**PASS**	**PASS**	-	-

Remark(s): (a) MDL: Method detected limit
(b) N.D.: Not detected (result is less than MDL)

2. Azo colourants content - Item 43 of Annex XVII of REACH Regulation (EC) No 1907/2006 & amendment EC No 552/2009 and (EU) No 126/2013

ISO 14362-1:2017& ISO 14362-3:2017, determined by GC-MS and HPLC

Test Item(s)		Result	Limit (mg/kg)	MDL (mg/kg)
		1		
1	Biphenyl-4-ylamine/4-aminobiphenyl/ Xenylamine CAS#92-67-1	N.D.	30	5
2	Benzidine CAS#92-87-5	N.D.	30	5
3	4-chloro-o-toluidine CAS#95-69-2	N.D.	30	5

4	2-Naphthylamine CAS#91-59-8	N.D.	30	5
5	o-aminoazotoluene/4-o-tolyazao-o-toluidine /4-amino-2',3-dimethylazobenzene* CAS#97-56-3	N.D.	30	5
6	5-nitro-o-toluidine/2-amino-4-nitrotoluol* CAS#99-55-8	N.D.	30	5
7	4-chloroaniline CAS#106-47-8	N.D.	30	5
8	4-methoxy-m-phenylenediamine/ 2,4-diaminoanisole CAS#615-05-4	N.D.	30	5
9	4,4'-methylenedianiline/ 4,4'-diaminodiphenylmethane CAS#101-77-9	N.D.	30	5
10	3,3'-dichlorobenzidine/ 3,3'-dichlorobiphenyl-4,4'-ylenediamine CAS#91-94-1	N.D.	30	5
11	3,3'-dimethoxybenzidine/o-dianisidine CAS#119-90-4	N.D.	30	5
12	3,3'-dimethylbenzidine/4,4'-bi-o-toluidine CAS#119-93-7	N.D.	30	5
13	4,4'-methylenedi-o-toluidine CAS#838-88-0	N.D.	30	5
14	6-methoxy-m-toluidine/p-cresidine CAS#120-71-8	N.D.	30	5
15	4,4'-methylene-bis-(2-chloro-aniline)/ 2,2'-dichloro-4,4'-methylene-dianiline CAS#101-14-4	N.D.	30	5
16	4,4'-oxydianiline CAS#101-80-4	N.D.	30	5
17	4,4'-thiodianiline CAS#139-65-1	N.D.	30	5
18	o-toluidine/2-aminotoluen CAS#95-53-4	N.D.	30	5
19	2,4-diaminotoluene/2,4-toluylendiamine/ methyl-m-phenylenediamine CAS#95-80-7	N.D.	30	5
20	2,4,5-trimethylaniline CAS#137-17-7	N.D.	30	5
21	o-anisidine/2-methoxyaniline CAS#90-04-0	N.D.	30	5
22	4-aminoazobenzene** CAS#60-09-3	N.D.	30	5
-	**Conclusion**	**PASS**	-	-

Remark(s): (a) mg/kg: milligram per kilogram
(b) N.D.: Not detected (result is less than MDL)
(c) MDL: Method detected limit
*: The amines o-aminoazotoluene (No 5, CAS No.97-56-3) and 2-amino-4-nitrotoluene (No 6, CAS No.99-55-8) are further reduced to o-toluidine (No 18, CAS No. 95-53-4) and 2, 4-diaminotoluene (No 19, CAS No. 95-80-7).
**: Azo colorants that are able to form 4-aminoazobenzene (No 22, CAS No. 60-09-3) generate, under the condition of this method, aniline (CAS No. 62-53-3) and 1, 4-phenylendiamine (CAS No. 106-50-3).Due to detection limits, only aniline may be detected. If aniline is detected above 5mg/kg, then the presence of these colorants should be tested by ISO 14362-3:2017.

3. Polycyclic-aromatic hydrocarbons (PAHs) content - Item 50 of Annex XVII of REACH Regulation (EC) 1907/2006 & amendment (EU) No 1272/2013

AfPS-GS-2019-01:PAK，determined by GC-MS

Test Item(s)		Result	Limit (mg/kg)	MDL (mg/kg)
		category I*1		
		3+4+5		
1	Benz[a]anthracene(BaA) CAS#56-55-3	N.D.	1	0.2
2	Chrysene(CHR) CAS#218-01-9	N.D.	1	0.2
3	Benz[b]fluoranthene(BbFA) CAS#205-99-2	N.D.	1	0.2
4	Benz[k]fluoranthene(BkFA) CAS#207-08-9	N.D.	1	0.2
5	Benz[j]fluoranthene(BjFA) CAS#205-82-3	N.D.	1	0.2
6	Benzo[a]pyrene(BaP) CAS#50-32-8	N.D.	1	0.2
7	Benzo[e]pyrene(BeP) CAS#192-97-2	N.D.	1	0.2
8	Dibenz [a,h]anthracene (DBahA) CAS#53-70-3	N.D.	1	0.2
	Conclusion	**PASS**	**-**	**-**

Remark: (a) mg/kg: milligram per kilogram
(b) MDL: Method detected limit
(c) N.D.: Not detected (result is less than MDL)
1：Material category
Category I：Articles come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use.
Category II ： Toys, including activity toys, and childcare articles, that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use.

