



# Test Report

Report No: KEYS240701041001RH-03

Date: Jul. 03, 2024

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**Applicant** : Shenzhen Caratar Technology Co., LTD  
**Address** : 5F,A3 Building,Meiying Innovation Park,No.3 Xingye third road,  
Fuyong Town,Baoan District,Shenzhen,China  
**Manufacturer** : Shenzhen Caratar Technology Co., LTD  
**Address** : 5F,A3 Building,Meiying Innovation Park,No.3 Xingye third road,  
Fuyong Town,Baoan District,Shenzhen,China

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

**Sample Name** : POE Splitter  
**Trade Name** : Caratar  
**Main Model** : POP-ASS001C  
**Additional model** : POP-ASS002C,POP-ASS003C,POP-ASS101C,POP-ASS102C,  
POP-ASS103C,POP-ASS201C,POP-ASS202C,POP-ASS203C,  
POP-ASS301C,POP-ASS302C,POP-ASS303C,POP-ASS401C,  
POP-ASS402C,POP-ASS403C  
**Sample Received Date** : Jul. 01, 2024  
**Testing Period** : Jul. 01, 2024 To Jul. 03, 2024  
**Test Requested** : Selected test (s) in the selected parts as requested by client with the RoHS 2  
Directive 2011/65/EU Annex II (EU) 2015/863 as last amended by  
Directive (EU) 2017/2102.  
**Test Method** : 1. As specified by client, to screen Lead(Pb), Cadmium(Cd), Mercury(Hg),  
Chromium(Cr) and Bromine(Br) in the submitted sample(s) by XRF.  
2. As specified by client, when screening results exceed the XRF screening  
limit in IEC 62321-3-1: 2013, further use of wet chemical methods are  
required to test Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent  
Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated  
Diphenyl Ethers(PBDEs), Bis(2-ethylhexyl) phthalate (DEHP) ,Butyl  
benzyl phthalate (BBP), Dibutylphthalate (DBP) ,and Diisobutyl phthalate  
(DIBP)in the submitted sample(s).  
**Test Result** : Please refer to next page(s).  
**Conclusion** : PASS (Based on test results)

Signed for and on behalf of

Tony Qian/Approved Signatory



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Guangdong KEYS Testing Technology Co., Ltd.

Address: Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan,  
Guangdong, China

Tel:+86-0769-89798319 <http://www.keys-lab.com> E-mail: [info@keys-lab.com](mailto:info@keys-lab.com)

**Summary of Test Results:**

TEST REQUEST	CONCLUSION
RoHS Directive 2011/65/EU and its subsequent amendments Directive (EU) 2015/863	--
(1)To determine Lead (Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)),Polybrominated Biphenyls (PBBs) and Polybrominated DiphenylEthers (PBDEs)content by screening test and chemical test	<b>PASS</b>
(2) To determine Phthalates (DBP, BBP, DEHP, DIBP) content by chemical test	<b>PASS</b>



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# Test Report

### Sample Description:

No.	Name
1	White plastic
2	Silver metal
3	Screw
4	PCB
5	Soldering tin
6	Silver metal
7	IC
8	Triode
9	Resistance
10	Lamp bead
11	Green plastic
12	Capacitance
13	Diode

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## 1. XRF Test Result:

No.	XRF Result(mg/kg)					Chemical Test (mg/kg)	Conclusion
	Pb	Cd	Hg	Cr	Br		
1	BL	BL	BL	BL	BL	--	Pass
2	BL	BL	BL	BL	--	--	Pass
3	BL	BL	BL	BL	--	--	Pass
4	BL	BL	BL	BL	BL	--	Pass
5	BL	BL	BL	BL	--	--	Pass
6	BL	BL	BL	BL	--	--	Pass
7	BL	BL	BL	BL	BL	--	Pass
8	BL	BL	BL	BL	BL	--	Pass
9	BL	BL	BL	BL	BL	--	Pass
10	BL	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

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**Remark:**

1. It is the result on total Br while test item on restricted substances in PBBs/PBDEs. It is the result on total Cr while test item on restricted substances is Cr(VI).

2. Screening test by XRF spectroscopy

XRF screening limits in mg/kg for regulated elements according to IEC 62321-3-1: 2013 Annex A.

