



# 检测报告 Test Report

报告编号 A2240549756101002E  
Report No. A2240549756101002E

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报告抬头公司名称 健鼎（無錫）电子有限公司  
**Company Name** TRIPOD(WUXI) ELECTRONIC CO.,LTD  
**shown on Report**  
地址 無錫市錫山經濟開發區團結中路 6#  
**Address** MID TUANJIE.RD.DEVELOPMENT ZONE .XISHAN DISTRICT,WUXI  
CITY,JIANGSU PROVINCE

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                 | 印刷線路板                         |
| Sample Name          | Printed Circuit Board         |
| 样品型号                 | 無鉛 OSP(無鹵素)                   |
| Model No.            | Lead-Free OSP(Halogen-Free)   |
| 样品接收日期               | 2024.09.05                    |
| Sample Received Date | Sep. 5, 2024                  |
| 样品检测日期               | 2024.09.05-2024.09.11         |
| Testing Period       | Sep. 5, 2024 to Sep. 11, 2024 |

**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), 铍(Be), 氟(F), 氯(Cl), 溴(Br), 碘(I)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), Beryllium(Be), Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I) 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

陈凯敏

日期  
Date

2024.09.12

陈凯敏

实验室经理 Lab Manager

No. R188386667

上海市闵行区万芳路 1351 号

上海华测品标检测技术有限公司

Centre Testing International Pinbiao(Shanghai) Co., Ltd.

No.1351, Wanfang Road, Minhang District, Shanghai, 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 RoHS Directive 2011/65/EU<br>with amendment (EU) 2015/863 | 符合 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(Cr(VI))<br>Hexavalent Chromium (Cr(VI))     | IEC 62321-7-1:2015,<br>IEC 62321-7-2:2017 和/或 IEC 62321-5:2013 测试总<br>铬含量<br>IEC 62321-7-1:2015,<br>IEC 62321-7-2:2017 and/or determination of Total<br>Chromium by IEC 62321-5:2013 | UV-Vis/ICP-OES                |
| 多溴联苯 Polybrominated Biphenyls<br>(PBBs)         | IEC 62321-6:2015                                                                                                                                                                     | GC-MS                         |
| 多溴二苯醚 Polybrominated Diphenyl<br>Ethers (PBDEs) | IEC 62321-6:2015                                                                                                                                                                     | GC-MS                         |
| 邻苯二甲酸酯 Phthalates (DBP, BBP,<br>DEHP, DIBP)     | IEC 62321-8:2017                                                                                                                                                                     | GC-MS                         |
| 铍 Beryllium(Be)                                 | 参考 US EPA 3052:1996 & US EPA<br>6010D:2018<br>Refer to US EPA 3052:1996 & US EPA<br>6010D:2018                                                                                       | ICP-OES                       |
| 氟 Fluorine (F)                                  | 参考 EN 14582:2016<br>Refer to EN 14582:2016                                                                                                                                           | IC                            |
| 氯 Chlorine (Cl)                                 | 参考 EN 14582:2016<br>Refer to EN 14582:2016                                                                                                                                           | IC                            |
| 溴 Bromine (Br)                                  | 参考 EN 14582:2016<br>Refer to EN 14582:2016                                                                                                                                           | IC                            |
| 碘 Iodine (I)                                    | 参考 EN 14582:2016<br>Refer to EN 14582:2016                                                                                                                                           | IC                            |

