

检测报告
Test Report报告编号 SCL01I117724E
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申请单位 惠州市興利業精密電子廠有限公司 [敬業電子(惠州)有限公司]

Applicant BENNIC AND COMPANY

地址 廣東省惠州市惠城區惠風西四路 82 號(平南工業園 50 號小區)

Address 82, HUI FENG XI SI ROAD, HUIZHOU, GUANG DONG PROVIENCE

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 client

| 序号 No. | 成品名称 Finished Product Name | 样品名称 Sample Name(s) |
|--------|-----------------------------|-----------------------------------|
| (1) | 水泥電阻 CEMENT POWER RESISTORS | 瓷殼 Porcelain case |
| (2) | | 瓷棒 Porcelain rods |
| (3) | | 石英沙填充料 Material quartz sand fills |
| (4) | | 引線型鐵帽 Pin-type iron cap |
| (5) | | 插片型鐵帽 Insert type money cap |
| (6) | | 電阻絲 Resistance wire |
| (7) | | 紅色油墨 Red ink |
| (8) | | 黑色油墨 Black ink |

样品接收日期 2016.12.27
Sample Received Date Dec. 27, 2016
样品检测日期 2016.12.27-2017.01.03
Testing Period Dec. 27, 2016 to Jan. 3, 2017检测要求 请参见下页。
Test Requested Please refer to the following page(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).主 检
Tested by

刘前生

审 核
Reviewed by

岑丹娜

批准
Approved by

刘少蔚

日 期
Date

2017.01.03

刘少蔚

技术经理 Technical Manager

No. R169561482

华测检测集团股份有限公司
Centre Testing International Group Co., Ltd.广东省深圳市宝安区 70 区鸿威工业园
Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China

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结论 Conclusion

| 测试样品 Tested Sample | 依据指令 According to directive | 结果 Result |
|--------------------------|--|--------------|
| 提交样品 Submitted Sample | 欧盟 RoHS 指令 2011/65/EU 及其修订指令 (EU) 2015/863 RoHS Directive 2011/65/EU 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 Test Method

| 测试项目 Tested Item(s) | 测试方法 Test Method | 测试仪器 Measured Equipment(s) |
|---|--|-------------------------------|
| 铅 Lead (Pb) | IEC 62321-5:2013 Ed.1.0 | ICP-OES |
| 镉 Cadmium (Cd) | IEC 62321-5:2013 Ed.1.0 | ICP-OES |
| 汞 Mercury (Hg) | IEC 62321-4:2013 Ed.1.0 | ICP-OES |
| 六价铬 Hexavalent Chromium (Cr(VI)) | IEC 62321:2008 Ed.1 Annex C | UV-Vis |
| | IEC 62321-7-1:2015 | |
| 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) | 参考 IEC 62321-8 CDV Refer to IEC 62321-8 CDV | GC-MS |

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检测结果 Test Result(s)

| 测试项目 Tested Item(s) | 结果 Result | | 方法检出限 MDL | 限值 Limit |
|----------------------------------|-----------|----------|--------------|-------------|
| | (1) | (2) | | |
| 铅 Lead (Pb) | N.D. | 30 mg/kg | 2 mg/kg | 1000 mg/kg |
| 镉 Cadmium (Cd) | N.D. | N.D. | 2 mg/kg | 100 mg/kg |
| 汞 Mercury (Hg) | N.D. | N.D. | 2 mg/kg | 1000 mg/kg |
| 六价铬 Hexavalent Chromium (Cr(VI)) | N.D. | N.D. | 2 mg/kg | 1000 mg/kg |

| 测试项目 Tested Item(s) | 结果 Result | | 方法检出限 MDL | 限值 Limit |
|----------------------------------|-----------|--------|----------------------------------|-------------|
| | (3) | (4) | | |
| 铅 Lead (Pb) | N.D. | N.D. | 2 mg/kg | 1000 mg/kg |
| 镉 Cadmium (Cd) | N.D. | N.D. | 2 mg/kg | 100 mg/kg |
| 汞 Mercury (Hg) | N.D. | N.D. | 2 mg/kg | 1000 mg/kg |
| 六价铬 Hexavalent Chromium (Cr(VI)) | N.D. | --- | 2 mg/kg | 1000 mg/kg |
| | --- | N.D. ▼ | 0.10 µg/cm ² (LOQ) | |

