



检测报告

Test Report

报告编号 A225055618810100101ER1
Report No. A225055618810100101ER1

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报告抬头公司名称 苏州固锴电子股份有限公司
Company Name SUZHOU GOOD-ARK ELECTRONICS CO.,LTD
shown on Report
地 址 苏州高新技术产业开发区通安镇华金路 200 号
Address NO.200 HUAJIN ROAD,TONGAN ECONOMIC DEVELOPMENT ZONE,SUZHOU

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 Sample Name(s) TO220AB(AMBR40250S) 产品
型号 Part No. TO220AB(AMBR40250S) 产品
样品颜色 Color 黑色本体带银色引脚 Black body with silvery pin
材料名称 Material 铜,锡,环氧 Cu,Sn,Epoxy Resin
物料编码 Material No. 11201514000785
样品接收日期 2025.08.01
Sample Received Date Aug. 1, 2025
样品检测日期 2025.08.01-2025.08.06
Testing Period Aug. 1, 2025 to Aug. 6, 2025

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), 六溴环十二烷(HBCDD)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), Hexabromocyclododecane (HBCDD) 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 宋 岩
Approved by 宋岩
技术经理 Technical Manager

日 期 2025.08.27
Date

苏州固锴电子股份有限公司
Inspection & Testing Services
Centre Testing International(Suzhou) Co.,Ltd

No. R449751292
江苏省苏州市相城区澄阳路 3286 号
No.3286 Chengyang Road, Xiangcheng District, Suzhou,Jiangsu

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

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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 Lead (Pb)	IEC 62321-5:2013	ICP-OES
	参考 IEC 62321-5:2013 Refer to IEC 62321-5:2013	
镉 Cadmium (Cd)	IEC 62321-5:2013	ICP-OES
	参考 IEC 62321-5:2013 Refer to IEC 62321-5:2013	
汞 Mercury (Hg)	IEC 62321-4:2013+AMD1:2017 CSV	ICP-OES
	参考 IEC 62321-4:2013+AMD1:2017 CSV Refer to IEC 62321-4:2013+AMD1:2017 CSV	
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 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 62321-12:2023	GC-MS
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-12:2023	GC-MS
邻苯二甲酸酯 Phthalates (DBP, BBP, DEHP, DIBP)	IEC 62321-12:2023	GC-MS
铍 Beryllium(Be)	参考 US EPA 3050B:1996 & US EPA 6010D:2018* Refer to US EPA 3050B:1996 & US EPA 6010D:2018*	ICP-OES
氟 Fluorine (F)	EN 14582:2016	IC
氯 Chlorine (Cl)	EN 14582:2016	IC
溴 Bromine (Br)	EN 14582:2016	IC
碘 Iodine (I)	EN 14582:2016	IC
六溴环十二烷 Hexabromocyclododecane (HBCDD)	IEC 62321-9:2021	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
	001	002	003		
铅 Lead (Pb)	4927 mg/kg* ¹	N.D.	N.D.	2 mg/kg	1000 mg/kg
镉 Cadmium (Cd)	N.D.	N.D.	N.D.	2 mg/kg	100 mg/kg
汞 Mercury (Hg)	N.D.	N.D.	N.D.	2 mg/kg	1000 mg/kg
六价铬 Hexavalent Chromium (Cr(VI))	N.D.	--	--	8 mg/kg	1000 mg/kg
	--	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
	001		
多溴联苯 Polybrominated Biphenyls (PBBs)			
一溴联苯 Monobromobiphenyl	N.D.	25 mg/kg	1000 mg/kg
二溴联苯 Dibromobiphenyl	N.D.	25 mg/kg	
三溴联苯 Tribromobiphenyl	N.D.	25 mg/kg	
四溴联苯 Tetrabromobiphenyl	N.D.	25 mg/kg	
五溴联苯 Pentabromobiphenyl	N.D.	25 mg/kg	
六溴联苯 Hexabromobiphenyl	N.D.	25 mg/kg	
七溴联苯 Heptabromobiphenyl	N.D.	25 mg/kg	
八溴联苯 Octabromobiphenyl	N.D.	25 mg/kg	
九溴联苯 Nonabromobiphenyl	N.D.	25 mg/kg	
十溴联苯 Decabromobiphenyl	N.D.	25 mg/kg	

