

检测报告

Test Report

报告编号 A2170062733101ER1
Report No. A2170062733101ER1

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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 [JINGYE ELECTRONICS (HUIZHOU) CO., LTD.]
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 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 client

序号 No.	成品名称 Finished Product Name	样品名称 Sample Name(s)
001	電解電容器 ALUMINIUM ELECTROLYTIC CAPACITORS	鋁箔 ALUMINUM FOIL
002		鋁殼 ALUMINUM CASE
003		導針(鋁材) LEAD WIRE(AL WIRE)
004		導針(CP 線) LEAD WIRE(CP WIRE)
005		電解紙 PAPER
006		電解液 ELECTROLYTE
007		白色油墨 WHITE INK
008		黑色油墨 BLACK INK
009		PET 黑色套管 PET BLACK PLASTIC TUBE
010		PET 深藍色套管 PET DARK BLUE PLASTIC TUBE
011		膠蓋 RUBBER
012		電子膠帶 ELECTRONIC TAPE

样品接收日期 2017.11.29
Sample Received Date Nov. 29, 2017
样品检测日期 2017.11.29-2017.12.04
Testing Period Nov. 29, 2017 to Dec. 4, 2017

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).

检测依据和检测结果 请参见下页
Test Method & Test Result(s) Please refer to following page(s).

主 检 燕程程 审 核 方理松
Tested by Reviewed by

批准 郑晴涛 日期 2017.12.06
Approved by Date

郑晴涛
技术经理 Technical Manager

No. R177734203

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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(Pb) Lead (Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES
镉(Cd) Cadmium (Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES
汞(Hg) Mercury (Hg)	IEC 62321-4:2013 Ed.1.0	ICP-OES
六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))	IEC 62321-7-2:2017 和/或 IEC 62321-5:2013 Ed.1.0 测试总 铬含量 IEC 62321-7-2:2017 and/or determination of Total Chromium by IEC 62321-5:2013 Ed.1.0	UV-Vis/ICP-OES
	IEC 62321-7-1:2015	UV-Vis
多溴联苯(PBBs) Polybrominated Biphenyls (PBBs)	IEC 62321-6:2015 Ed.1.0	GC-MS
多溴二苯醚(PBDEs) Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015 Ed.1.0	GC-MS
邻苯二甲酸酯(DBP, BBP, DEHP, DIBP) 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 MDL	限值 Limit
	001	002		
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
	003	004		
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

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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
	005	006		
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.	8 mg/kg	1000 mg/kg

测试项目 Tested Item(s)	结果 Result		方法检出限 MDL	限值 Limit
	007	008		
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.	8 mg/kg	1000 mg/kg

测试项目 Tested Item(s)	结果 Result		方法检出限 MDL	限值 Limit
	009	010		
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.	8 mg/kg	1000 mg/kg