| 测试项目 Tested Item(s) | 结果 Result | | 方法检出限 MDL | 限值 Limit |
|----------------------------------|-----------|--------|----------------------------------|-------------|
| | (5) | (6) | | |
| 铅 Lead (Pb) | N.D. | N.D. | 2 mg/kg | 1000 mg/kg |
| 镉 Cadmium (Cd) | N.D. | N.D. | 2 mg/kg | 100 mg/kg |
| 汞 Mercury (Hg) | N.D. | N.D. | 2 mg/kg | 1000 mg/kg |
| 六价铬 Hexavalent Chromium (Cr(VI)) | N.D. ▼ | N.D. ▼ | 0.10 µg/cm ² (LOQ) | 1000 mg/kg |

| 测试项目 Tested Item(s) | 结果 Result | | 方法检出限 MDL | 限值 Limit |
|----------------------------------|-----------|------|--------------|-------------|
| | (7)* | (8)* | | |
| 铅 Lead (Pb) | N.D. | N.D. | 2 mg/kg | 1000 mg/kg |
| 镉 Cadmium (Cd) | N.D. | N.D. | 2 mg/kg | 100 mg/kg |
| 汞 Mercury (Hg) | N.D. | N.D. | 2 mg/kg | 1000 mg/kg |
| 六价铬 Hexavalent Chromium (Cr(VI)) | N.D. | N.D. | 2 mg/kg | 1000 mg/kg |

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检测结果 Test Result(s)

| 测试项目 Tested Item(s) | 结果 Result | | 方法检出限 MDL | 限值 Limit |
|--|-----------|------|--------------|-------------|
| | (1) | (2) | | |
| 多溴联苯 Polybrominated Biphenyls(PBBs) | | | | |
| 一溴联苯 Monobromobiphenyl | N.D. | N.D. | 5 mg/kg | 1000 mg/kg |
| 二溴联苯 Dibromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 三溴联苯 Tribromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 四溴联苯 Tetrabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 五溴联苯 Pentabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 六溴联苯 Hexabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 七溴联苯 Heptabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 八溴联苯 Octabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 九溴联苯 Nonabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 十溴联苯 Decabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 多溴二苯醚 Polybrominated Diphenyl Ethers(PBDEs) | | | | |
| 一溴二苯醚 Monobromodiphenyl ether | N.D. | N.D. | 5 mg/kg | 1000 mg/kg |
| 二溴二苯醚 Dibromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 三溴二苯醚 Tribromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 四溴二苯醚 Tetrabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 五溴二苯醚 Pentabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 六溴二苯醚 Hexabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 七溴二苯醚 Heptabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 八溴二苯醚 Octabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 九溴二苯醚 Nonabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 十溴二苯醚 Decabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |

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检测结果 Test Result(s)

| 测试项目 Tested Item(s) | 结果 Result | | 方法检出限 MDL | 限值 Limit |
|--|-----------|------|--------------|-------------|
| | (3) | (7)* | | |
| 多溴联苯 Polybrominated Biphenyls(PBBs) | | | | |
| 一溴联苯 Monobromobiphenyl | N.D. | N.D. | 5 mg/kg | 1000 mg/kg |
| 二溴联苯 Dibromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 三溴联苯 Tribromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 四溴联苯 Tetrabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 五溴联苯 Pentabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 六溴联苯 Hexabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 七溴联苯 Heptabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 八溴联苯 Octabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 九溴联苯 Nonabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 十溴联苯 Decabromobiphenyl | N.D. | N.D. | 5 mg/kg | |
| 多溴二苯醚 Polybrominated Diphenyl Ethers(PBDEs) | | | | |
| 一溴二苯醚 Monobromodiphenyl ether | N.D. | N.D. | 5 mg/kg | 1000 mg/kg |
| 二溴二苯醚 Dibromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 三溴二苯醚 Tribromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 四溴二苯醚 Tetrabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 五溴二苯醚 Pentabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 六溴二苯醚 Hexabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 七溴二苯醚 Heptabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 八溴二苯醚 Octabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 九溴二苯醚 Nonabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |
| 十溴二苯醚 Decabromodiphenyl ether | N.D. | N.D. | 5 mg/kg | |