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL	限值 Limit
	001		
多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)			
一溴二苯醚 Monobromodiphenyl ether	N.D.	25 mg/kg	1000 mg/kg
二溴二苯醚 Dibromodiphenyl ether	N.D.	25 mg/kg	
三溴二苯醚 Tribromodiphenyl ether	N.D.	25 mg/kg	
四溴二苯醚 Tetrabromodiphenyl ether	N.D.	25 mg/kg	
五溴二苯醚 Pentabromodiphenyl ether	N.D.	25 mg/kg	
六溴二苯醚 Hexabromodiphenyl ether	N.D.	25 mg/kg	
七溴二苯醚 Heptabromodiphenyl ether	N.D.	25 mg/kg	
八溴二苯醚 Octabromodiphenyl ether	N.D.	25 mg/kg	
九溴二苯醚 Nonabromodiphenyl ether	N.D.	25 mg/kg	
十溴二苯醚 Decabromodiphenyl ether	N.D.	25 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
	001		
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
	003	
铍 Beryllium (Be)	N.D.	10 mg/kg

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL
	001	
氟 Fluorine (F)	N.D.	10 mg/kg
氯 Chlorine (Cl)	N.D.	10 mg/kg
溴 Bromine (Br)	N.D.	10 mg/kg
碘 Iodine (I)	N.D.	10 mg/kg

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL
	001	
六溴环十二烷 Hexabromocyclododecane (HBCDD)	N.D.	20 mg/kg

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样品/部位描述 Sample/Part Description

序号 No.	CTI 样品 ID CTI Sample ID	描述 Description
1	001	黑色本体 (整体测试) Black body (Tested as a whole)
2	002	银白色镀层 Silvery white plating
3	003	金属基材 Metal base

备注: 对于检测铅, 镉, 汞, 铍之样品已消解完全。

-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。

-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 $\mu\text{g}/\text{cm}^2$

-▼六价铬浓度小于 0.10 $\mu\text{g}/\text{cm}^2$, 样品未检出六价铬。由于未获知样品的存储条件和生产日期, 样品的六价铬测试结果仅能代表测试时样品含六价铬的状态。

-*1=根据客户声明, 样品中的铅来自于高温融化焊料。高温熔融焊料中的铅 (即: 铅基合金中铅含量 $\geq 85\%$ (Wt)), 根据欧盟指令 2011/65/EU 附录 III 豁免项第 7(a)条, 是符合豁免的。

-本报告的测试结果(除铍)引自于报告 A2250556188101001E。

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

-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.

-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 $\mu\text{g}/\text{cm}^2$

-▼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. 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.

-*1= According to the client's statement, lead mainly comes from the high melting temperature type solders. Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead) is exempted from the restriction, with reference to EU Directive 2011/65/EU annex III Exemption Applications 7(a).

-The test result(s) (except for Beryllium) is(are) presented in reference to the result(s) that reported in A2250556188101001E.

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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。

“*” 表示该方法不在 CNAS 认可范围内。

本报告于原报告(报告编号 A225055618810100101E)基础上增加了“附录”。本报告替换原报告 A225055618810100101E, 自本报告签发之日起, 原报告 A225055618810100101E 作废。

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

“*” indicates the method(s) is (are) not in CNAS accreditation scope.

This testing report added “Appendix” based on the original report of No.A225055618810100101E. This testing report displaces the original one which was invalid since the date of this testing report released.