### 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 |
|----------------------------------|-----------|--------------|-------------|
|                                  | 002       |              |             |
| 铅 Lead (Pb)                      | N.D.      | 2 mg/kg      | 1000 mg/kg  |
| 镉 Cadmium (Cd)                   | N.D.      | 2 mg/kg      | 100 mg/kg   |
| 汞 Mercury (Hg)                   | N.D.      | 2 mg/kg      | 1000 mg/kg  |
| 六价铬 Hexavalent Chromium (Cr(VI)) | N.D.      | 8 mg/kg      | 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   |
|--------------------------------------|-----------|-----------|------------|
|                                      | 002       |           |            |
| 多溴联苯 Polybrominated Biphenyls (PBBs) |           |           |            |
| 一溴联苯 Monobromobiphenyl               | N.D.      | 5 mg/kg   | 1000 mg/kg |
| 二溴联苯 Dibromobiphenyl                 | N.D.      | 5 mg/kg   |            |
| 三溴联苯 Tribromobiphenyl                | N.D.      | 5 mg/kg   |            |
| 四溴联苯 Tetrabromobiphenyl              | N.D.      | 5 mg/kg   |            |
| 五溴联苯 Pentabromobiphenyl              | N.D.      | 5 mg/kg   |            |
| 六溴联苯 Hexabromobiphenyl               | N.D.      | 5 mg/kg   |            |
| 七溴联苯 Heptabromobiphenyl              | N.D.      | 5 mg/kg   |            |
| 八溴联苯 Octabromobiphenyl               | N.D.      | 5 mg/kg   |            |
| 九溴联苯 Nonabromobiphenyl               | N.D.      | 5 mg/kg   |            |
| 十溴联苯 Decabromobiphenyl               | N.D.      | 5 mg/kg   |            |

| 测试项目 Tested Item(s)                          | 结果 Result | 方法检出限 MDL | 限值 Limit   |
|----------------------------------------------|-----------|-----------|------------|
|                                              | 002       |           |            |
| 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs) |           |           |            |
| 一溴二苯醚 Monobromodiphenyl ether                | N.D.      | 5 mg/kg   | 1000 mg/kg |
| 二溴二苯醚 Dibromodiphenyl ether                  | N.D.      | 5 mg/kg   |            |
| 三溴二苯醚 Tribromodiphenyl ether                 | N.D.      | 5 mg/kg   |            |
| 四溴二苯醚 Tetrabromodiphenyl ether               | N.D.      | 5 mg/kg   |            |
| 五溴二苯醚 Pentabromodiphenyl ether               | N.D.      | 5 mg/kg   |            |
| 六溴二苯醚 Hexabromodiphenyl ether                | N.D.      | 5 mg/kg   |            |
| 七溴二苯醚 Heptabromodiphenyl ether               | N.D.      | 5 mg/kg   |            |
| 八溴二苯醚 Octabromodiphenyl ether                | N.D.      | 5 mg/kg   |            |
| 九溴二苯醚 Nonabromodiphenyl ether                | N.D.      | 5 mg/kg   |            |
| 十溴二苯醚 Decabromodiphenyl ether                | N.D.      | 5 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   |
|-----------------------------------------------------------------|-----------|-----------|------------|
|                                                                 | 002       |           |            |
| 邻苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)                        |           |           |            |
| 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 |
| 邻苯二甲酸二异丁酯 Diisobutyl phthalate (DIBP) CAS#:84-69-5              | N.D.      | 50 mg/kg  | 1000 mg/kg |

| 测试项目 Tested Item(s) | 结果 Result | 方法检出限 MDL |
|---------------------|-----------|-----------|
|                     | 002       |           |
| 铍 Beryllium (Be)    | N.D.      | 10 mg/kg  |

| 测试项目 Tested Item(s) | 结果 Result | 方法检出限 MDL |
|---------------------|-----------|-----------|
|                     | 002       |           |
| 氟 Fluorine (F)      | 228 mg/kg | 10 mg/kg  |
| 氯 Chlorine (Cl)     | 116 mg/kg | 10 mg/kg  |
| 溴 Bromine (Br)      | N.D.      | 10 mg/kg  |
| 碘 Iodine (I)        | N.D.      | 10 mg/kg  |

样品/部位描述 Sample/Part Description

|     |               |                                     |
|-----|---------------|-------------------------------------|
| 序号  | CTI 样品 ID     | 描述                                  |
| No. | CTI Sample ID | Description                         |
| 1   | 002           | PCB（整体测试）<br>PCB(Tested as a whole) |

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备注: 对于检测铅, 镉, 汞, 铍之样品已消解完全。

-N.D. = 未检出 (小于方法检出限)

-mg/kg = ppm = 百万分之一

-1000 mg/kg = 0.1%

按照目前手段, 样品无法进一步拆分, 样品整体测试, 测试结果不代表整体测试样品中任何一种单一材质的含量。

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

-MDL = Method Detection Limit

-N.D. = Not Detected (<MDL)

-mg/kg = ppm = parts per million

-1000 mg/kg = 0.1%

The sample(s) was tested as a whole, because it's impossible to disassemble or separate it by current equipment and technology. The result(s) shown on this report may be different from the content of any homogeneous material.

