

检测报告  
Test Report报告编号 A2230333338101E  
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报告抬头公司名称 青岛三莹电子有限公司  
Company Name QINGDAO SAMYOUNG ELECTRONICS CO.,LTD  
shown on Report  
地址 山东省平度市长江路 5 号  
Address NO.5,CHANGJIANG ROAD,PINGDU CITY,SHANDONG PROVINCE,CHINA

以下测试之样品及样品信息由申请者提供并确认

The following sample(s) and sample information was/were submitted and identified by/on the behalf of the applicant

样品名称 铝电解电容器  
Sample Name(s) AL CAPACITOR  
样品接收日期 2023.07.07  
Sample Received Date Jul. 7, 2023  
样品检测日期 2023.07.07-2023.07.17  
Testing Period Jul. 7, 2023 to Jul. 17, 2023

检测要求 根据客户要求, 对所提交样品中的铅(Pb), 镉(Cd), 汞(Hg), 六价铬(Cr(VI)), 多溴联苯(PBBs), 多溴二苯醚(PBDEs), 邻苯二甲酸酯(DBP, BBP, DEHP, DIBP)进行测试。

Test Requested As specified by client, to test Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs), Phthalates (DBP, BBP, DEHP, DIBP) in the submitted sample(s).

检测依据/检测结果 请参见下页。

Test Method/Test Result(s) Please refer to the following page(s).

批准

Approved by

杨启良

实验室经理 Lab Manager

日期

Date

2023.07.17

No. R219922159

宁波高新区菁华路 76 号厂区东首第一、二层

宁波市华测检测技术有限公司  
Centre Testing International (Ningbo) Co., Ltd.

1-2F, Eastern Factory, No.76, Jinghua Road, High-Tech Zone, Ningbo, Zhejiang, China

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结论 Conclusion

| 测试样品<br>Tested Sample    | 依据标准/指令<br>According to standard/directive                                                                 | 结果<br>Result |
|--------------------------|------------------------------------------------------------------------------------------------------------|--------------|
| 提交样品<br>Submitted Sample | 欧盟 RoHS 指令 2011/65/EU 及其修订指令<br>(EU) 2015/863<br>RoHS Directive 2011/65/EU with<br>amendment (EU) 2015/863 | 符合<br>PASS   |

\*\*\*\*\*

符合表示检测结果满足欧盟RoHS指令2011/65/EU及其修订指令(EU) 2015/863要求的限值。  
PASS means that the results shown on the report comply with the limits set by RoHS Directive 2011/65/EU with amendment (EU) 2015/863.

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### 检测依据 Test Method

| 测试项目<br>Tested Item(s)                       | 测试方法<br>Test Method                                                                                                             | 测试仪器<br>Measured Equipment(s) |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 铅 Lead (Pb)                                  | IEC 62321-5:2013                                                                                                                | ICP-OES                       |
| 镉 Cadmium (Cd)                               | IEC 62321-5:2013                                                                                                                | ICP-OES                       |
| 汞 Mercury (Hg)                               | IEC 62321-4:2013+AMD1:2017 CSV                                                                                                  | ICP-OES                       |
| 六价铬 Hexavalent Chromium (Cr(VI))             | IEC 62321-7-1:2015                                                                                                              | UV-Vis                        |
|                                              | IEC 62321-7-2:2017 和/或 IEC 62321-5:2013 测试总铬含量<br>IEC 62321-7-2:2017 and/or determination of Total Chromium by IEC 62321-5:2013 | UV-Vis/ICP-OES                |
| 多溴联苯 Polybrominated Biphenyls (PBBs)         | IEC 62321-6:2015                                                                                                                | GC-MS                         |
| 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs) | IEC 62321-6:2015                                                                                                                | GC-MS                         |
| 邻苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)     | IEC 62321-8:2017                                                                                                                | GC-MS                         |

