



检测报告 Test Report

报告编号 A219018284310100702E
Report No. A219018284310100702E

第 1 页 共 13 页
Page 1 of 13

申请单位 东莞市兆科电子材料科技有限公司
Applicant DONGGUAN ZHITEK ELECTRONIC MATERIALS & TECHNOLOGY LTD.
地址 东莞市横沥镇西城工业二区 B8 栋
Address BUILDING B8,INDUSTRY DISTRICT II,XICHENG,HENGLI TOWN,DONGGUAN CITY,GUANGDONG 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

样品名称 Sample Name 导热材料 Thermal Material
样品型号 Part No. TIF200
样品颜色 Color 灰色 Grey
样品接收日期 2019.07.23
Sample Received Date Jul. 23, 2019
样品检测日期 2019.07.23-2019.07.31
Testing Period Jul. 23, 2019 to Jul. 31, 2019

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), 锑(Sb), 氟(F), 氯(Cl), 溴(Br), 碘(I), 硫(S), 全氟辛烷磺酸(PFOS), 全氟辛酸(PFOA), 邻苯二甲酸酯, 聚氯乙烯(PVC), 红磷进行测试。

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), Antimony(Sb), Fluorine (F), Chlorine (Cl), Bromine (Br), Iodine (I), Sulfur(S), Perfluorooctane Sulfonates (PFOS), Perfluorooctanoic Acid (PFOA), Phthalates, Polyvinyl Chloride (PVC), Red phosphorus 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).

主 检
Tested by

许小转

审 核
Reviewed by

文利

批 准
Approved by

郑晴涛

日 期
Date

2019.07.31

郑晴涛

技术经理 Technical Manager

No. R158921375

广东省深圳市宝安区新安街道兴东社区华测检测大楼

华测检测认证集团股份有限公司

Centre Testing International Group Co., Ltd.

CTI Building, Xing Dong Community, Xin'an Sub-district, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

检测报告

Test Report

报告编号 A219018284310100702E
Report No. A219018284310100702E

第 2 页 共 13 页
Page 2 of 13

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
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 62321-7-2:2017 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 62321-6:2015	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
锑 Antimony(Sb)	参考 US EPA 3052:1996 & US EPA 6010D:2014 Refer to US EPA 3052:1996 & US EPA 6010D:2014	ICP-OES
氟 Fluorine (F)	参考 EN 14582:2016 Refer to EN 14582:2016	IC
氯 Chlorine (Cl)	参考 EN 14582:2016 Refer to EN 14582:2016	IC
溴 Bromine (Br)	参考 EN 14582:2016 Refer to EN 14582:2016	IC
碘 Iodine (I)	参考 EN 14582:2016 Refer to EN 14582:2016	IC
硫 Sulfur(S)	参考 EN 14582:2016 Refer to EN 14582:2016	IC
全氟辛烷磺酸 Perfluorooctane Sulfonates (PFOS)	参考 US EPA 3550C:2007 & US EPA 8321B:2007 Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
全氟辛酸 Perfluorooctanoic Acid (PFOA)	参考 US EPA 3550C:2007 & US EPA 8321B:2007 Refer to US EPA 3550C:2007 & US EPA 8321B:2007	LC-MS-MS
邻苯二甲酸酯 Phthalates	参考 EN 14372:2004(E) Refer to EN 14372:2004(E)	GC-MS
聚氯乙烯 Polyvinyl Chloride (PVC)	参考 JY/T 001-1996 Refer to JY/T 001-1996	FT-IR
红磷 Red phosphorus	参考 GB/T 9722-2006 Refer to GB/T 9722-2006	PY-GC-MS

检测报告

Test Report

报告编号 A219018284310100702E
 Report No. A219018284310100702E

第 3 页 共 13 页
 Page 3 of 13

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 [▲]
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

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL	限值 Limit [▲]
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 [▲]
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	

检测报告

Test Report

报告编号 A219018284310100702E
Report No. A219018284310100702E

第 4 页 共 13 页
Page 4 of 13

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL	限值 Limit [▲]
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
锑 Antimony (Sb)	N.D.	5 mg/kg

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL
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
硫 Sulfur (S)	N.D.	50 mg/kg

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL
全氟辛烷磺酸 Perfluorooctane Sulfonates (PFOS)	N.D.	0.01 mg/kg

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL
全氟辛酸 Perfluorooctanoic Acid (PFOA)	N.D.	0.01 mg/kg