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检测结果 Test Result(s)

| 测试项目 Tested Item(s) | 结果 Result | 方法检出限 MDL | 限值 Limit |
|--|-----------|--------------|-------------|
| | (8)* | | |
| 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 | |
| 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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检测结果 Test Result(s)

| 测试项目 Tested Item(s) | 结果 Result | | 方法检出限 MDL | 限值 Limit |
|--|-----------|------|--------------|-------------|
| | (1) | (2) | | |
| 邻苯二甲酸酯 Phthalates | | | | |
| 邻苯二甲酸二正丁酯 Dibutyl phthalate(DBP) CAS#:84-74-2 | N.D. | N.D. | 50 mg/kg | 1000 mg/kg |
| 邻苯二甲酸丁基苄酯 Benzylbutyl phthalate(BBP) CAS#:85-68-7 | N.D. | N.D. | 50 mg/kg | 1000 mg/kg |
| 邻苯二甲酸(2-乙基己基)酯 Di-2-ethylhexyl phthalate(DEHP) CAS#:117-81-7 | N.D. | 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. | N.D. | 50 mg/kg | 1000 mg/kg |

| 测试项目 Tested Item(s) | 结果 Result | | 方法检出限 MDL | 限值 Limit |
|--|-----------|------|--------------|-------------|
| | (3) | (7)* | | |
| 邻苯二甲酸酯 Phthalates | | | | |
| 邻苯二甲酸二正丁酯 Dibutyl phthalate(DBP) CAS#:84-74-2 | N.D. | N.D. | 50 mg/kg | 1000 mg/kg |
| 邻苯二甲酸丁基苄酯 Benzylbutyl phthalate(BBP) CAS#:85-68-7 | N.D. | N.D. | 50 mg/kg | 1000 mg/kg |
| 邻苯二甲酸(2-乙基己基)酯 Di-2-ethylhexyl phthalate(DEHP) CAS#:117-81-7 | N.D. | 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. | N.D. | 50 mg/kg | 1000 mg/kg |

| 测试项目 Tested Item(s) | 结果 Result | 方法检出限 MDL | 限值 Limit |
|--|-----------|--------------|-------------|
| | (8)* | | |
| 邻苯二甲酸酯 Phthalates | | | |
| 邻苯二甲酸二正丁酯 Dibutyl phthalate(DBP) CAS#:84-74-2 | N.D. | 50 mg/kg | 1000 mg/kg |
| 邻苯二甲酸丁基苄酯 Benzylbutyl phthalate(BBP) CAS#:85-68-7 | N.D. | 50 mg/kg | 1000 mg/kg |
| 邻苯二甲酸(2-乙基己基)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 |

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测试样品/部位描述 Tested Sample/Part Description

- (1) 白色陶瓷 White ceramic
- (2) 灰白色陶瓷 Gray-white ceramic
- (3) 白色粉末 White powder
- (4) 带有银灰色镀层的金属 Metal with silver-gray plating
- (5) 带有银色镀层的金属 Metal with silvery plating
- (6) 银灰色金属线 Silver-gray metal wire
- (7) 红色油墨 Red ink
- (8) 黑色油墨 Black ink

备注: 对于检测铅, 镉, 汞之样品已完全溶解。

-N.D. = 未检出 (小于方法检出限或定量限)

-mg/kg = ppm = 百万分之一

-LOQ = 定量限, 六价铬的定量限为 $0.10 \mu\text{g}/\text{cm}^2$

-▼六价铬浓度小于 $0.10 \mu\text{g}/\text{cm}^2$, 样品未检出六价铬。

-*测试样品经过 105°C 烘烤 2 小时后测试。

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

-LOQ = Limit of Quantification, The LOQ of Hexavalent chromium is $0.10 \mu\text{g}/\text{cm}^2$

-▼The sample is negative for Cr(VI) – The Cr(VI) concentration is below $0.10 \mu\text{g}/\text{cm}^2$. The coating is considered a non-Cr(VI) based coating.

-*The sample was tested after drying for 2 hours under 105°C .