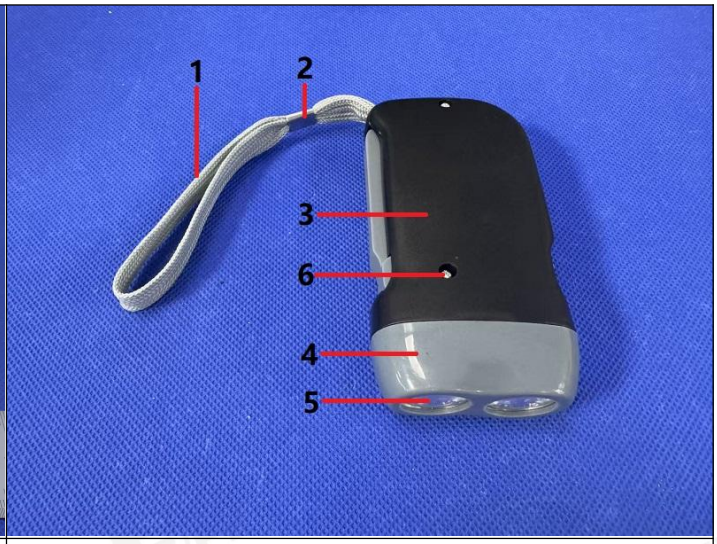
4. Client's requirement - Colour fastness to rubbing

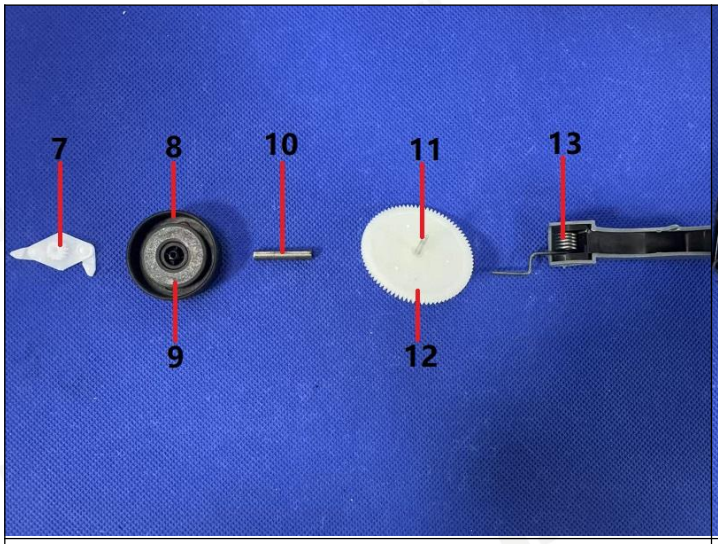
EN ISO 105-X12:2016

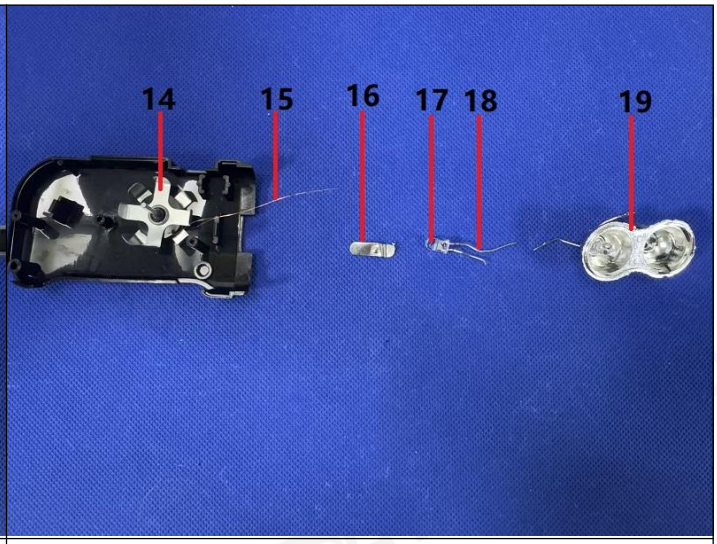
Test Item(s)	Result(s)	Client's Requirement
	1	
Staining-Dry(Grade)	4-5	≥2-3
Staining-Wet(Grade)	4-5	≥2-3
Conclusion	**PASS**	**-**

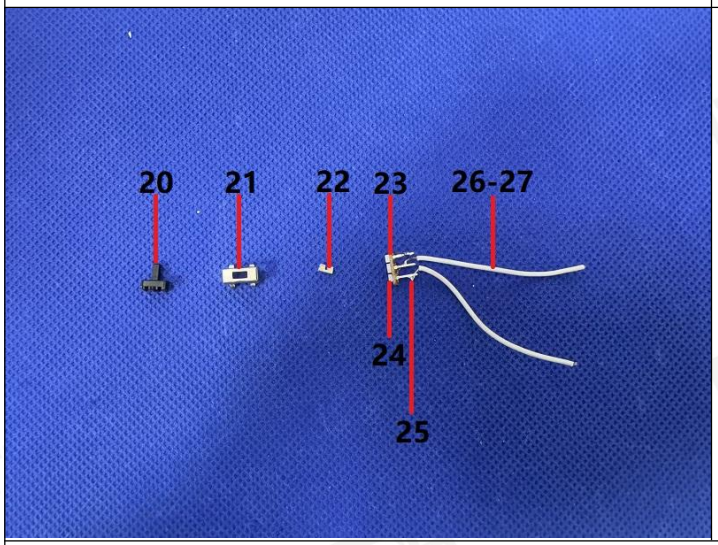
Remark(s): (a) Grey Scale Rating is based on the 5-step of 1 to 5,where 1 is bad and 5 is good.

Photo(s):









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Test Sample Photo

<<<<<< END OF REPORT >>>>>>

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