Element	Polymer Material	Metallic Material	Composite Material
Pb	$BL \leq 700 - 3\sigma \leq X <$	$BL \leq 700 - 3\sigma \leq X <$	$BL \leq 500 - 3\sigma \leq X <$
Cd	$BL \leq 70 - 3\sigma \leq X <$	$BL \leq 70 - 3\sigma \leq X <$	$LOD < X < 150 + 3\sigma \leq OL$
Hg	$BL \leq 700 - 3\sigma \leq X <$	$BL \leq 700 - 3\sigma \leq X <$	$BL \leq 500 - 3\sigma \leq X <$
Cr	$BL \leq 700 - 3\sigma < X$	$BL \leq 700 - 3\sigma < X$	$BL \leq 500 - 3\sigma < X$
Br	$BL \leq 300 - 3\sigma < X$	--	$BL \leq 250 - 3\sigma < X$

**XRF detection limits in mg/kg for regulated elements in various material**

Element	Polymer Material	Metallic Material	Composite Material
Pb	10	50	50
Cd	10	50	50
Hg	10	50	50
Cr	10	50	50
Br	10	50	50

- Note:**
- BL = Under the XRF screening limit
  - OL = Future chemical test will be conducted while result is above the screening limit
  - X = The symbol "X" marks the region where further investigation is necessary
  - 3σ = The reproducibility of analytical instruments
  - LOD = Detection limit

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## 2. Wet Chemical Test

Test Item(s)	Test Method/ Test Equipment	Unit	Limit	MDL
Cadmium(Cd)	IEC 62321-5:2013, ICP-OES	mg/kg	100	2
Lead(Pb)	IEC 62321-5:2013, ICP-OES	mg/kg	1000	2
Mercury(Hg)	IEC 62321-4:2013+AMD1:2017, ICP-OES	mg/kg	1000	2
Hexavalent Chromium(CrVI) (Metal)	IEC 62321-7-1:2015, UV-Vis	µg/cm <sup>2</sup>	0.13	0.1
Hexavalent Chromium(CrVI) (Nonmetal)	IEC 62321-7-2:2017, UV-Vis	mg/kg	1000	8
PBBs (Next form)	IEC 62321-6:2015, GC-MS	mg/kg	1000	5
PBDEs (Next form)	IEC 62321-6:2015, GC-MS	mg/kg	1000	5
Dibutyl Phthalate(DBP)	IEC 62321-8:2017, GC-MS	mg/kg	1000	30
Butyl benzyl phthalate (BBP)	IEC 62321-8:2017, GC-MS	mg/kg	1000	30
Di-(2-ethylhexyl) Phthalate(DEHP)	IEC 62321-8:2017, GC-MS	mg/kg	1000	30
Diisobutyl phthalate (DIBP)	IEC 62321-8:2017, GC-MS	mg/kg	1000	30

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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- Note:**
1. mg/kg= ppm=0.0001%
  2. N.D.= Not Detected(<MDL)
  3. MDL = Method Detection Limit
  4. -- = No Testing
  5. When Cr (VI) in a sample is detected below the 0.10 µg/cm<sup>2</sup> LOQ (limit of quantification), the sample is considered to be negative for Cr (VI). Since Cr (VI) may not be uniformly distributed in the coating even within the same sample batch, a "grey zone" between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> has been established as "inconclusive" to reduce inconsistent results due to unavoidable coating variations. In this case, additional testing may be necessary to confirm the presence of Cr (VI). When Cr (VI) is detected above 0.13 µg/cm<sup>2</sup>, the sample is considered to be positive for the presence of Cr (VI) in the coating layer. Unavoidable coating variations may influence the determination 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.