检测报告

Test Report

 报告编号 A219018284310100702E
 Report No. A219018284310100702E

 第 5 页 共 13 页
 Page 5 of 13

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL
邻苯二甲酸酯 Phthalates		
邻苯二甲酸二正辛酯 Di-n-octyl phthalate (DNOP) CAS#:117-84-0	N.D.	30 mg/kg
邻苯二甲酸二异壬酯 Di-isononyl phthalate (DINP) CAS#:28553-12-0,68515-48-0	N.D.	50 mg/kg
邻苯二甲酸二异癸酯 Di-iso-decyl phthalate (DIDP) CAS#:26761-40-0,68515-49-1	N.D.	50 mg/kg
邻苯二甲酸二甲酯 Dimethyl phthalate (DMP) CAS#:131-11-3	N.D.	30 mg/kg
邻苯二甲酸二乙酯 Diethyl phthalate (DEP) CAS#:84-66-2	N.D.	30 mg/kg
邻苯二甲酸二丙酯 Dipropyl phthalate (DPrP) CAS#:131-16-8	N.D.	30 mg/kg
邻苯二甲酸二戊酯 Dipentyl phthalate (DPP) CAS#:131-18-0	N.D.	30 mg/kg
邻苯二甲酸二庚酯 Diheptyl phthalate (DHP) CAS#:3648-21-3	N.D.	30 mg/kg
邻苯二甲酸二环己酯 Dicyclohexyl phthalate (DCHP) CAS#:84-61-7	N.D.	30 mg/kg
邻苯二甲酸二异辛酯 Diisooctyl phthalate (DIOP) CAS#:27554-26-3	N.D.	50 mg/kg
邻苯二甲酸二壬酯 Dinonyl phthalate (DNP) CAS#:84-76-4	N.D.	30 mg/kg
己二酸二异壬酯 Diisononyl adipate (DINA) CAS#:33703-08-1	N.D.	50 mg/kg

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL
聚氯乙烯 Polyvinyl Chloride (PVC)	阴性 Negative	/

测试项目 Tested Item(s)	结果 Result	方法检出限 MDL
红磷 Red phosphorus	阴性 Negative*/#	500 mg/kg

检测报告

Test Report

报告编号 A219018284310100702E
Report No. A219018284310100702E

第 6 页 共 13 页
Page 6 of 13

样品/部位描述 灰色固体
Sample/Part Description Gray solid

备注: 对于检测铅, 镉, 汞, 锑之样品已完全溶解。

-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%

-#阴性 = 不含有

-采用 PY-GC-MS 方法以测定样品裂解过程中裂解产物 P₄ 的定性红磷, 在磷酸盐和磷酸酯与部分强氧化或还原剂共存时, 可能会因裂解过程发生反应产生 P₄, 出现假阳性风险。

-*结果仅供参考。

-阴性表示不含有聚氯乙烯(PVC)

-▲= 此限值引自欧盟 RoHS 指令 2011/65/EU 及其修订指令(EU) 2015/863

-根据客户声明, 本报告中的样品和报告 A2190182843101007E 中的样品为同材质, 本报告中样品的结果引自报告 A2190182843101007E 中样品的结果。

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

-MDL = Method Detection Limit

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

-mg/kg = ppm = parts per million

-1000 mg/kg = 0.1%

-#Negative = Not Contained

-The red phosphorus is qualified by PY-GC-MS method which detect pyrolysis products P₄ of red phosphorus. But there is a false positive risk by performing this method, since P₄ could also generate while the phosphate and organic phosphate coexist with some strong oxidizing or reductant agent in pyrolysis process.

-*Result for reference only.

-Negative = Not Contained Polyvinyl Chloride(PVC)

-▲= The limit is quoted from RoHS Directive 2011/65/EU with amendment (EU) 2015/863

-According to the client's statement, the material of sample is the same as the sample in Report No. A2190182843101007E, so the test result(s) is presented in reference to that one.

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.