检测报告

Test Report

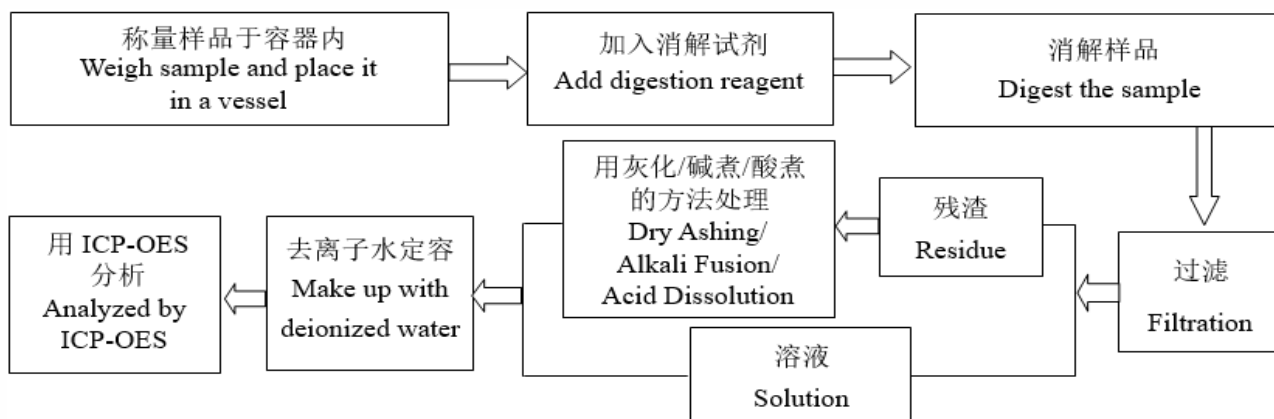
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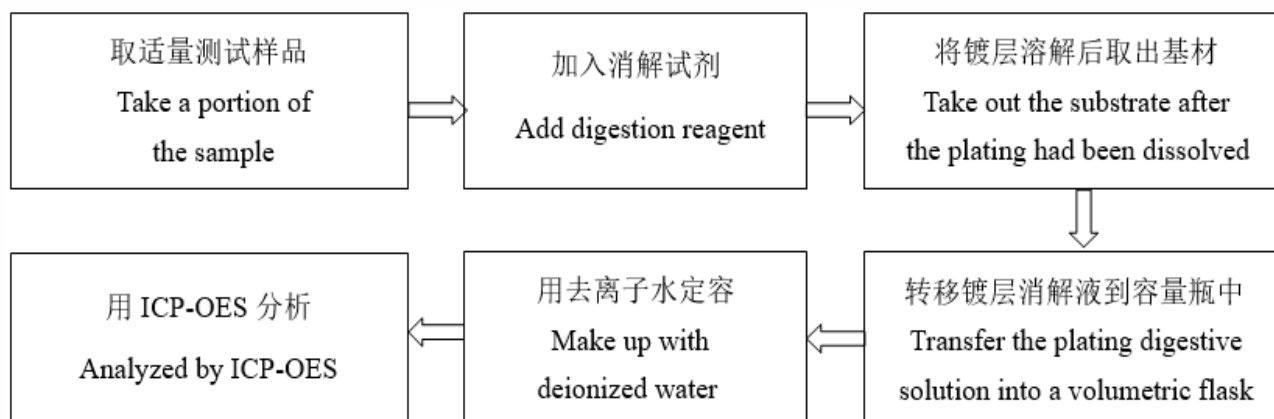
检测流程 Test Process