### 检测结果 Test Result(s)

| 测试项目 Tested Item(s)              | 结果 Result |       |          | 方法检出限<br>MDL                  | 限值<br>Limit |
|----------------------------------|-----------|-------|----------|-------------------------------|-------------|
|                                  | 1.1       | 1.2   | 1.3      |                               |             |
| 铅 Lead (Pb)                      | N.D.      | N.D.  | 18 mg/kg | 10 mg/kg                      | 1000 mg/kg  |
| 镉 Cadmium (Cd)                   | N.D.      | N.D.  | N.D.     | 10 mg/kg                      | 100 mg/kg   |
| 汞 Mercury (Hg)                   | N.D.      | N.D.  | N.D.     | 10 mg/kg                      | 1000 mg/kg  |
| 六价铬 Hexavalent Chromium (Cr(VI)) | N.D.      | --    | N.D.     | 20 mg/kg                      | 1000 mg/kg  |
|                                  | --        | N.D.▼ | --       | 0.10 µg/cm <sup>2</sup> (LOQ) | 1000 mg/kg  |

| 测试项目 Tested Item(s)              | 结果 Result |       |      | 方法检出限<br>MDL                  | 限值<br>Limit |
|----------------------------------|-----------|-------|------|-------------------------------|-------------|
|                                  | 1.4       | 1.5   | 1.6  |                               |             |
| 铅 Lead (Pb)                      | N.D.      | N.D.  | N.D. | 10 mg/kg                      | 1000 mg/kg  |
| 镉 Cadmium (Cd)                   | N.D.      | N.D.  | N.D. | 10 mg/kg                      | 100 mg/kg   |
| 汞 Mercury (Hg)                   | N.D.      | N.D.  | N.D. | 10 mg/kg                      | 1000 mg/kg  |
| 六价铬 Hexavalent Chromium (Cr(VI)) | --        | --    | N.D. | 20 mg/kg                      | 1000 mg/kg  |
|                                  | N.D.▼     | N.D.▼ | --   | 0.10 µg/cm <sup>2</sup> (LOQ) | 1000 mg/kg  |

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| 测试项目 Tested Item(s)              | 结果 Result |       |       | 方法检出限 MDL         | 限值 Limit   |
|----------------------------------|-----------|-------|-------|-------------------|------------|
|                                  | 1.7       | 1.8   | 1.9   |                   |            |
| 铅 Lead (Pb)                      | N.D.      | N.D.  | N.D.  | 10 mg/kg          | 1000 mg/kg |
| 镉 Cadmium (Cd)                   | N.D.      | N.D.  | N.D.  | 10 mg/kg          | 100 mg/kg  |
| 汞 Mercury (Hg)                   | N.D.      | N.D.  | N.D.  | 10 mg/kg          | 1000 mg/kg |
| 六价铬 Hexavalent Chromium (Cr(VI)) | N.D.      | --    | --    | 20 mg/kg          | 1000 mg/kg |
|                                  | --        | N.D.▼ | N.D.▼ | 0.10 µg/cm² (LOQ) | 1000 mg/kg |

| 测试项目 Tested Item(s)                  | 结果 Result |      |      | 方法检出限 MDL | 限值 Limit   |
|--------------------------------------|-----------|------|------|-----------|------------|
|                                      | 1.1       | 1.3  | 1.6  |           |            |
| 多溴联苯 Polybrominated Biphenyls (PBBs) |           |      |      |           |            |
| 一溴联苯 Monobromobiphenyl               | N.D.      | N.D. | N.D. | 100 mg/kg | 1000 mg/kg |
| 二溴联苯 Dibromobiphenyl                 | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 三溴联苯 Tribromobiphenyl                | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 四溴联苯 Tetrabromobiphenyl              | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 五溴联苯 Pentabromobiphenyl              | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 六溴联苯 Hexabromobiphenyl               | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 七溴联苯 Heptabromobiphenyl              | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 八溴联苯 Octabromobiphenyl               | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 九溴联苯 Nonabromobiphenyl               | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 十溴联苯 Decabromobiphenyl               | N.D.      | N.D. | N.D. | 100 mg/kg |            |

| 测试项目 Tested Item(s)                  | 结果 Result | 方法检出限 MDL | 限值 Limit   |
|--------------------------------------|-----------|-----------|------------|
|                                      | 1.7       |           |            |
| 多溴联苯 Polybrominated Biphenyls (PBBs) |           |           |            |
| 一溴联苯 Monobromobiphenyl               | N.D.      | 100 mg/kg | 1000 mg/kg |
| 二溴联苯 Dibromobiphenyl                 | N.D.      | 100 mg/kg |            |
| 三溴联苯 Tribromobiphenyl                | N.D.      | 100 mg/kg |            |
| 四溴联苯 Tetrabromobiphenyl              | N.D.      | 100 mg/kg |            |
| 五溴联苯 Pentabromobiphenyl              | N.D.      | 100 mg/kg |            |
| 六溴联苯 Hexabromobiphenyl               | N.D.      | 100 mg/kg |            |
| 七溴联苯 Heptabromobiphenyl              | N.D.      | 100 mg/kg |            |
| 八溴联苯 Octabromobiphenyl               | N.D.      | 100 mg/kg |            |
| 九溴联苯 Nonabromobiphenyl               | N.D.      | 100 mg/kg |            |
| 十溴联苯 Decabromobiphenyl               | N.D.      | 100 mg/kg |            |