注释: 本报告中的数据结果供科研、教学、企业内部质量控制、企业产品研发等目的用。

**Note: The testing data and result(s) in this report is(are) just for scientific research, education, internal quality control and product development etc.**

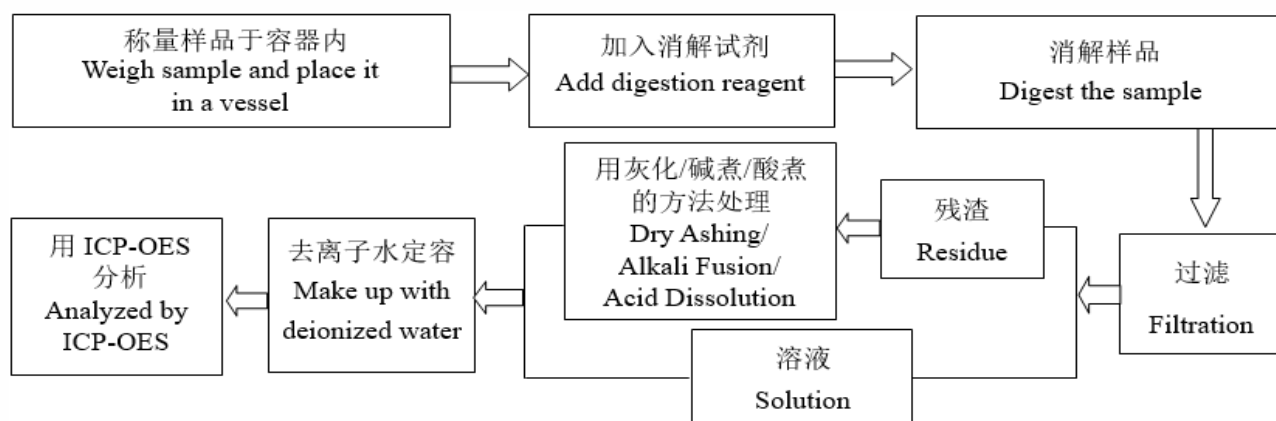
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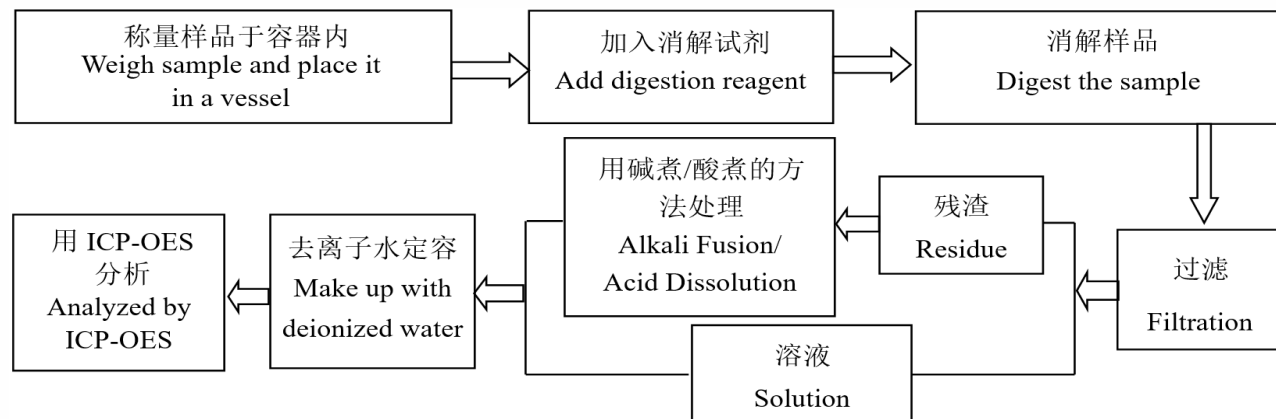
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## 检测流程 Test Process