## 2. Phthalate Test Result:

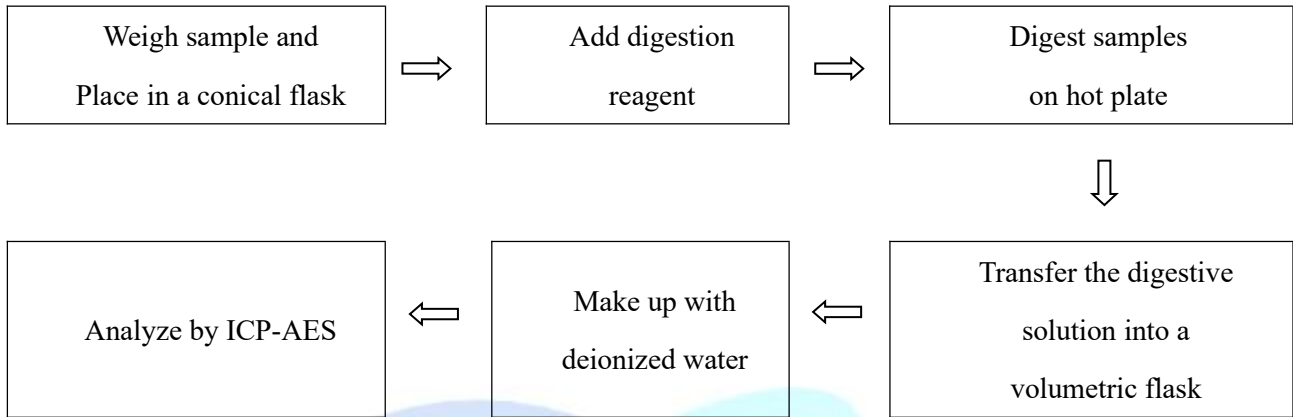
Test Item(s)	No.1	No.4	No.7	No.8	No.9
Dibutyl Phthalate (DBP)	N.D.	N.D.	N.D.	N.D.	N.D.
Butyl benzyl phthalate (BBP)	N.D.	N.D.	N.D.	N.D.	N.D.
Di-(2-ethylhexyl) Phthalate(DEHP)	N.D.	N.D.	N.D.	N.D.	N.D.
Diisobutyl phthalate (DIBP)	N.D.	N.D.	N.D.	N.D.	N.D.
Test Item(s)	No.10	No.11	No.12	No.13	--
Dibutyl Phthalate (DBP)	N.D.	N.D.	N.D.	N.D.	--
Butyl benzyl phthalate (BBP)	N.D.	N.D.	N.D.	N.D.	--
Di-(2-ethylhexyl) Phthalate(DEHP)	N.D.	N.D.	N.D.	N.D.	--
Diisobutyl phthalate (DIBP)	N.D.	N.D.	N.D.	N.D.	--

- Note:**
1. mg/kg= ppm=0.0001%
  2. N.D.= Not Detected(<MDL)

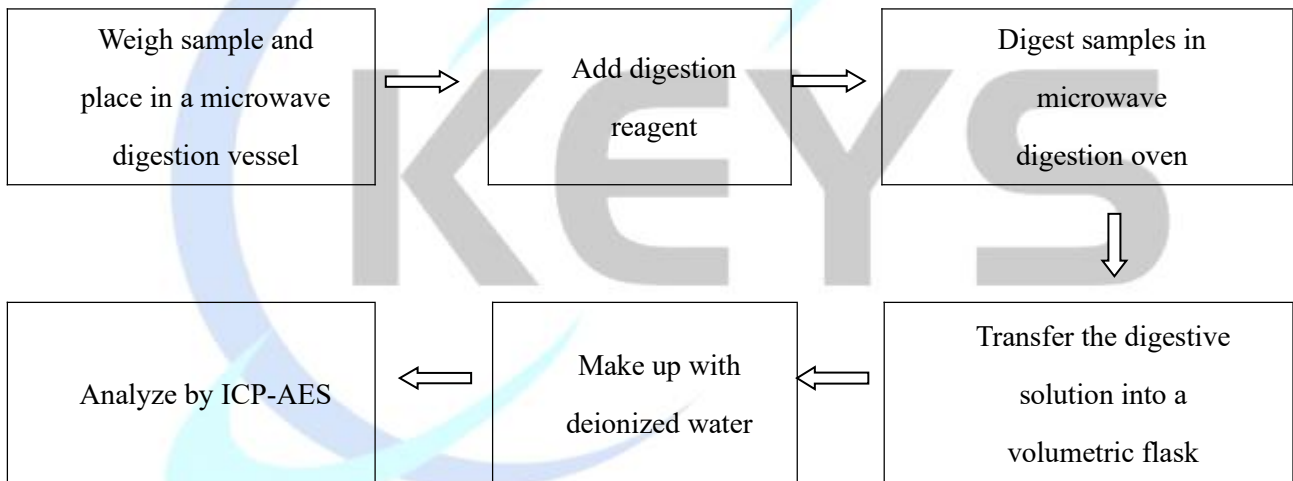
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### Test Process:

#### 1. Test for Cd/Pb Content



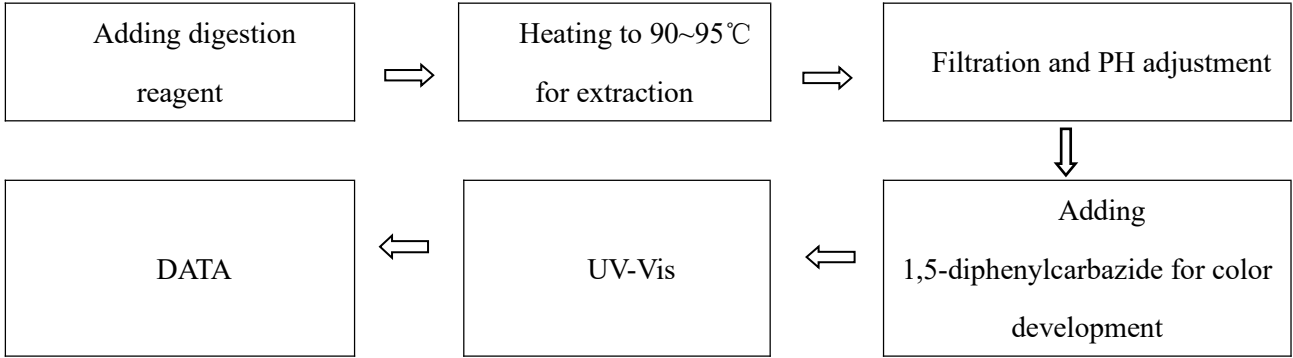
#### 2. Test for Hg Content



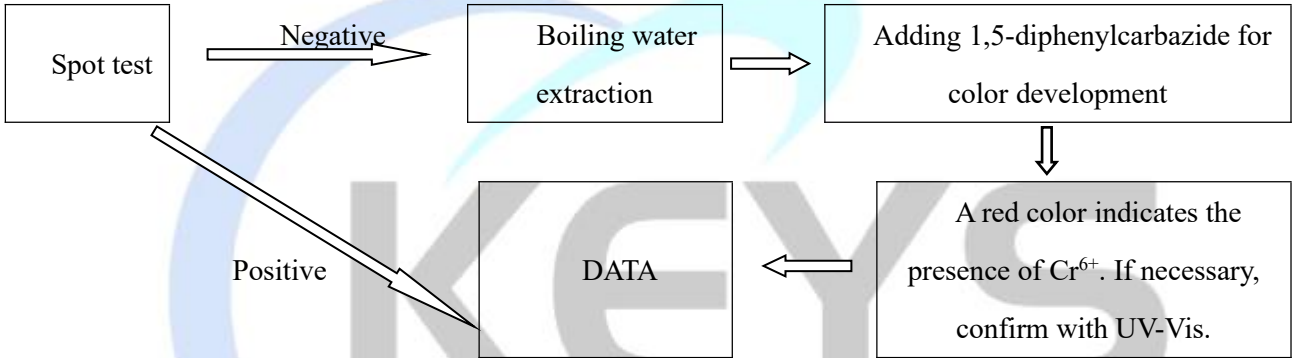
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### 3. Test for Chromium (VI) Content