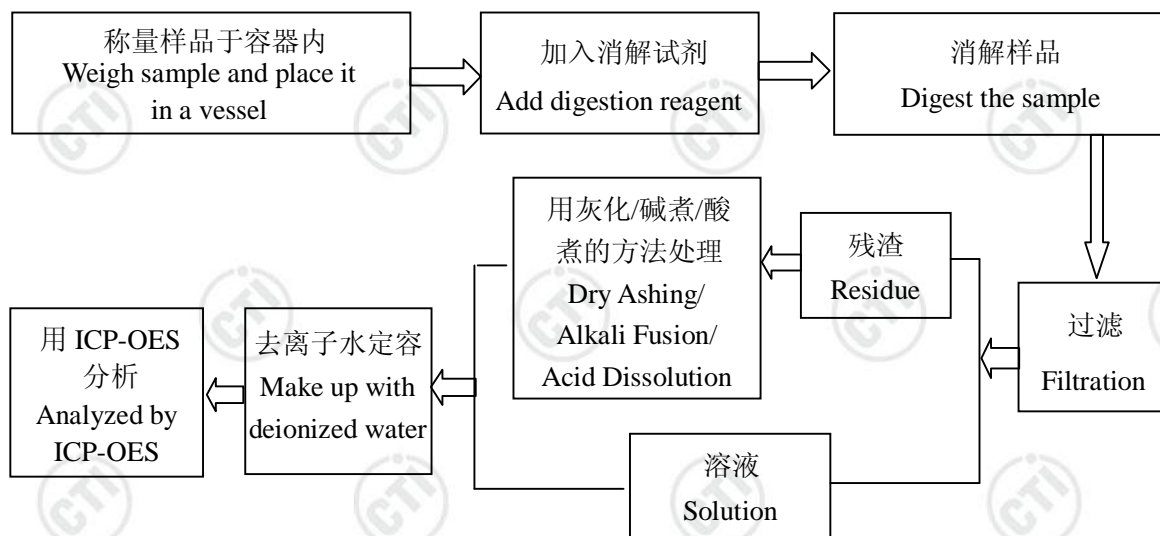
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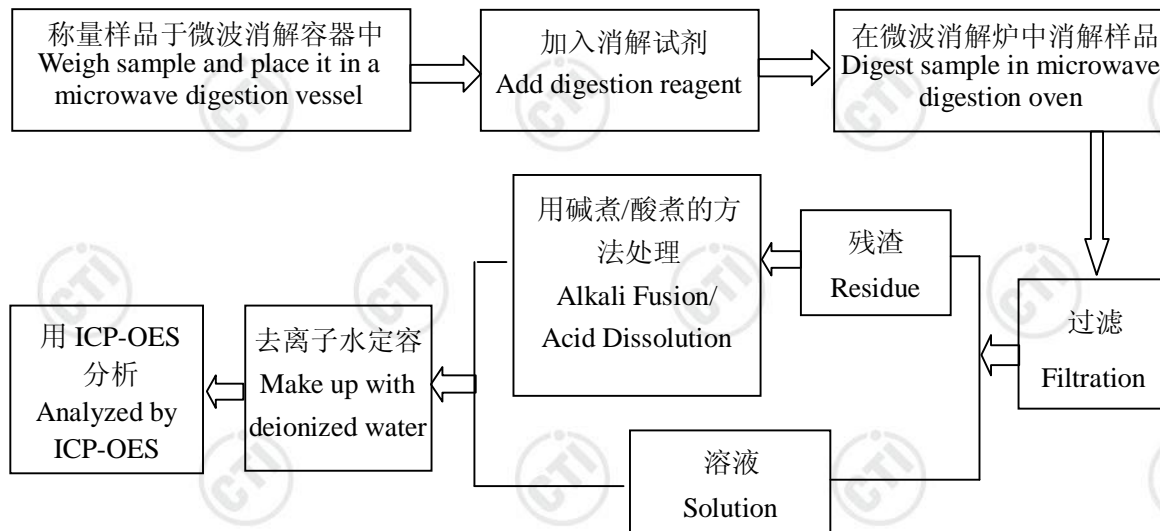
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检测流程 Test Process

1. 铅 Lead(Pb), 镉 Cadmium(Cd)



2. 汞 Mercury(Hg)