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

(1) IEC 62321-5:2013



(2) 参考 IEC 62321-5:2013 Refer to IEC 62321-5:2013



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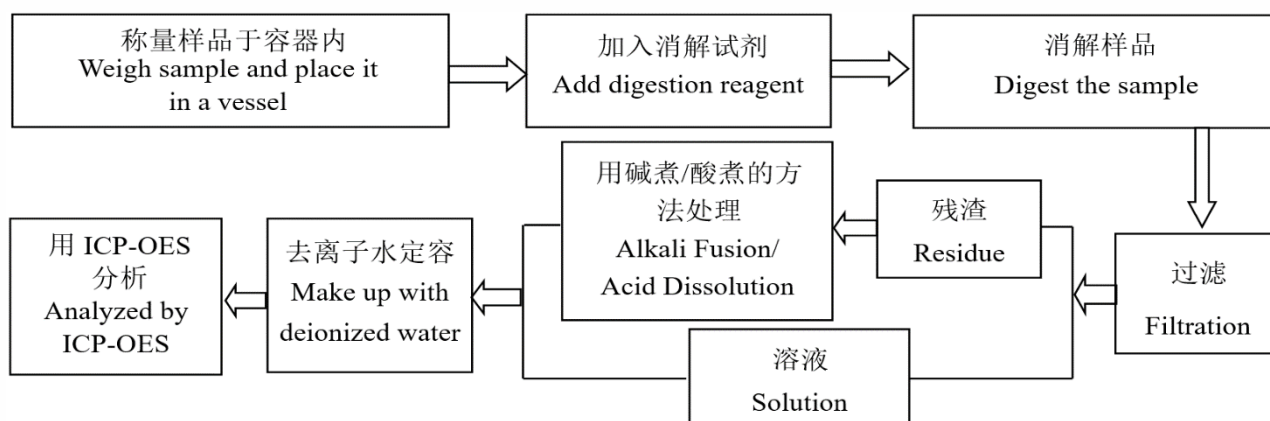
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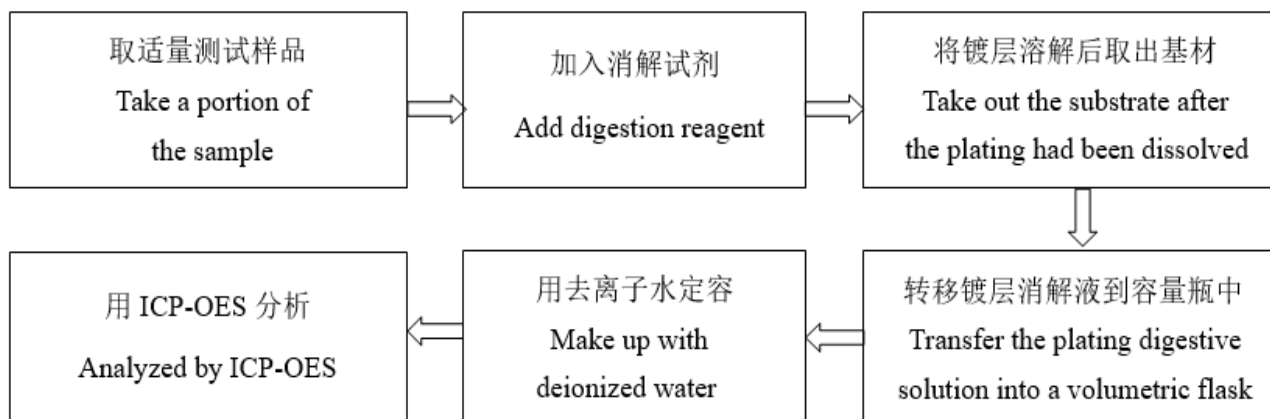
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2. 汞 Mercury (Hg)

(1) IEC 62321-4:2013+AMD1:2017 CSV

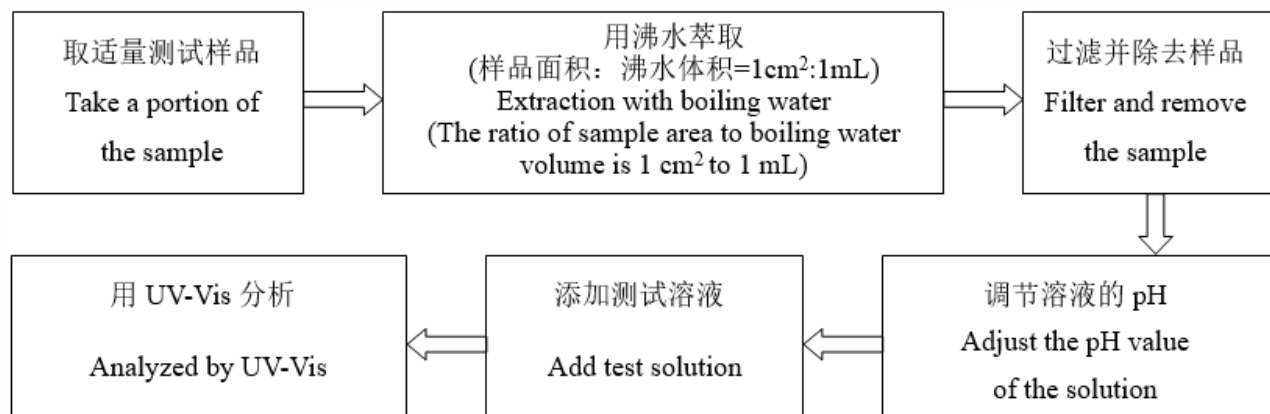


(2) 参考 IEC 62321-4:2013+AMD1:2017 CSV Refer to IEC 62321-4:2013+AMD1:2017 CSV



3. 六价铬 Hexavalent Chromium (Cr(VI))