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| 测试项目 Tested Item(s)                          | 结果 Result |      |      | 方法检出限 MDL | 限值 Limit   |
|----------------------------------------------|-----------|------|------|-----------|------------|
|                                              | 1.1       | 1.3  | 1.6  |           |            |
| 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs) |           |      |      |           |            |
| 一溴二苯醚 Monobromodiphenyl ether                | N.D.      | N.D. | N.D. | 100 mg/kg | 1000 mg/kg |
| 二溴二苯醚 Dibromodiphenyl ether                  | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 三溴二苯醚 Tribromodiphenyl ether                 | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 四溴二苯醚 Tetrabromodiphenyl ether               | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 五溴二苯醚 Pentabromodiphenyl ether               | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 六溴二苯醚 Hexabromodiphenyl ether                | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 七溴二苯醚 Heptabromodiphenyl ether               | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 八溴二苯醚 Octabromodiphenyl ether                | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 九溴二苯醚 Nonabromodiphenyl ether                | N.D.      | N.D. | N.D. | 100 mg/kg |            |
| 十溴二苯醚 Decabromodiphenyl ether                | N.D.      | N.D. | N.D. | 100 mg/kg |            |

| 测试项目 Tested Item(s)                          | 结果 Result | 方法检出限 MDL | 限值 Limit   |
|----------------------------------------------|-----------|-----------|------------|
|                                              | 1.7       |           |            |
| 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs) |           |           |            |
| 一溴二苯醚 Monobromodiphenyl ether                | N.D.      | 100 mg/kg | 1000 mg/kg |
| 二溴二苯醚 Dibromodiphenyl ether                  | N.D.      | 100 mg/kg |            |
| 三溴二苯醚 Tribromodiphenyl ether                 | N.D.      | 100 mg/kg |            |
| 四溴二苯醚 Tetrabromodiphenyl ether               | N.D.      | 100 mg/kg |            |
| 五溴二苯醚 Pentabromodiphenyl ether               | N.D.      | 100 mg/kg |            |
| 六溴二苯醚 Hexabromodiphenyl ether                | N.D.      | 100 mg/kg |            |
| 七溴二苯醚 Heptabromodiphenyl ether               | N.D.      | 100 mg/kg |            |
| 八溴二苯醚 Octabromodiphenyl ether                | N.D.      | 100 mg/kg |            |
| 九溴二苯醚 Nonabromodiphenyl ether                | N.D.      | 100 mg/kg |            |
| 十溴二苯醚 Decabromodiphenyl ether                | N.D.      | 100 mg/kg |            |

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| 测试项目 Tested Item(s)                                             | 结果 Result |      |      | 方法检出限 MDL | 限值 Limit   |
|-----------------------------------------------------------------|-----------|------|------|-----------|------------|
|                                                                 | 1.1       | 1.3  | 1.6  |           |            |
| 邻苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)                        |           |      |      |           |            |
| 邻苯二甲酸二异丁酯 Diisobutyl phthalate (DIBP) CAS#:84-69-5              | N.D.      | N.D. | N.D. | 50 mg/kg  | 1000 mg/kg |
| 邻苯二甲酸二丁酯 Dibutyl phthalate (DBP) CAS#:84-74-2                   | N.D.      | N.D. | N.D. | 50 mg/kg  | 1000 mg/kg |
| 邻苯二甲酸丁基苄基酯 Butyl benzyl phthalate (BBP) CAS#:85-68-7            | N.D.      | N.D. | N.D. | 50 mg/kg  | 1000 mg/kg |
| 邻苯二甲酸二(2-乙基)己酯 Di-(2-ethylhexyl) phthalate (DEHP) CAS#:117-81-7 | N.D.      | N.D. | N.D. | 50 mg/kg  | 1000 mg/kg |