测试项目 Tested Item(s)	结果 Result		方法检出限 MDL	限值 Limit
	011	012		
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.	8 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
	005	006	007		
多溴联苯 Polybrominated Biphenyls(PBBs)					
一溴联苯 Monobromodiphenyl	N.D.	N.D.	N.D.	5 mg/kg	1000 mg/kg
二溴联苯 Dibromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
三溴联苯 Tribromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
四溴联苯 Tetrabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
五溴联苯 Pentabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
六溴联苯 Hexabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
七溴联苯 Heptabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
八溴联苯 Octabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
九溴联苯 Nonabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
十溴联苯 Decabromobiphenyl	N.D.	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.	N.D.	5 mg/kg	1000 mg/kg
二溴二苯醚 Dibromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
三溴二苯醚 Tribromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
四溴二苯醚 Tetrabromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
五溴二苯醚 Pentabromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
六溴二苯醚 Hexabromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
七溴二苯醚 Heptabromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
八溴二苯醚 Octabromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
九溴二苯醚 Nonabromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
十溴二苯醚 Decabromobiphenyl ether	N.D.	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
	008	009	010		
多溴联苯 Polybrominated Biphenyls(PBBs)					
一溴联苯 Monobromodiphenyl	N.D.	N.D.	N.D.	5 mg/kg	1000 mg/kg
二溴联苯 Dibromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
三溴联苯 Tribromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
四溴联苯 Tetrabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
五溴联苯 Pentabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
六溴联苯 Hexabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
七溴联苯 Heptabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
八溴联苯 Octabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
九溴联苯 Nonabromobiphenyl	N.D.	N.D.	N.D.	5 mg/kg	
十溴联苯 Decabromobiphenyl	N.D.	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.	N.D.	5 mg/kg	1000 mg/kg
二溴二苯醚 Dibromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
三溴二苯醚 Tribromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
四溴二苯醚 Tetrabromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
五溴二苯醚 Pentabromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
六溴二苯醚 Hexabromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
七溴二苯醚 Heptabromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
八溴二苯醚 Octabromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
九溴二苯醚 Nonabromobiphenyl ether	N.D.	N.D.	N.D.	5 mg/kg	
十溴二苯醚 Decabromobiphenyl ether	N.D.	N.D.	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
	011	012		
多溴联苯 Polybrominated Biphenyls(PBBs)				
一溴联苯 Monobromodiphenyl	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 Dibromobiphenyl ether	N.D.	N.D.	5 mg/kg	
三溴二苯醚 Tribromobiphenyl ether	N.D.	N.D.	5 mg/kg	
四溴二苯醚 Tetrabromobiphenyl ether	N.D.	N.D.	5 mg/kg	
五溴二苯醚 Pentabromobiphenyl ether	N.D.	N.D.	5 mg/kg	
六溴二苯醚 Hexabromobiphenyl ether	N.D.	N.D.	5 mg/kg	
七溴二苯醚 Heptabromobiphenyl ether	N.D.	N.D.	5 mg/kg	
八溴二苯醚 Octabromobiphenyl ether	N.D.	N.D.	5 mg/kg	
九溴二苯醚 Nonabromobiphenyl ether	N.D.	N.D.	5 mg/kg	
十溴二苯醚 Decabromobiphenyl 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
	005	006	007		
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.	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.	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.	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.	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
	008	009	010		
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.	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.	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.	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.	N.D.	50 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
	011	012		
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

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

- 001 银灰色金属箔 Silver-gray metal foil
- 002 银白色金属 Silver-white metal
- 003 银白色金属 Silver-white metal
- 004 带有银色镀层的金属引脚 Metal pin with silvery plating
- 005 米白色纸 Beige-white paper
- 006 透明液体 Transparent liquid
- 007 白色油墨 White ink
- 008 黑色油墨 Black ink
- 009 黑色塑料套管 Black plastic tube
- 010 深蓝色塑料套管 Dark blue plastic tube
- 011 黑色橡胶 Black rubber
- 012 透明胶带 Transparent adhesive tape

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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。

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.

注释: 本报告替换原报告 A2170062733101E, 自本报告签发之日起, 原报告 A2170062733101E 作废。

Note: **This testing report displaces the original report of No. A2170062733101E and the original one No. A2170062733101E was invalid since the date of this testing report released.**