(1) IEC 62321-7-1:2015

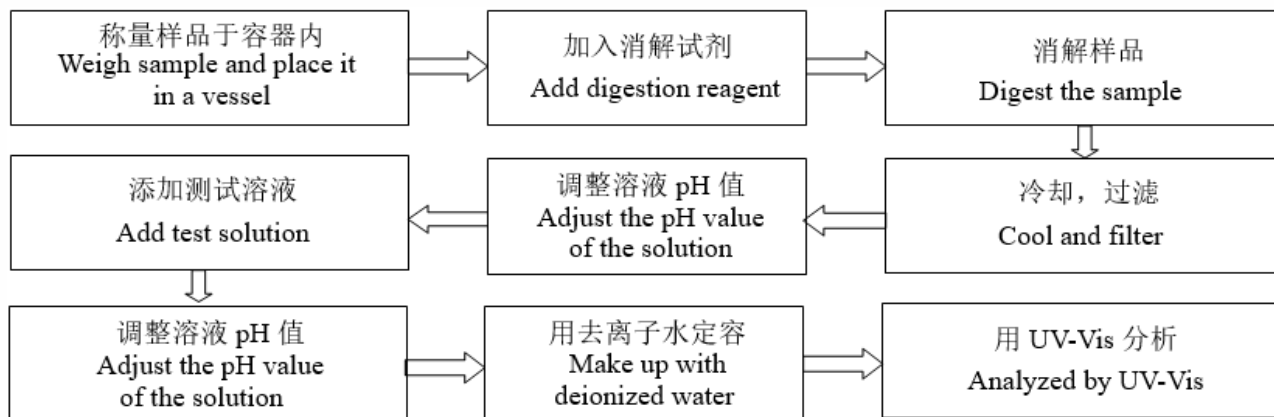


检测报告 Test Report

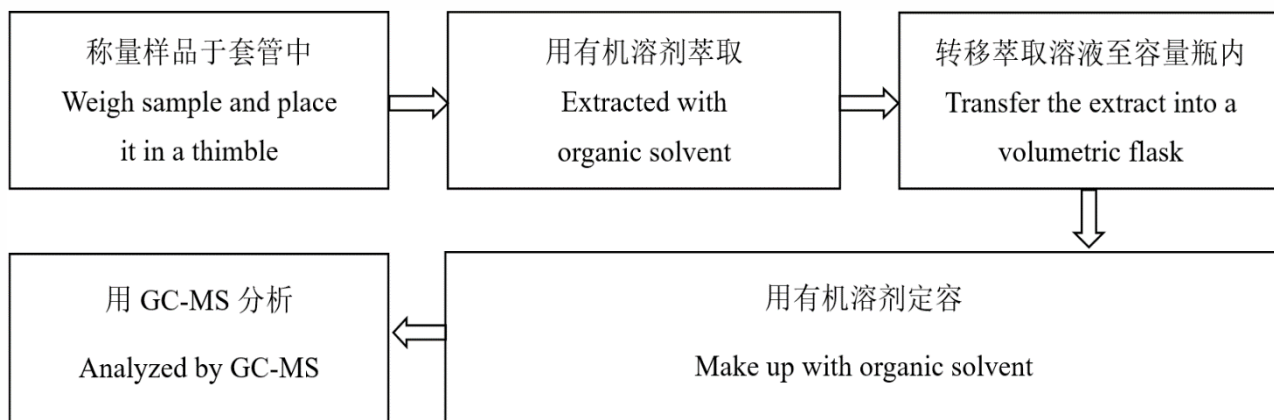
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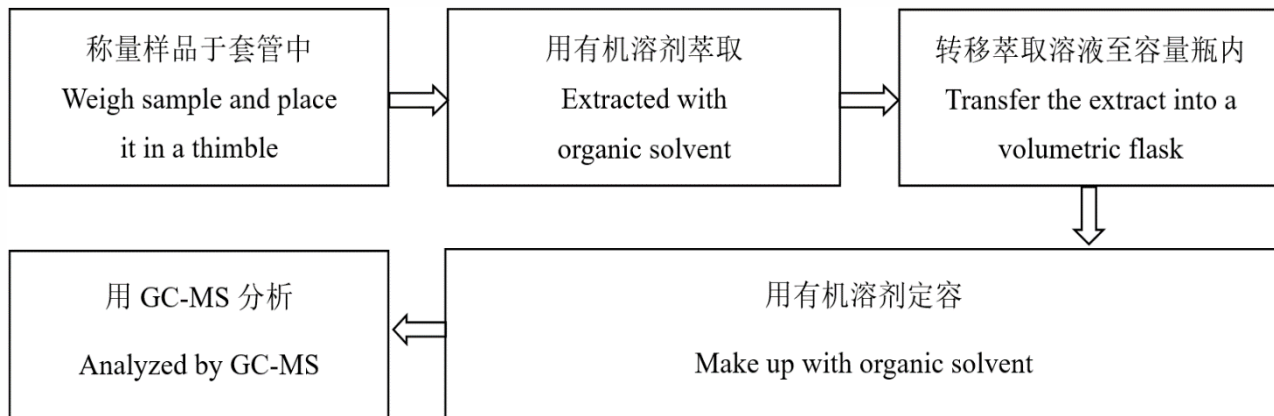
(2) IEC 62321-7-2:2017