| 测试项目 Tested Item(s)                                             | 结果 Result | 方法检出限<br>MDL | 限值<br>Limit |
|-----------------------------------------------------------------|-----------|--------------|-------------|
|                                                                 | 1.7       |              |             |
| 邻苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)                        |           |              |             |
| 邻苯二甲酸二异丁酯 Diisobutyl phthalate (DIBP) CAS#:84-69-5              | N.D.      | 50 mg/kg     | 1000 mg/kg  |
| 邻苯二甲酸二丁酯 Dibutyl phthalate (DBP) CAS#:84-74-2                   | N.D.      | 50 mg/kg     | 1000 mg/kg  |
| 邻苯二甲酸丁基苄基酯 Butyl benzyl phthalate (BBP) CAS#:85-68-7            | N.D.      | 50 mg/kg     | 1000 mg/kg  |
| 邻苯二甲酸二(2-乙基)己酯 Di-(2-ethylhexyl) phthalate (DEHP) CAS#:117-81-7 | N.D.      | 50 mg/kg     | 1000 mg/kg  |

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### 样品/部位描述 Sample/Part Description

| 序号  | CTI 样品 ID     | 描述                                              |
|-----|---------------|-------------------------------------------------|
| No. | CTI Sample ID | Description                                     |
| 1   | 1.1           | 有白色印字的黑色塑料<br>Black plastic with white printing |
| 2   | 1.2           | 银色金属<br>Silvery metal                           |
| 3   | 1.3           | 黑色橡胶<br>Black rubber                            |
| 4   | 1.4           | 银灰色金属<br>Silver-grey metal                      |
| 5   | 1.5           | 灰色金属<br>Grey metal                              |
| 6   | 1.6           | 无色透明胶带<br>Colorless transparent adhesive tape   |
| 7   | 1.7           | 黄色纸<br>Yellow paper                             |
| 8   | 1.8           | 银色金属引脚<br>Silvery metal pin                     |
| 9   | 1.9           | 银色金属引脚<br>Silvery metal pin                     |

**备注:** 对于检测铅, 镉, 汞之样品已消解完全。  
-N.D. = 未检出 (小于方法检出限或定量限)  
-mg/kg = ppm = 百万分之一  
-1000 mg/kg = 0.1%  
-LOQ = 定量限, 六价铬的定量限为 0.10 µg/cm<sup>2</sup>  
-▼六价铬浓度小于 0.10 µg/cm<sup>2</sup>, 样品未检出六价铬。

**Remark:** The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.

-MDL = Method Detection Limit  
-N.D. = Not Detected (<MDL or LOQ)  
-mg/kg = ppm = parts per million  
-1000 mg/kg = 0.1%  
-LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is 0.10 µg/cm<sup>2</sup>  
-▼The sample is negative for Cr(VI) – The Cr(VI) concentration is below 0.10 µg/cm<sup>2</sup>. The coating is considered a non-Cr(VI) based coating.