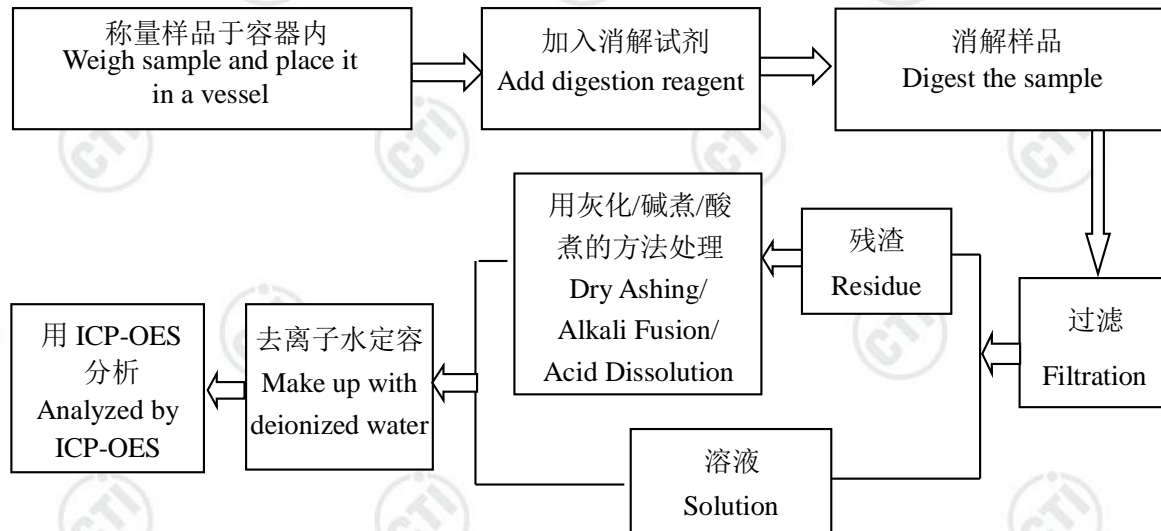
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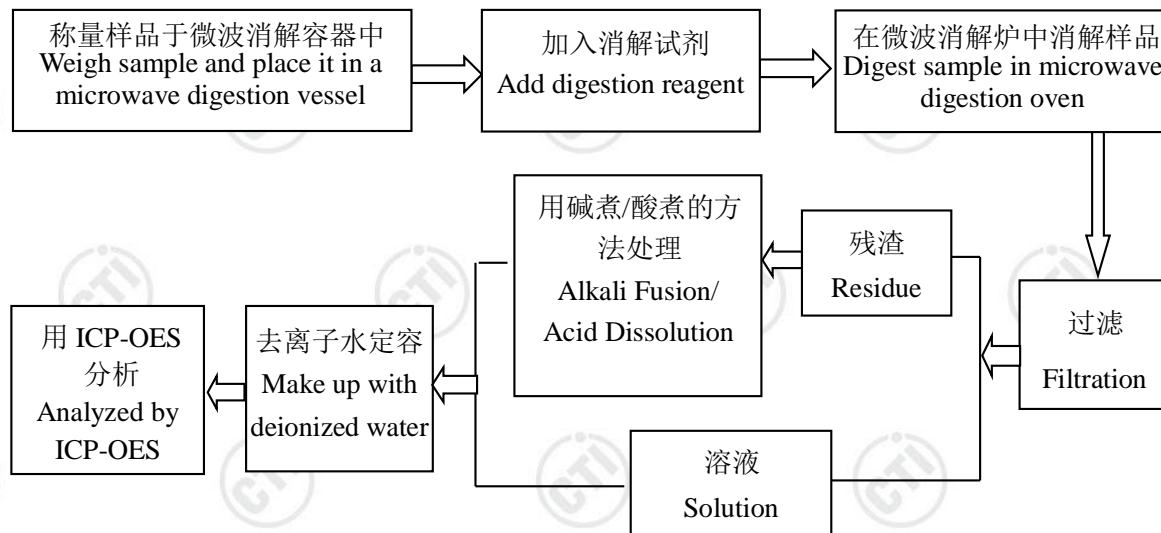
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检测流程 Test Process

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



2. 汞(Hg) Mercury (Hg)