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



### 2. 汞 Mercury (Hg)



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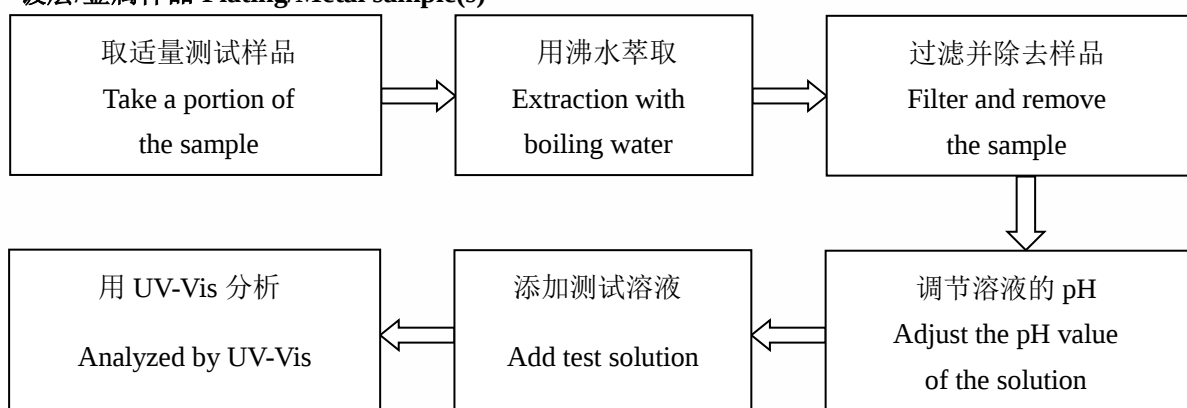
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## 3. 六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))

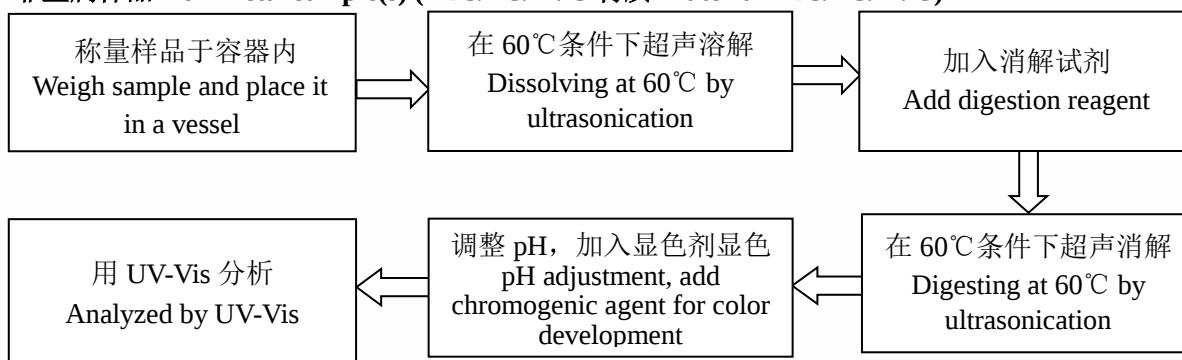
### (1) IEC 62321-7-1:2015

镀层/金属样品 Plating/Metal sample(s)



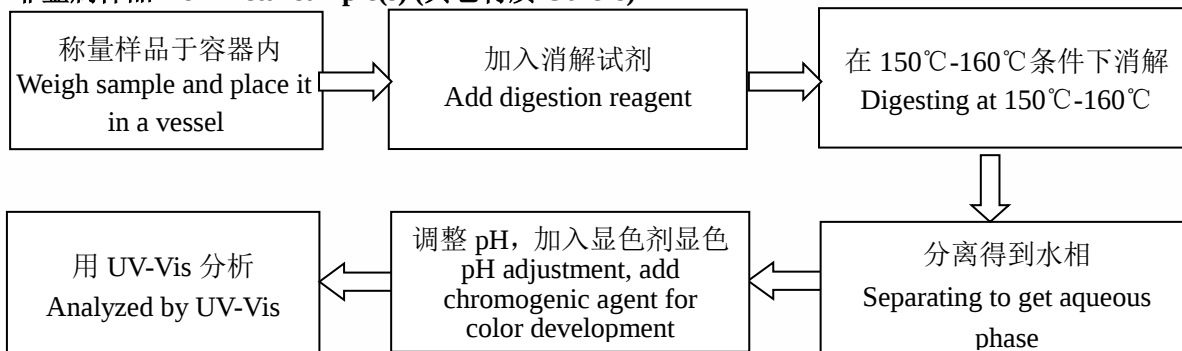
### (2) IEC 62321-7-2:2017

非金属样品 Non-metal sample(s) (ABS/PC/PVC 材质 Material ABS/PC/PVC)