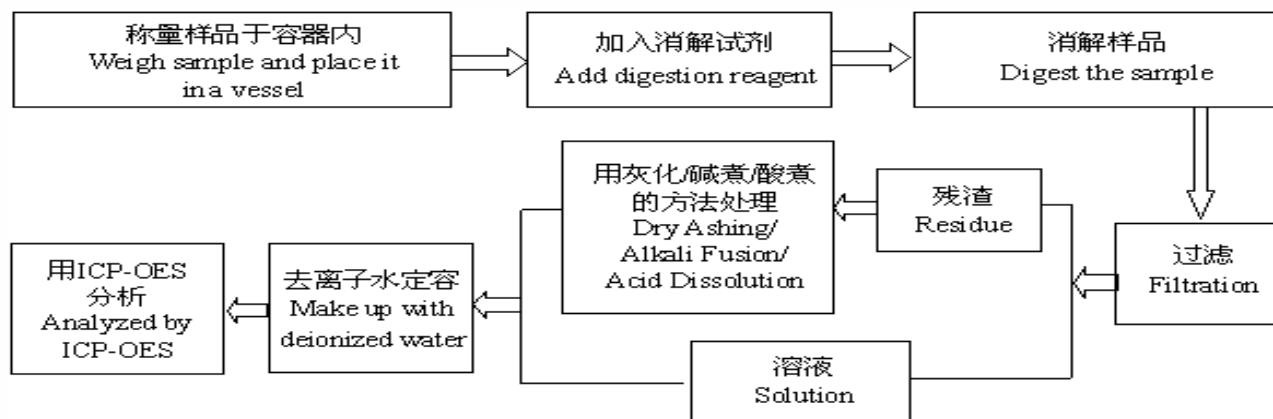
检测报告 Test Report

报告编号 A219018284310100702E
Report No. A219018284310100702E

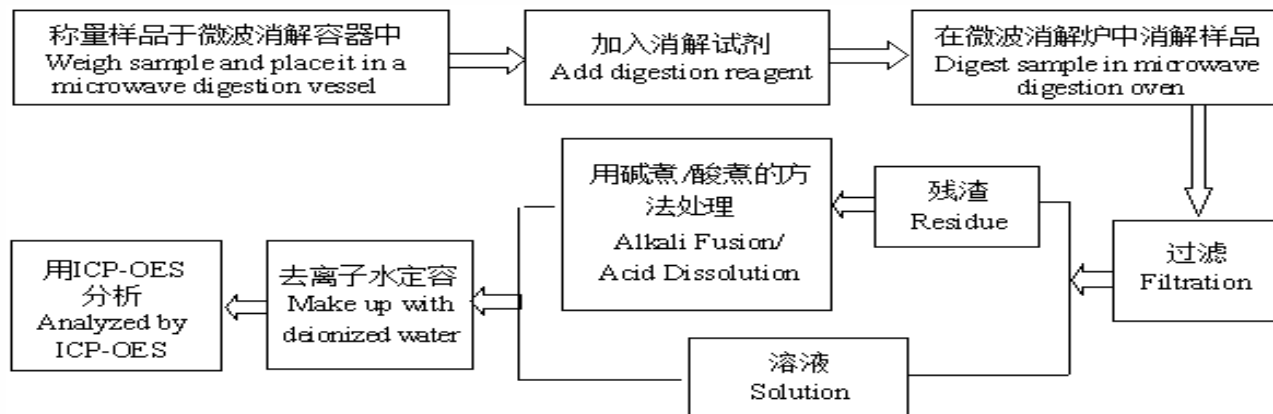
第 7 页 共 13 页
Page 7 of 13

检测流程 Test Process

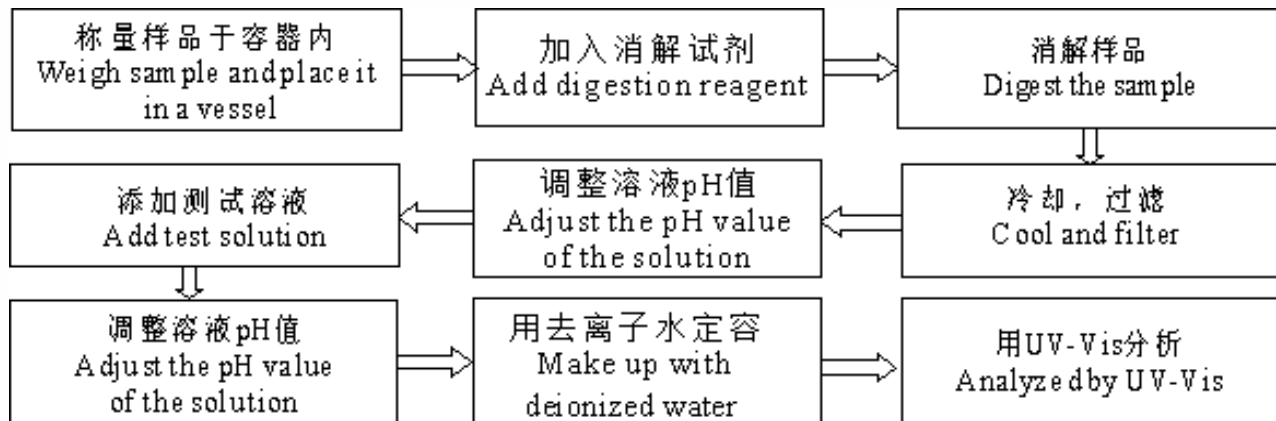
1. 铅 Lead(Pb), 镉 Cadmium(Cd), 铬 Chromium(Cr)