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)



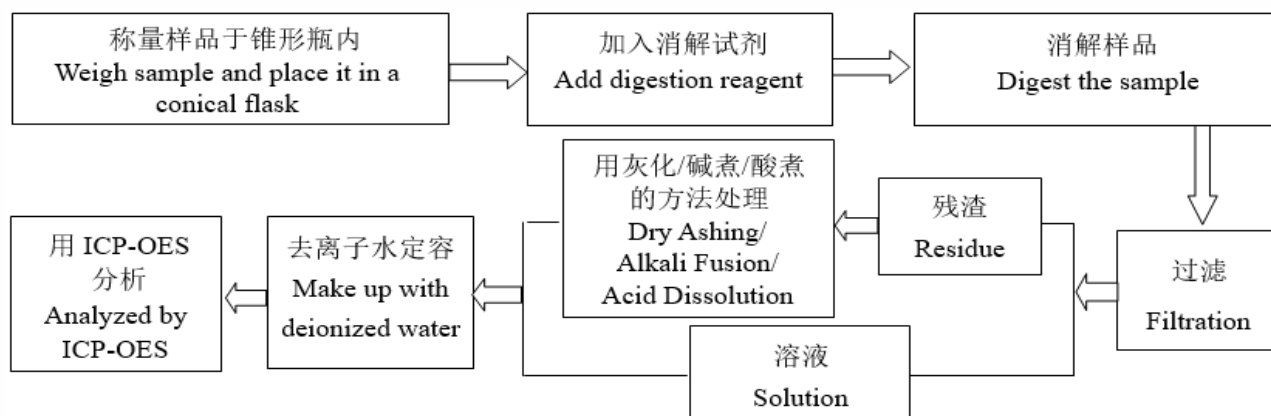
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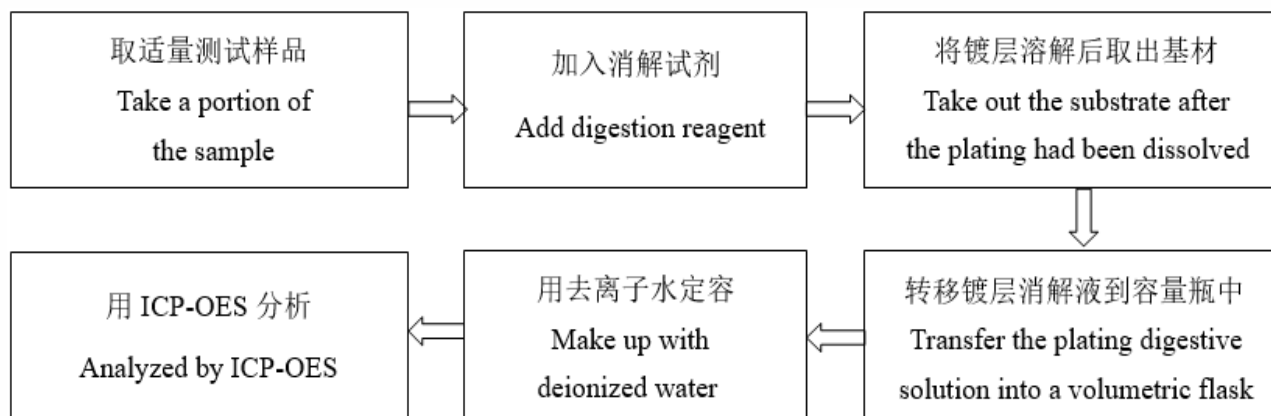
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6. 铍 Beryllium(Be)