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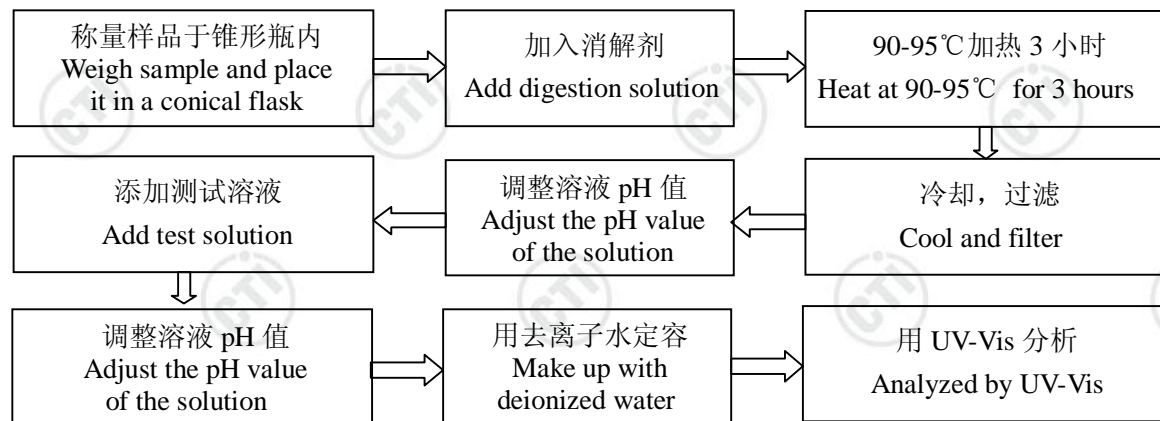
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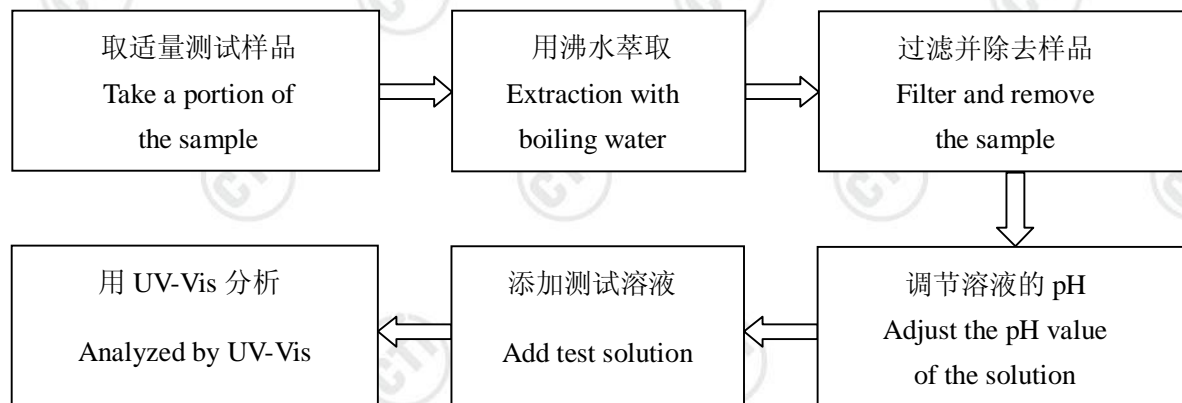
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3. 六价铬 Hexavalent Chromium (Cr(VI))

(1) IEC 62321:2008 Ed. 1 Annex C

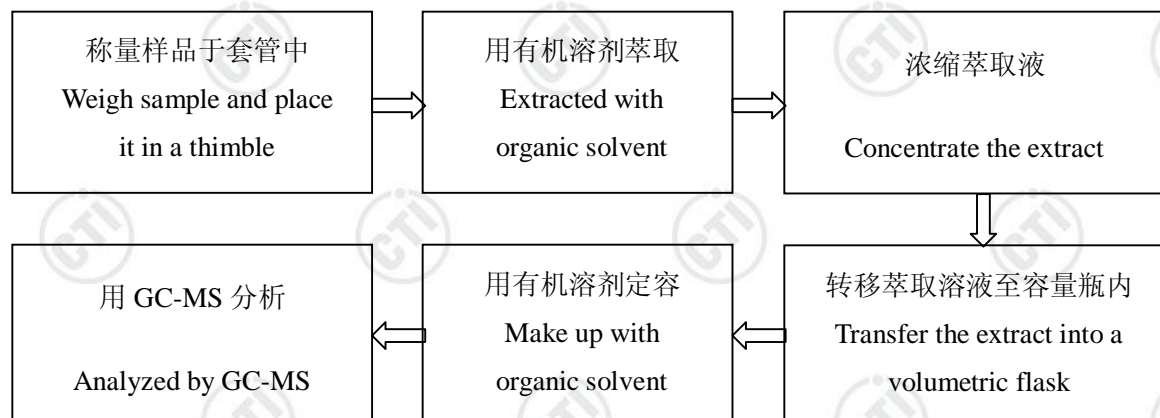


(2) IEC 62321-7-1:2015



4. 多溴联苯 Polybrominated Biphenyls(PBBs),

多溴二苯醚 Polybrominated Diphenyl Ethers(PBDEs)