2. 汞 Mercury(Hg)



3. 六价铬 Hexavalent Chromium(Cr(VI))

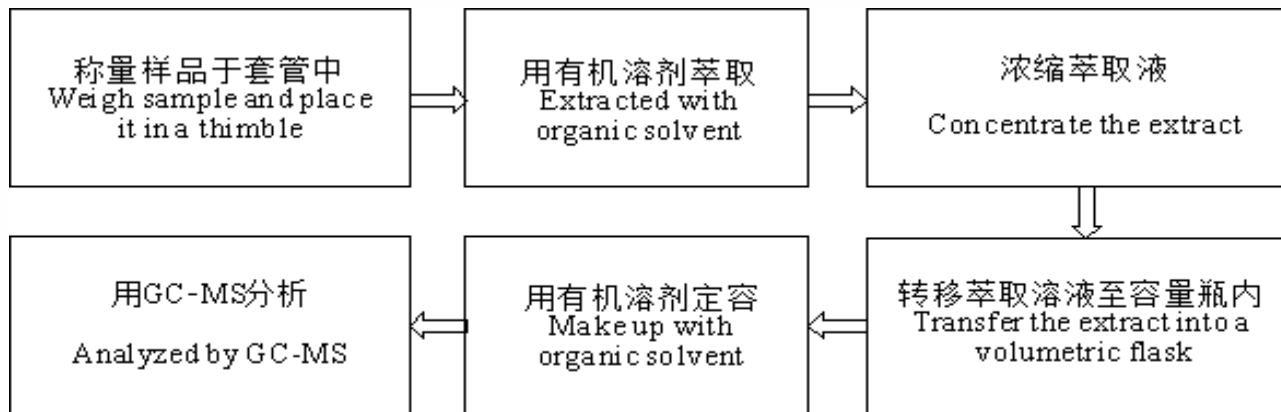


检测报告 Test Report

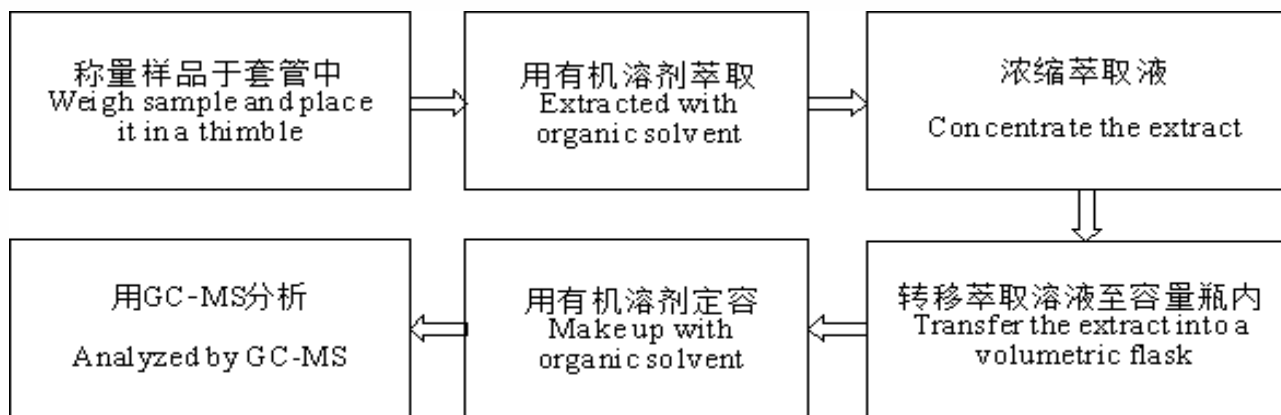
报告编号 A219018284310100702E
Report No. A219018284310100702E