# 检测报告

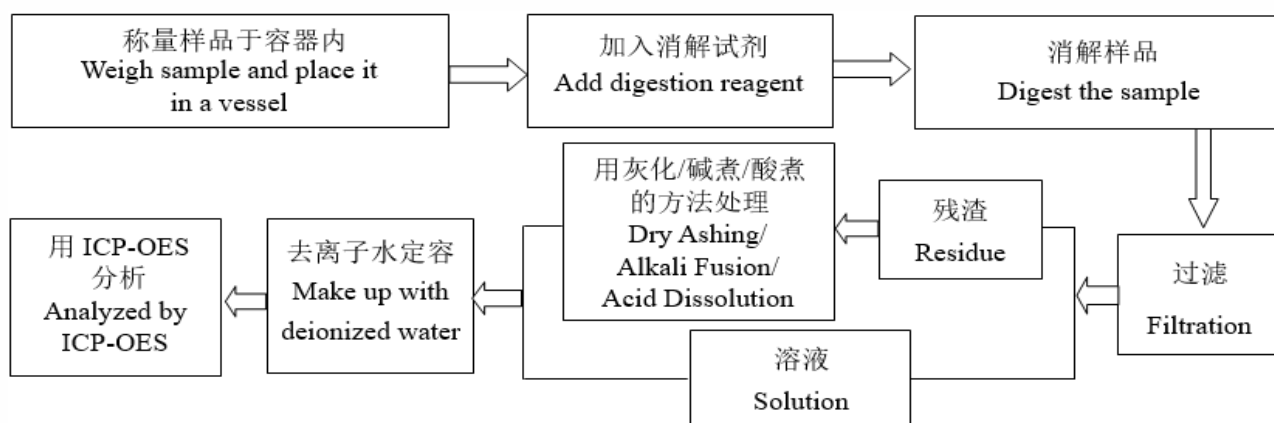
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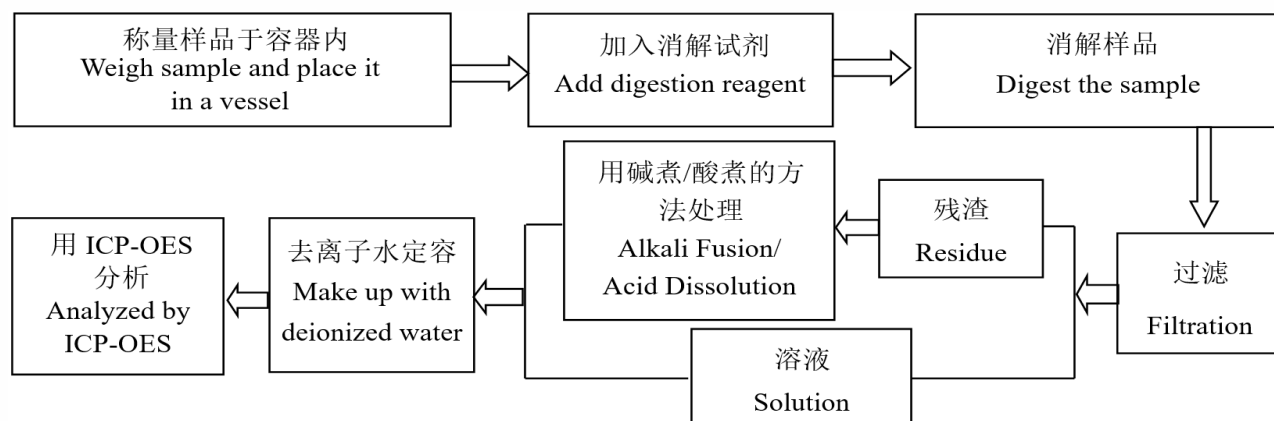
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### 检测流程 Test Process