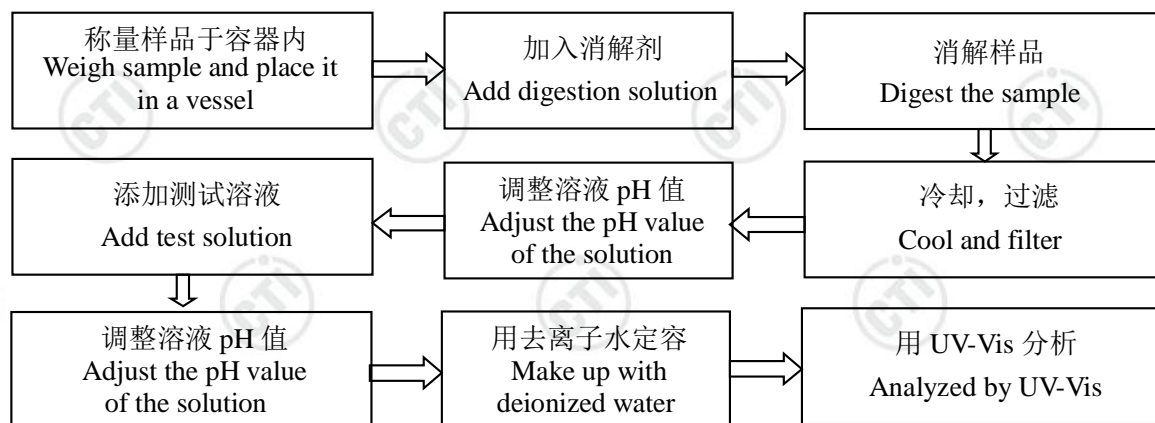
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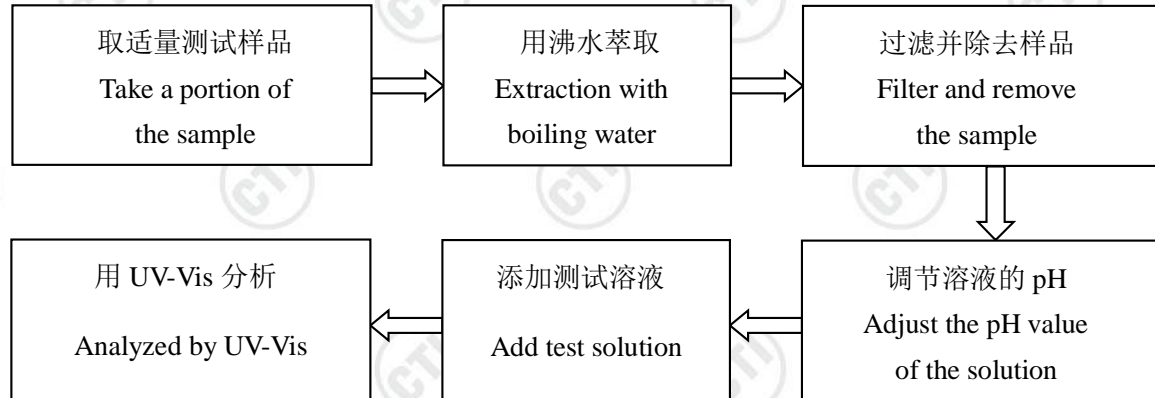
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3. 六价铬(Cr(VI)) Hexavalent Chromium (Cr(VI))