第 8 页 共 13 页
Page 8 of 13

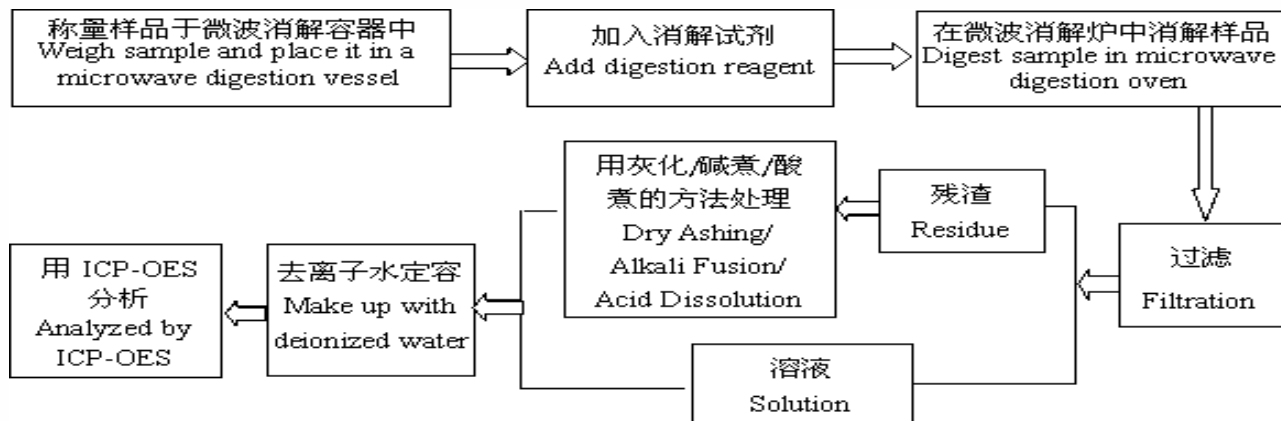
4. 多溴联苯 Polybrominated Biphenyls(PBBs), 多溴二苯醚 Polybrominated Diphenyl Ethers (PBDEs)



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



6. 锑 Antimony(Sb)

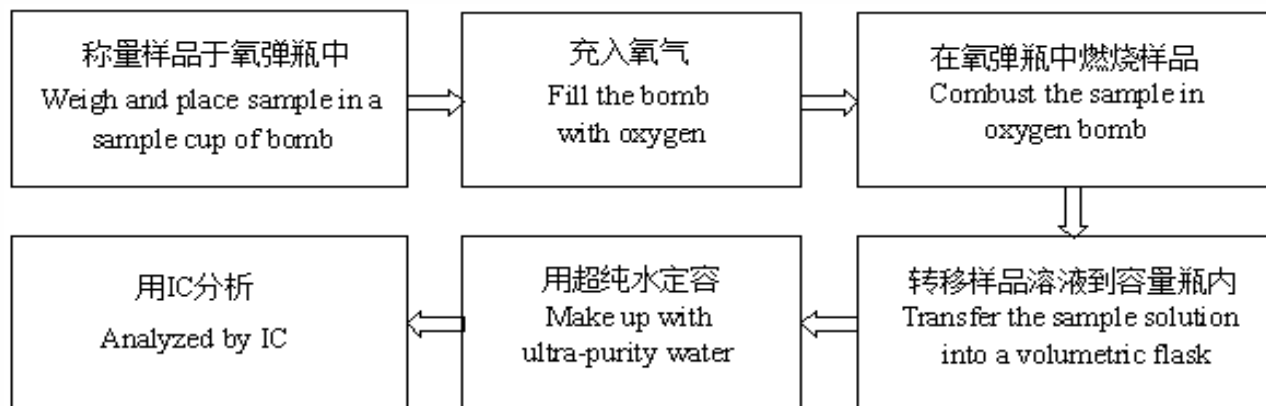


检测报告 Test Report

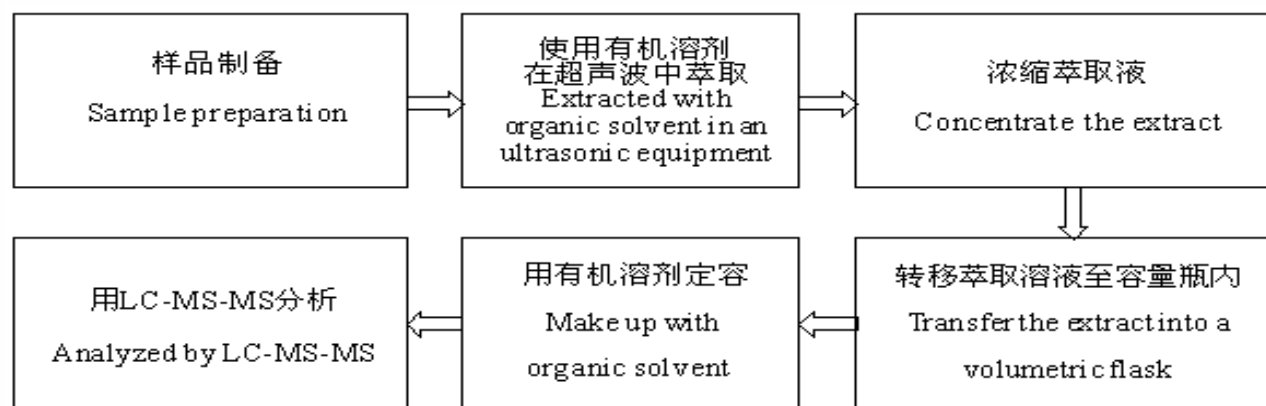
报告编号 A219018284310100702E
Report No. A219018284310100702E