#### 1. 铅 Lead (Pb), 镉 Cadmium (Cd), 铬 Chromium (Cr)

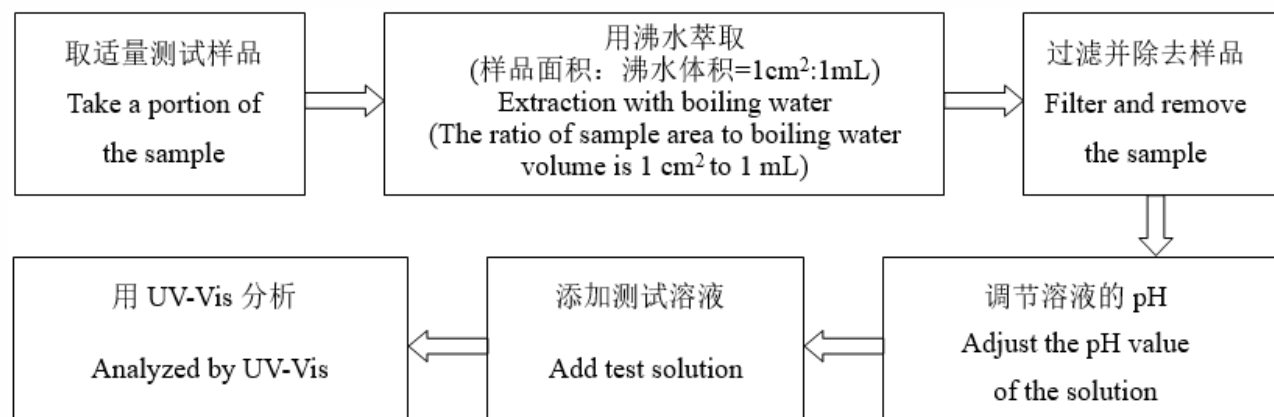


#### 2. 汞 Mercury (Hg)



#### 3. 六价铬 Hexavalent Chromium (Cr(VI))

##### (1) IEC 62321-7-1:2015



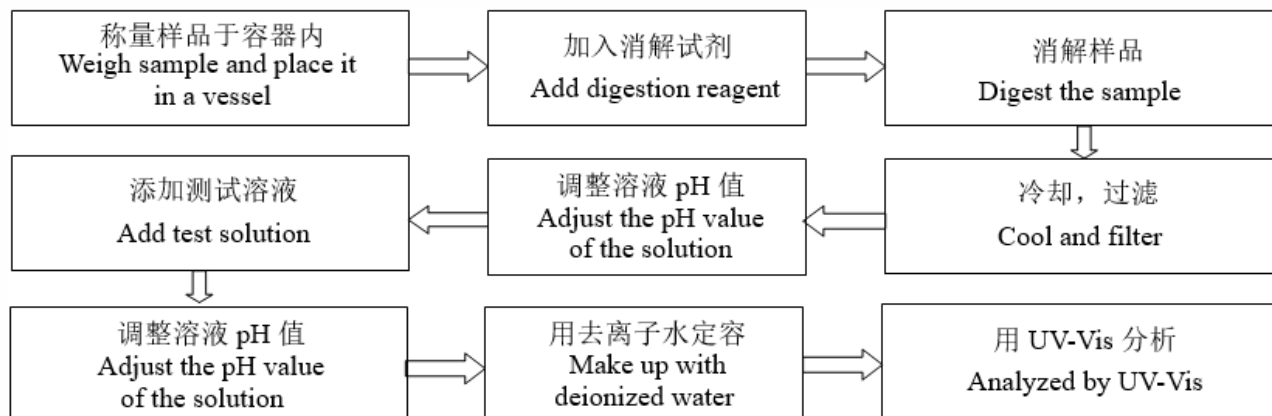


# 检测报告 Test Report

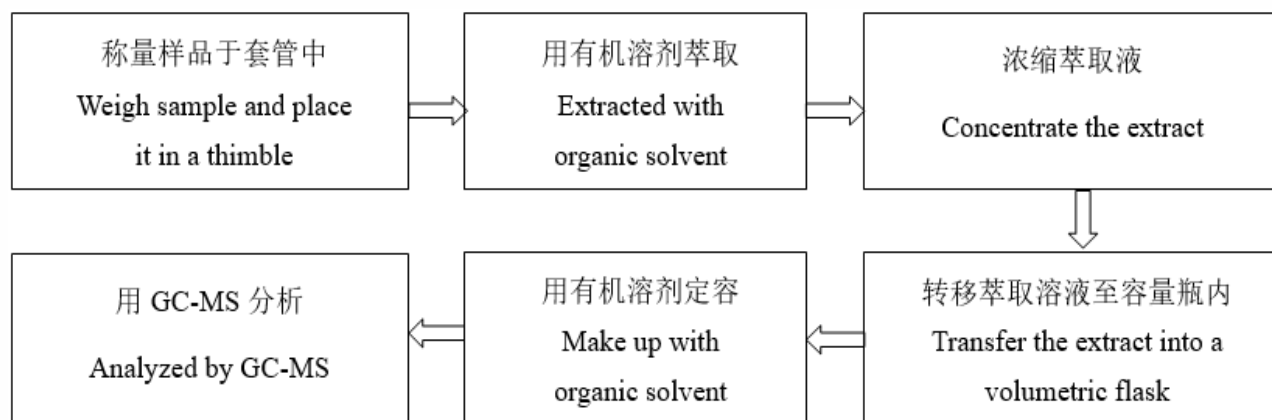
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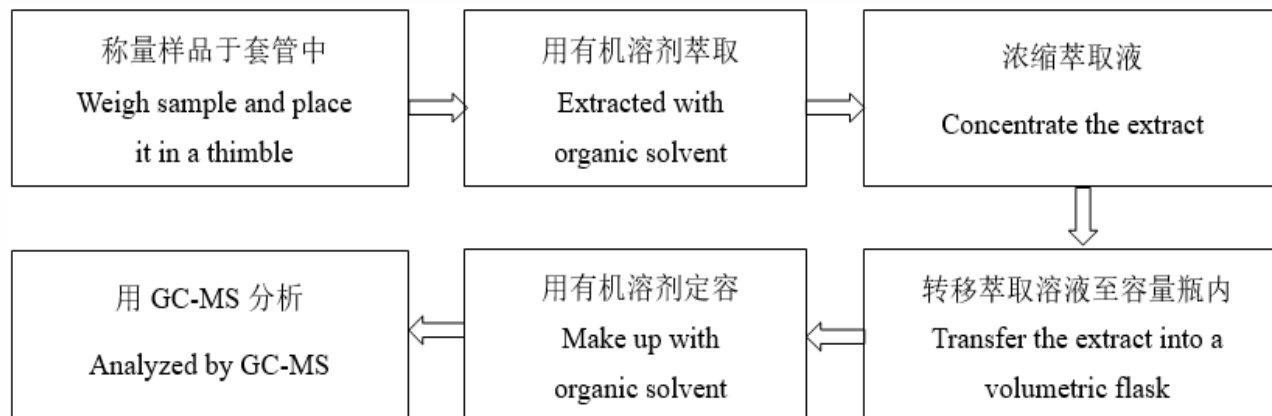
## (2) IEC 62321-7-2:2017