(1) IEC 62321-7-2:2017



(2) IEC 62321-7-1:2015



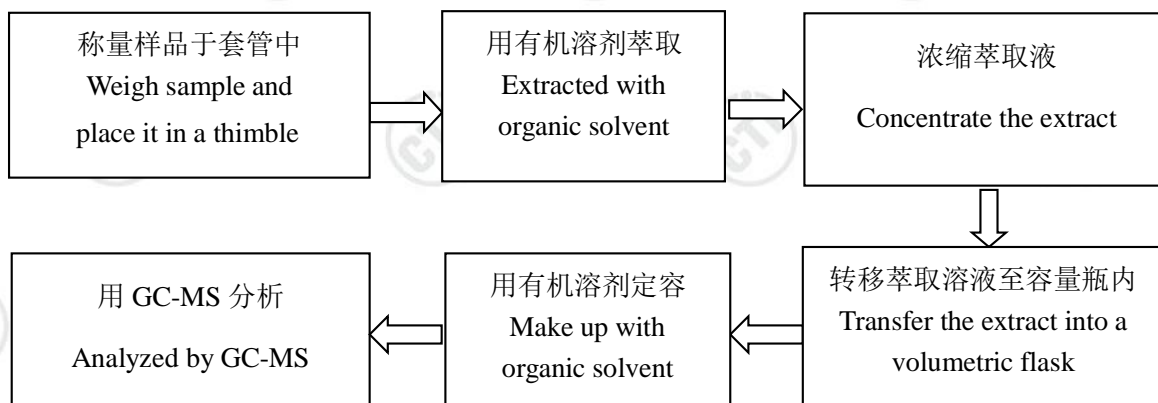
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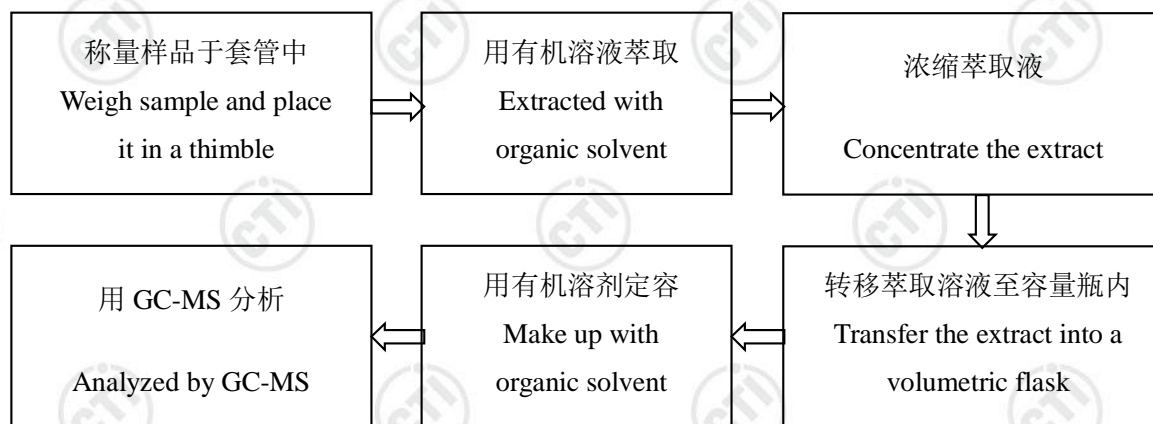
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4. 多溴联苯(PBBs), 多溴二苯醚(PBDEs)

Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs)



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



检测报告 Test Report

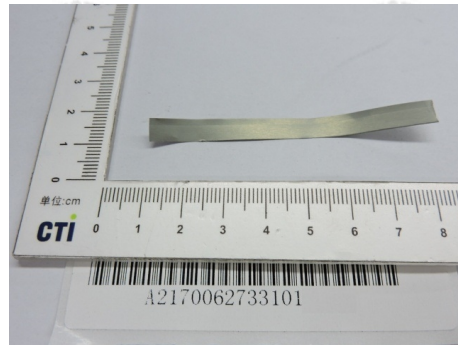
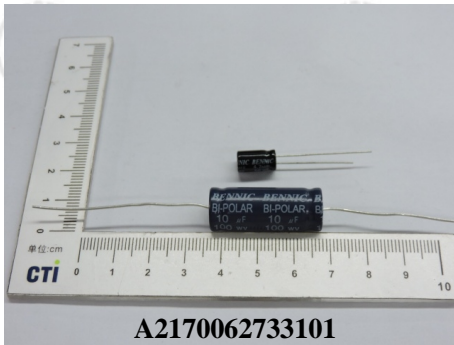
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样品图片 Photo(s) of the sample(s)

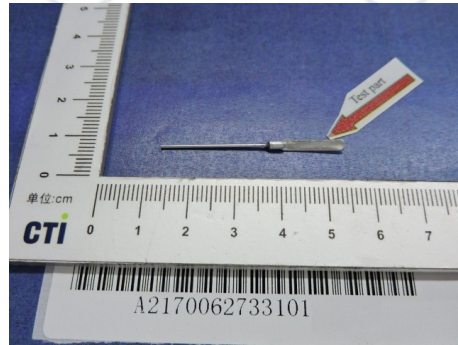
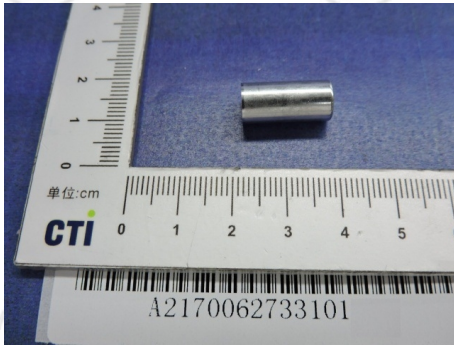
成品 Final Product