第 9 页 共 13 页
Page 9 of 13

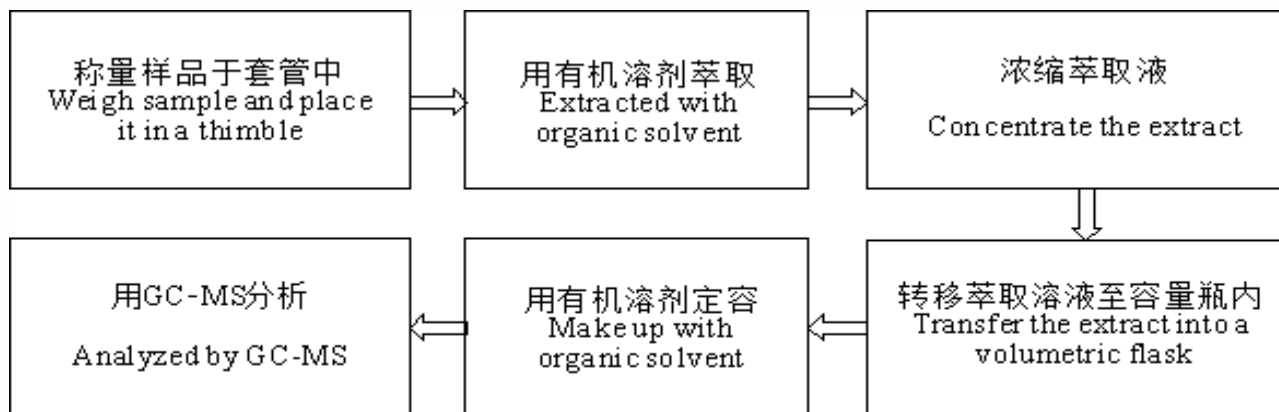
7. 氟 Fluorine (F), 氯 Chlorine (Cl), 溴 Bromine (Br), 碘 Iodine (I), 硫 Sulfur(S)



8. 全氟辛烷磺酸 Perfluorooctane Sulfonates (PFOS), 全氟辛烷酸 Perfluorooctanoic Acid (PFOA)