## 4. 多溴联苯 Polybrominated Biphenyls (PBBs), 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)



## 5. 邻苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)



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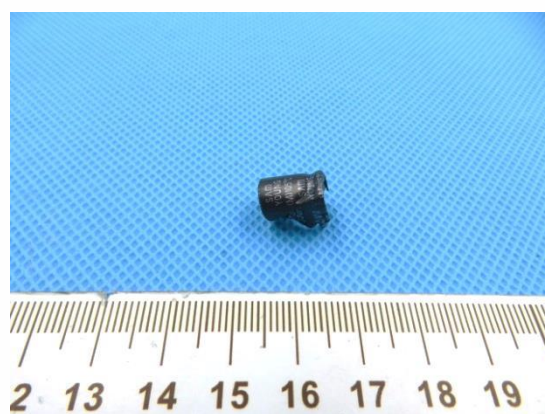
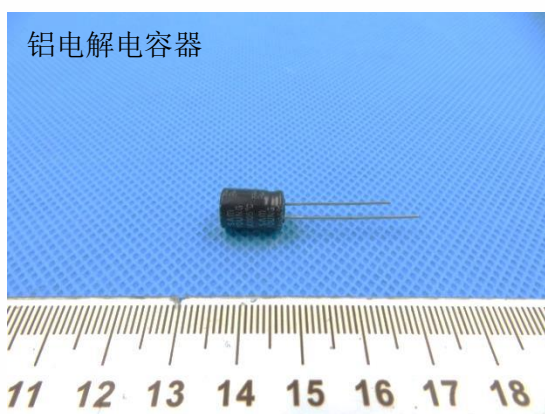
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## 样品图片

### Photo(s) of the sample(s)

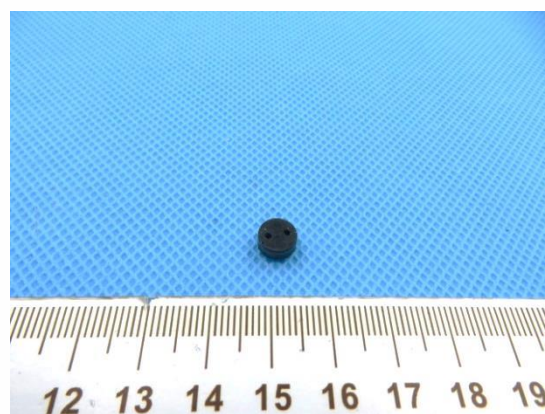
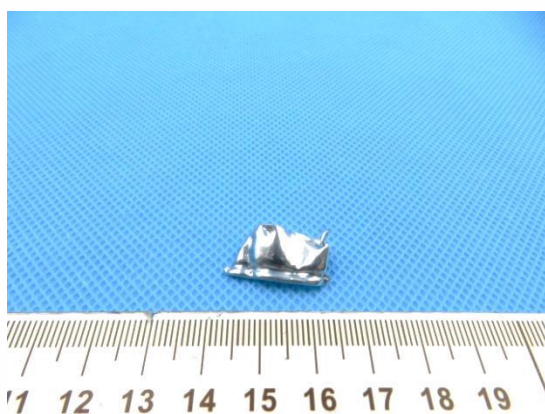
成品 Final Product