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

非金属样品 Non-metal sample(s) (其它材质 Others)

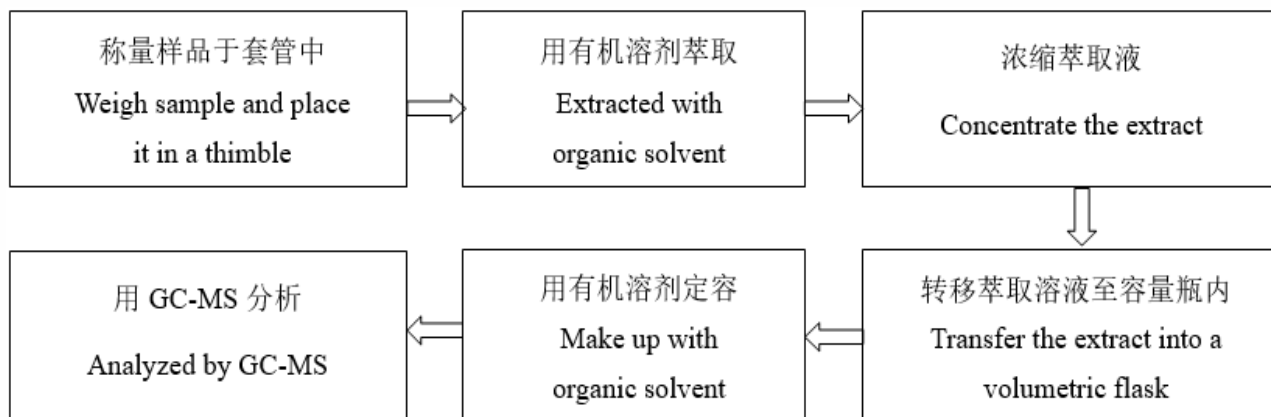


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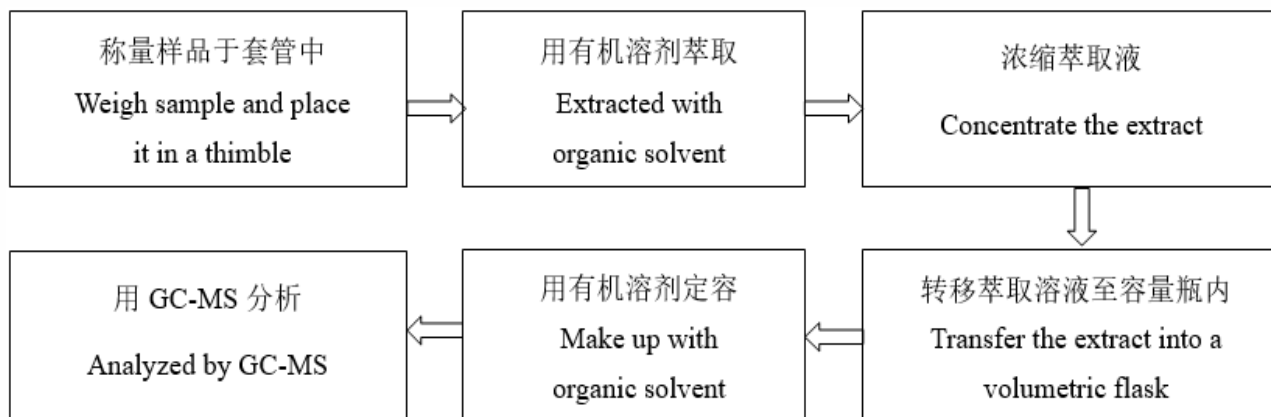
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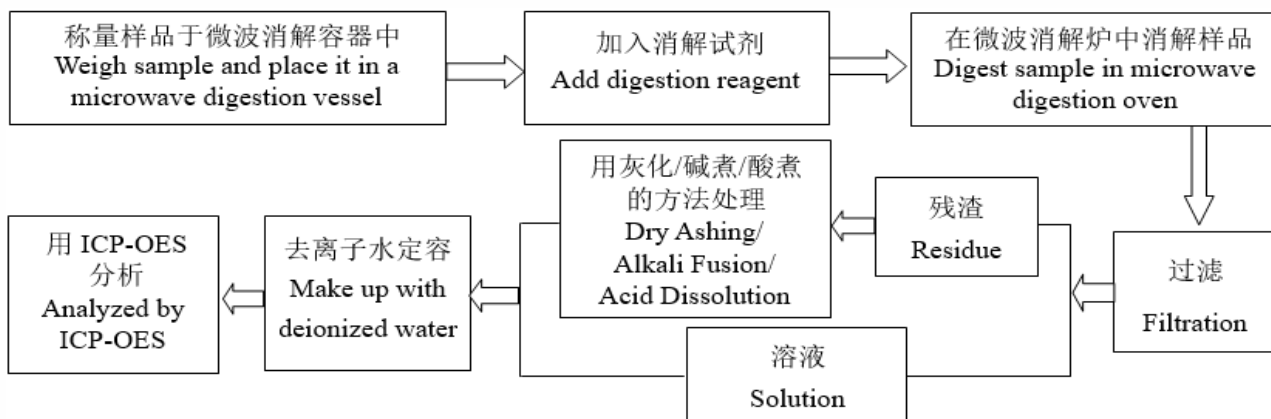
## 4. 多溴联苯 Polybrominated Biphenyls (PBBs), 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)