9. 邻苯二甲酸酯 Phthalates

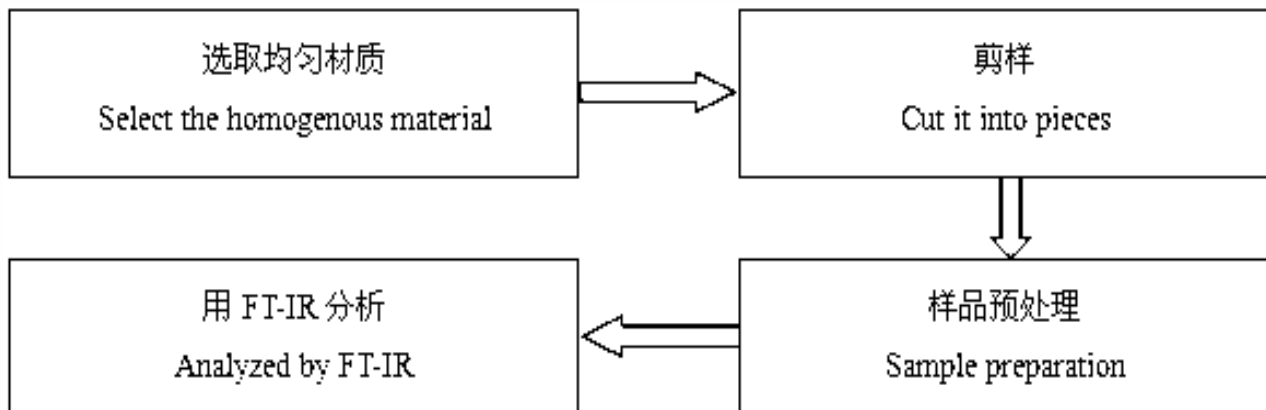


检测报告 Test Report

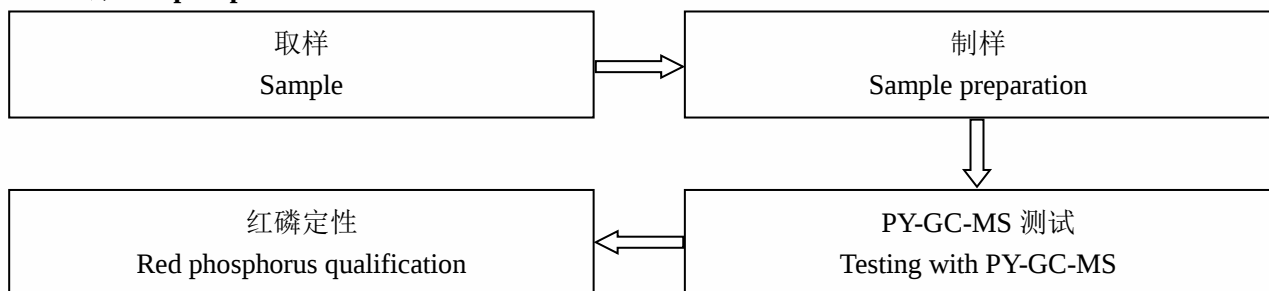
报告编号 A219018284310100702E
Report No. A219018284310100702E

第 10 页 共 13 页
Page 10 of 13

10. 聚氯乙烯 Polyvinyl Chloride (PVC)



11. 红磷 Red phosphorus



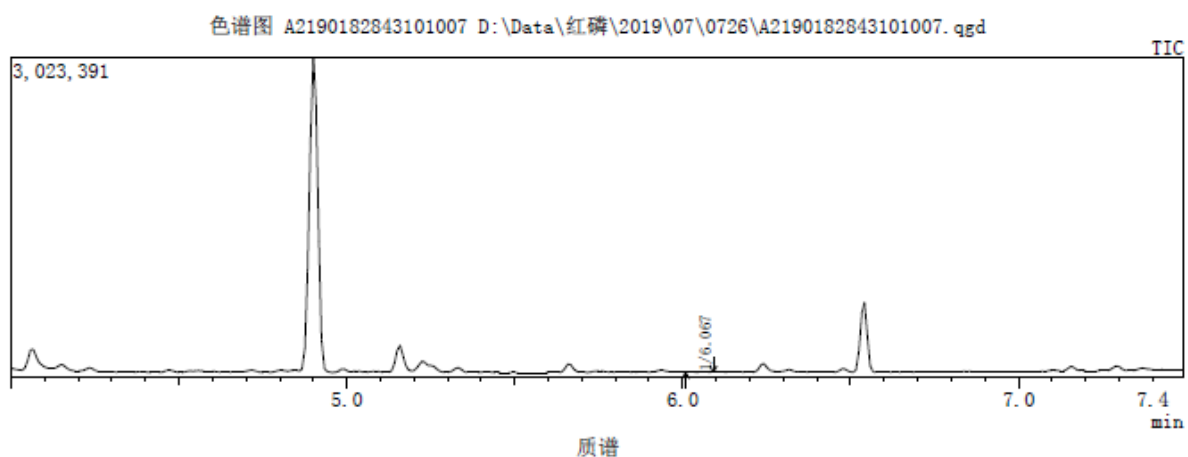
检测报告 Test Report

报告编号 A219018284310100702E
Report No. A219018284310100702E

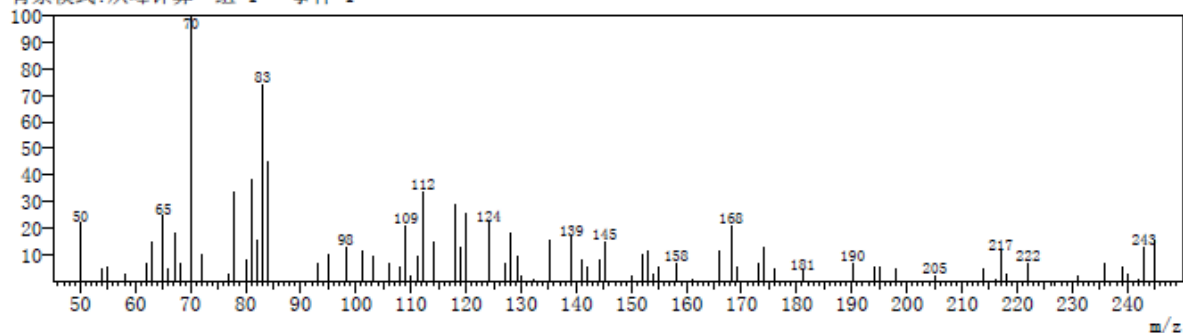
第 11 页 共 13 页
Page 11 of 13

样品测试谱图 Sample Test Spectra

红磷测试谱图 Red phosphorus Test Spectra



ID#:1 保留时间:6.125(扫描数:256)
质量峰:77
原始模式:平均 6.117-6.133(255-257)
背景模式:从峰计算 组 1 - 事件 1