1.1



1.2

1.3

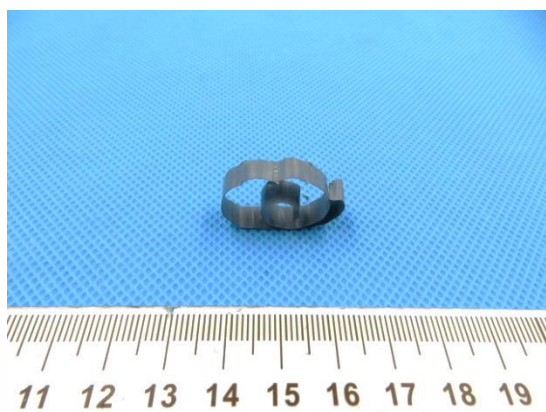


# 检测报告 Test Report

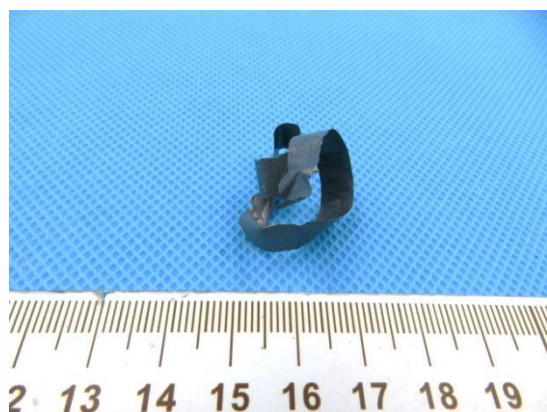
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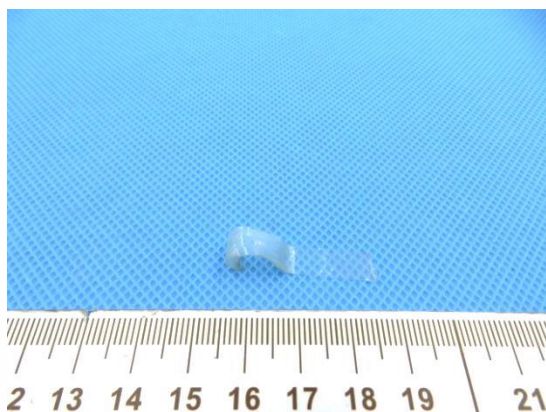
1.4



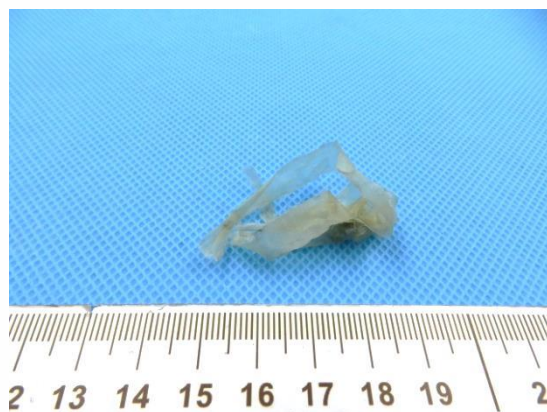
1.5



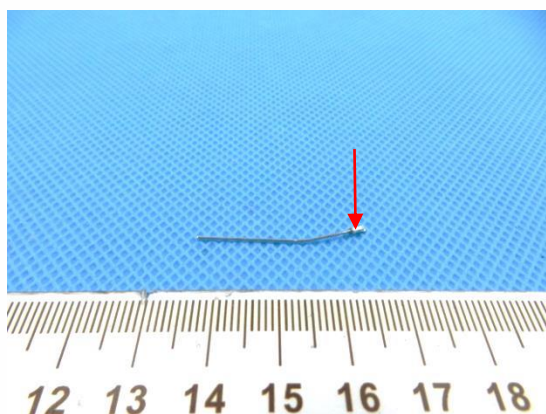
1.6



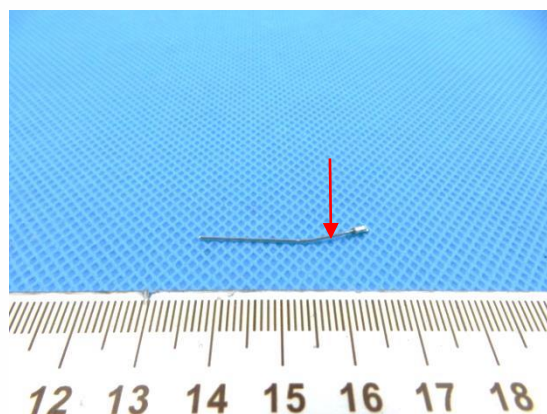
1.7



1.8



1.9





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## 声明 Statement:

1. 检测报告无批准人签字、“专用章”及报告骑缝章无效;

This report is considered invalid without approved signature, special seal and the seal on the perforation;

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\*\*\* 报告结束 \*\*\*

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

## 附录 Appendix

### 客户参考信息 Client Reference Information

SRE / SRA / CM-1 / CM-2 / LUG / CHIP

### 声明 Statement:

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The Appendix Information is/are the supplement(s) for the Report A223033338101E.