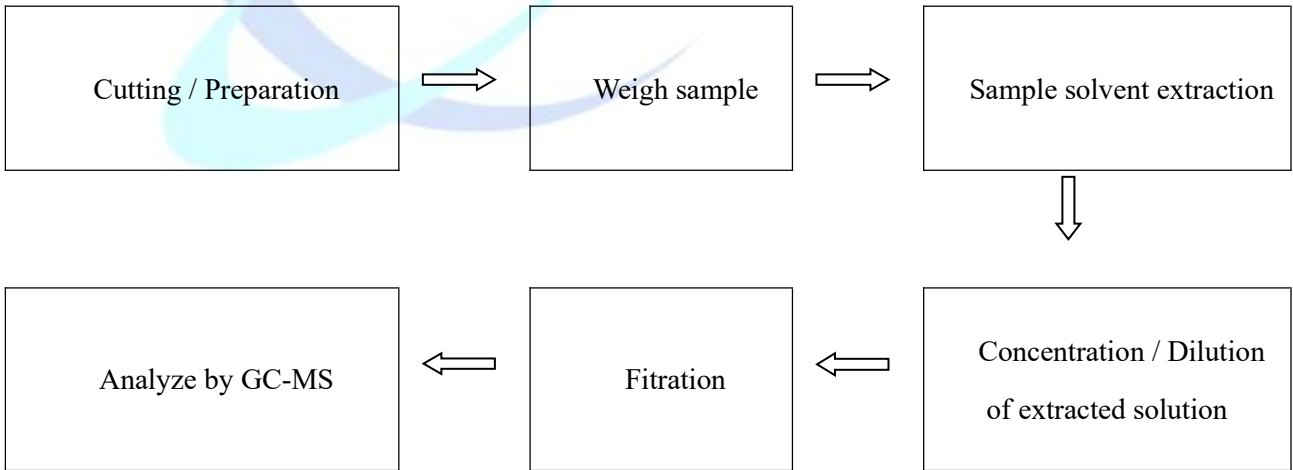
Nonmetal material



Metal material

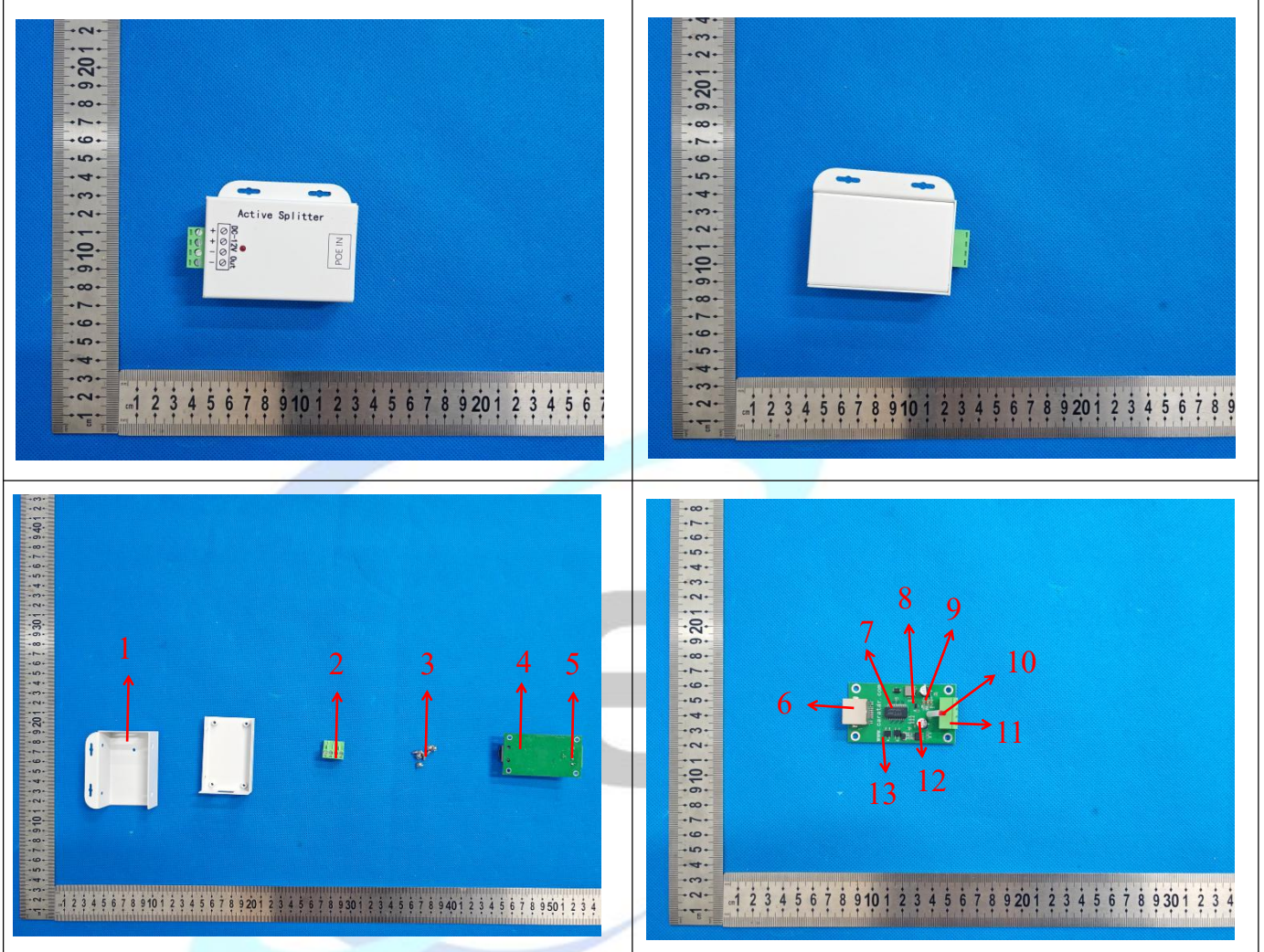


### 4. Test for DBP, BBP, DEHP, DIBP, PBB, PBDE Content



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**Sample Photo:**



\*\*\* End of Report \*\*\*

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