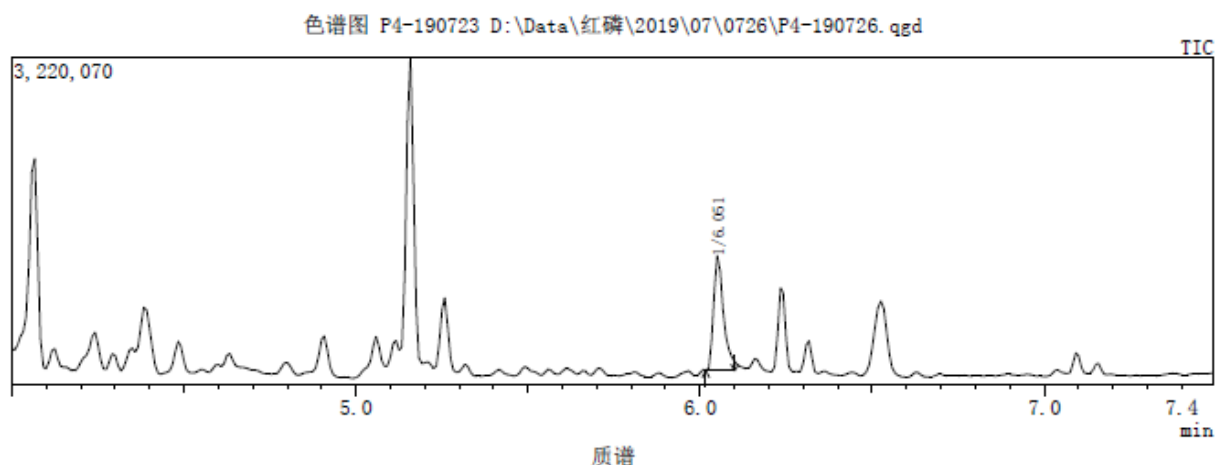


检测报告 Test Report

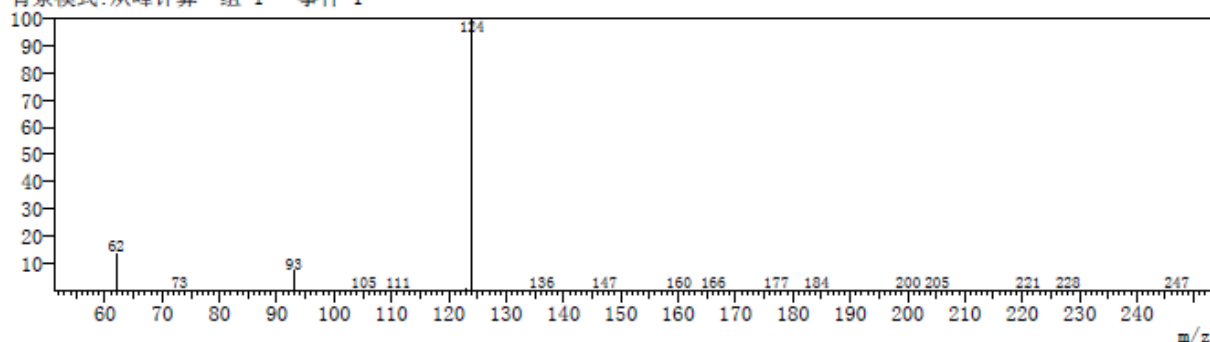
报告编号 A219018284310100702E
Report No. A219018284310100702E

第 12 页 共 13 页
Page 12 of 13

标准物质谱图 Standard Material Test Spectra



ID#:1 保留时间:6.050 (扫描数:247)
质量峰:83
原始模式:平均 6.042-6.058 (246-248)
背景模式:从峰计算 组 1 - 事件 1



检测报告 Test Report

报告编号 A219018284310100702E
Report No. A219018284310100702E

第 13 页 共 13 页
Page 13 of 13

样品图片

Photo(s) of the sample(s)



*** 报告结束 ***

*** End of Report ***

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. 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 sample(s) and sample information was/were provided by the client 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. 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;
5. 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.