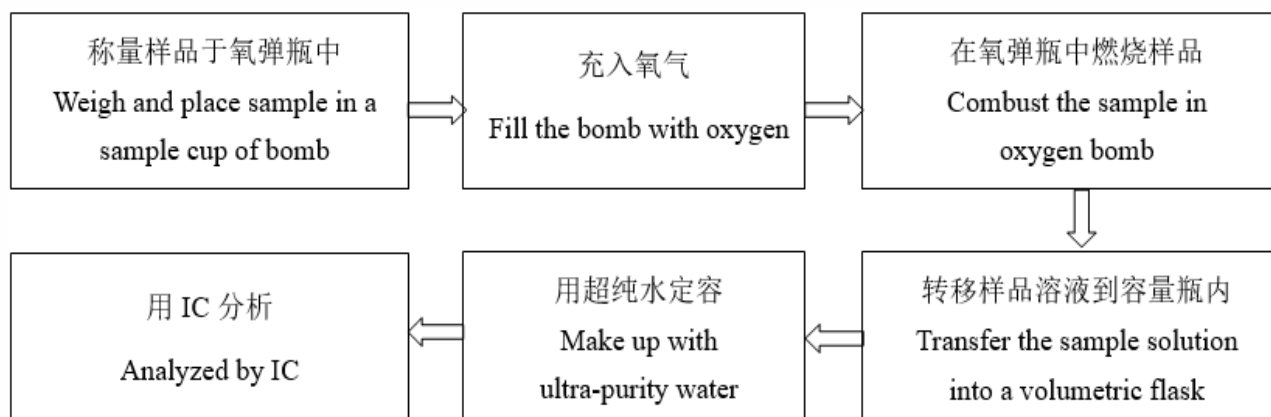
(1) 参考 US EPA 3050B:1996 & US EPA 6010D:2018 Refer to US EPA 3050B:1996 & US EPA 6010D:2018



(2) 参考 US EPA 3050B:1996 & US EPA 6010D:2018 Refer to US EPA 3050B:1996 & US EPA 6010D:2018