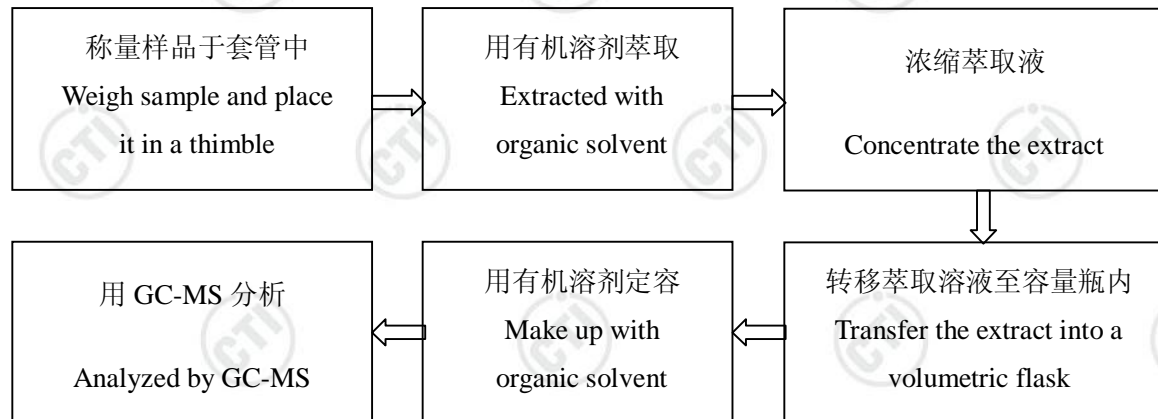
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5. 邻苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)



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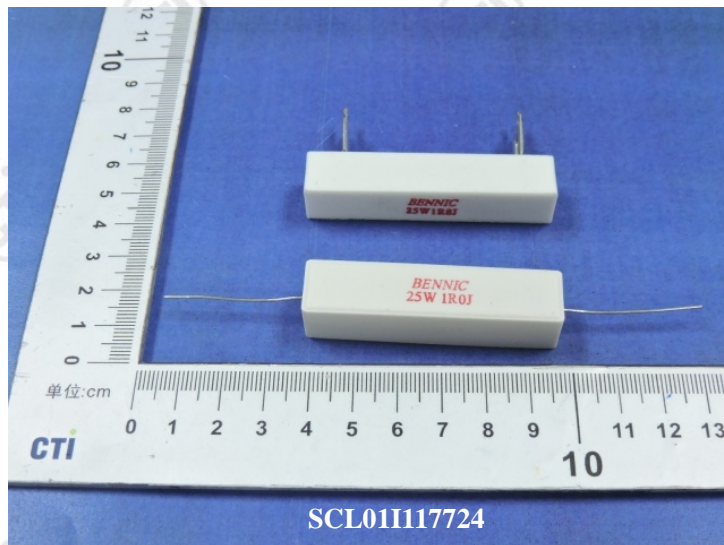
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成品图片

Photo(s) of the Finished Product(s)



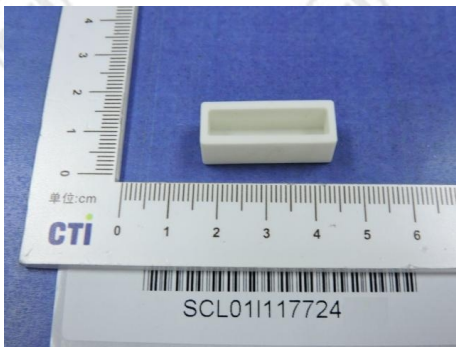
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样品图片 Photo(s) of the sample(s)

(1)



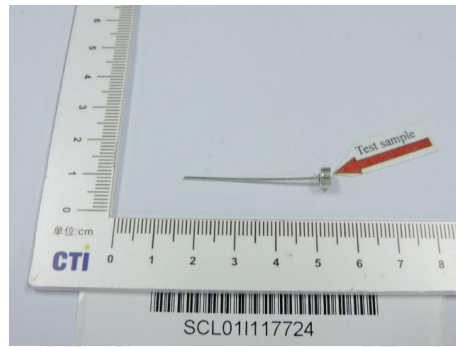
(2)



(3)



(4)



(5)



(6)



检测报告

Test Report

报告编号 SCL011117724E
Report No. SCL011117724E

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样品图片 Photo(s) of the sample(s)

(7)



(8)



*** 报告结束 ***

*** End of Report ***

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