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



## 6. 铍 Beryllium(Be)

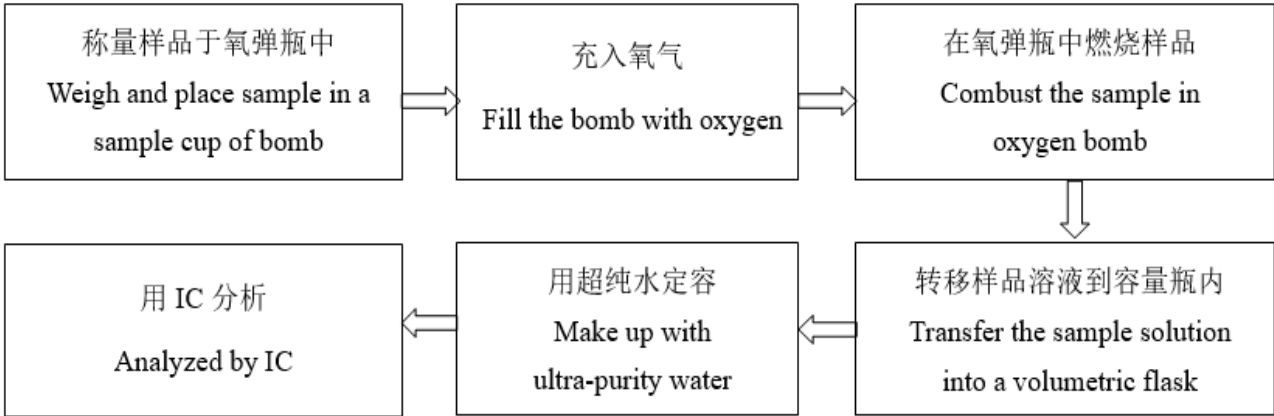


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7. 氟 Fluorine (F), 氯 Chlorine (Cl), 溴 Bromine (Br), 碘 Iodine (I)



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## 样品图片

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



### 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;
2. 报告抬头公司名称及地址、样品及样品信息由申请者提供, 申请者应对其真实性负责, CTI 未核实其真实性;  
The Company Name shown on Report and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified;
3. 本报告检测结果仅对受测样品负责;  
The result(s) shown in this report refer(s) only to the sample(s) tested;
4. 除非另有说明, 报告参照 ILAC-G8:09/2019 / CNAS-GL015:2022 使用简单接受 (w=0) 二元判定规则进行符合性判定; Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019 / CNAS-GL015:2022;
5. 未经 CTI 书面同意, 不得部分复制本报告;  
Without written approval of CTI, this report can't be reproduced except in full;
6. 如检测报告中的英文内容与中文内容有差异, 以中文为准。  
In case of any discrepancy between the English version and Chinese version of the testing reports (if generated), the Chinese version shall prevail.

\*\*\* 报告结束 \*\*\*  
\*\*\* End of Report \*\*\*