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

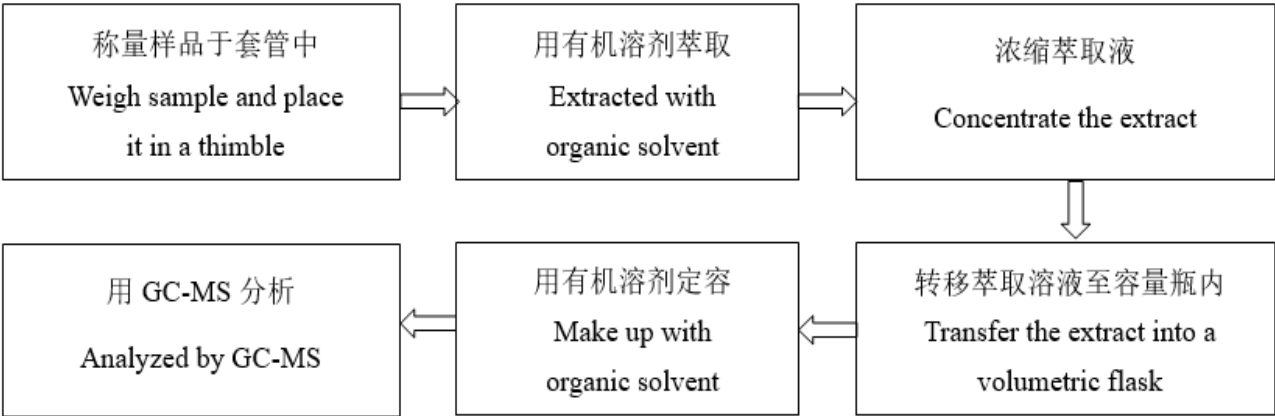


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8. 六溴环十二烷 Hexabromocyclododecane (HBCDD)



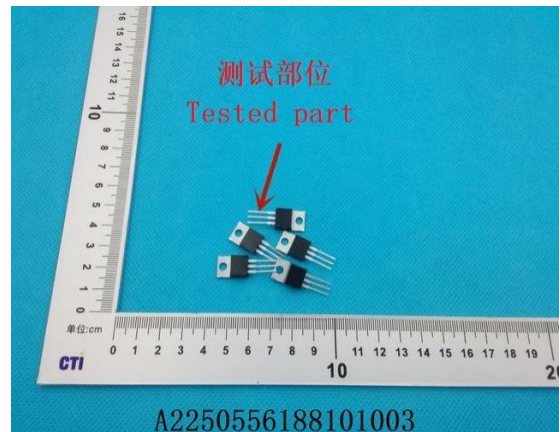
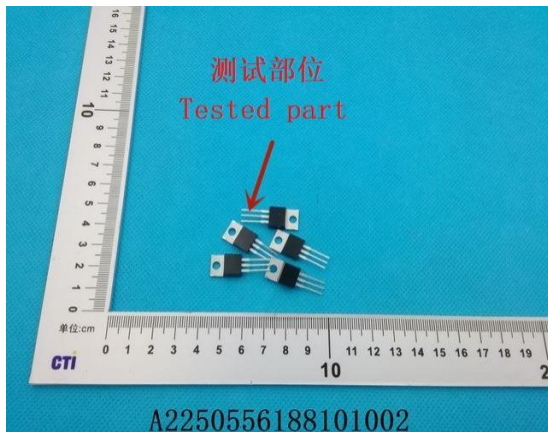
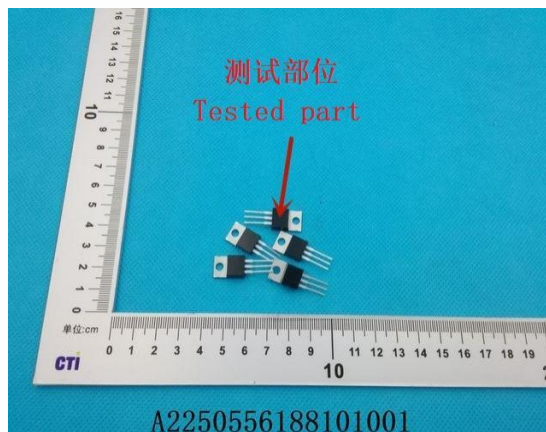
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样品图片

Photo(s) of the sample(s)



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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;
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 ***

附录 Appendix

客户参考信息 Client Reference Information

TO220AB(AMBR40250S) 产品覆盖 PPAK Package(TO263,TO220,ITO220,TO252,TO262, TO247,PQFN,PDFN)

TO220AB(AMBR40250S) product cover PPAK Package(TO263,TO220,ITO220,TO252,TO262, TO247,PQFN,PDFN)

声明 Statement:

1. 附录内容由申请者提供，申请者应对其真实性负责，CTI 未核实其真实性。

The Appendix Information was/were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.

2. 附录内容为 A225055618810100101ER1 报告的补充。

The Appendix Information is/are the supplement(s) for the Report A225055618810100101ER1.