001



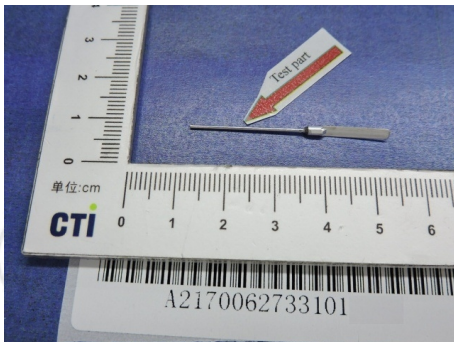
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003



004

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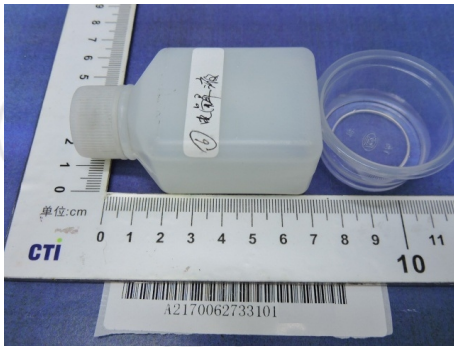


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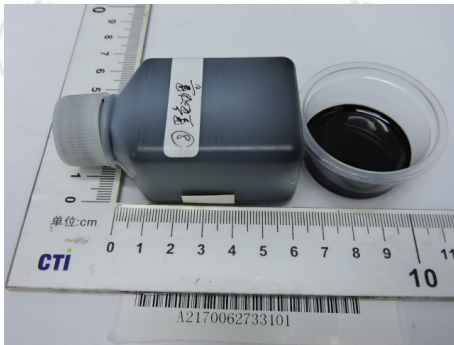
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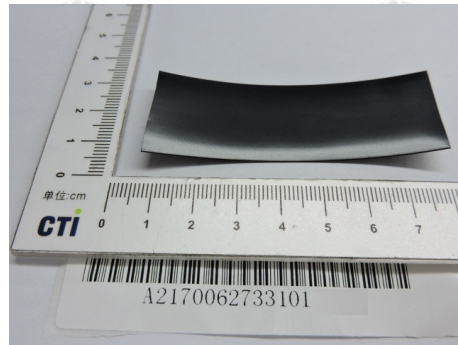
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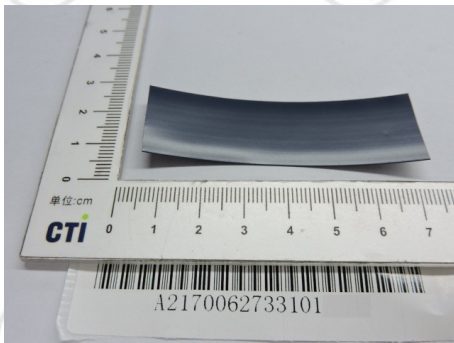
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009



010



011

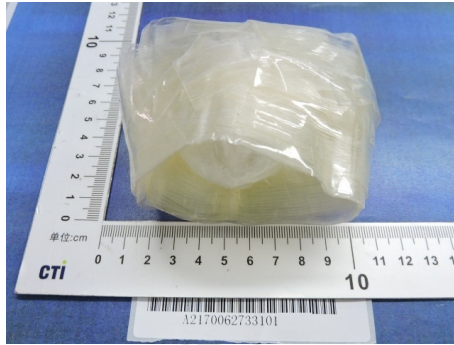


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012



*** 报告结束 ***

***End of report ***

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