

检测报告

编号: SHAEC24000195808

日期: 2024 年 01 月 19 日

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客户名称: 扬州扬杰电子科技股份有限公司
客户地址: 扬州市维扬经济开发区创业园中路 26 号

样品名称: 框架桥
客户参考信息: 1.锡球; 3.无卤塑封料 1; 4.玻钝芯片; 5.肖特基芯片; 8.无卤塑封料 3; 9.无卤塑封料 4; 10.框架/跳线/引线; 11.铝片; 26.锡膏/焊片/焊锡丝; 38.无卤塑封料 8; 39.无卤塑封料 9

以上样品及信息由客户提供。

SGS 工作编号: SHP24-000085
样品接收时间: 2024 年 01 月 03 日
检测周期: 2024 年 01 月 03 日 ~ 2024 年 01 月 15 日
检测要求: 根据客户要求检测。
检测方法: 见后续页。
检测结果: 见后续页。

检测要求	结论
欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863-铅、汞、镉、六价铬、多溴联苯 (PBB)、多溴二苯醚 (PBDE)、邻苯二甲酸二(2-乙基己基)酯 (DEHP)、邻苯二甲酸丁苄酯 (BBP)、邻苯二甲酸二丁酯 (DBP)和邻苯二甲酸二异丁酯 (DIBP)	符合
欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863- 铅、汞、镉、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)、邻苯二甲酸二丁酯 (DBP)、邻苯二甲酸丁苄酯(BBP)、邻苯二甲酸二(2-乙基己基)酯(DEHP)和邻苯二甲酸二异丁酯(DIBP)	符合
欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863-铅、汞、镉、六价铬、多溴联苯 (PBB)、多溴二苯醚 (PBDE)、邻苯二甲酸二(2-乙基己基)酯 (DEHP)、邻苯二甲酸丁苄酯 (BBP)、邻苯二甲酸二丁酯 (DBP)和邻苯二甲酸二异丁酯 (DIBP)	符合

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刘盈妹

Annie Liu 刘盈妹
批准签署人

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日期: 2024年01月19日

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检测结果:

检测部件外观描述:

样品序号	样品编号	SGS 样品 ID	样品描述
SN1	A1	SHA24-0001958-0001.C001	银色金属
SN2	A3	SHA24-0001958-0001.C003	灰色固体
SN3	A4	SHA24-0001958-0001.C004	灰色/黑色固体片
SN4	A5	SHA24-0001958-0001.C005	彩色固体片
SN5	A8	SHA24-0001958-0001.C008	灰色固体
SN6	A9	SHA24-0001958-0001.C009	灰色固体
SN7	A10	SHA24-0001958-0001.C010	铜色金属
SN8	A11	SHA24-0001958-0001.C011	银色/白色金属
SN9	A26	SHA24-0001958-0001.C026	银色金属丝
SN10	A38	SHA24-0001958-0001.C038	灰色固体
SN11	A39	SHA24-0001958-0001.C039	灰色固体

备注:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL= 方法检测限
- (3) ND = 未检出 (< MDL)
- (4) "-" = 未规定

欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863-铅、汞、镉、六价铬、多溴联苯 (PBB)、多溴二苯醚 (PBDE)、邻苯二甲酸二(2-乙基己基)酯 (DEHP)、邻苯二甲酸丁苄酯 (BBP)、邻苯二甲酸二丁酯 (DBP)和邻苯二甲酸二异丁酯 (DIBP)

检测方法: 参考 IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015 和 IEC 62321-8:2017, 采用 ICP-OES/AAS, UV-Vis 和 GC-MS 进行分析。

检测项目	限值	单位	MDL	A3	A4	A5
铅 (Pb)	1000	mg/kg	2	ND	32265 [▲]	ND
汞 (Hg)	1000	mg/kg	2	ND	ND	ND
镉 (Cd)	100	mg/kg	2	ND	ND	ND
六价铬 (Cr(VI))	1000	mg/kg	8	ND	ND	ND
多溴联苯之和 (PBB)	1000	mg/kg	-	ND	ND	ND
一溴联苯 (MonoBB)	-	mg/kg	5	ND	ND	ND
二溴联苯 (DiBB)	-	mg/kg	5	ND	ND	ND



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检测项目	限值	单位	MDL	A3	A4	A5
三溴联苯 (TriBB)	-	mg/kg	5	ND	ND	ND
四溴联苯 (TetraBB)	-	mg/kg	5	ND	ND	ND
五溴联苯 (PentaBB)	-	mg/kg	5	ND	ND	ND
六溴联苯 (HexaBB)	-	mg/kg	5	ND	ND	ND
七溴联苯 (HeptaBB)	-	mg/kg	5	ND	ND	ND
八溴联苯 (OctaBB)	-	mg/kg	5	ND	ND	ND
九溴联苯 (NonaBB)	-	mg/kg	5	ND	ND	ND
十溴联苯 (DecaBB)	-	mg/kg	5	ND	ND	ND
多溴二苯醚之和 (PBDE)	1000	mg/kg	-	ND	ND	ND
一溴二苯醚 (MonoBDE)	-	mg/kg	5	ND	ND	ND
二溴二苯醚 (DiBDE)	-	mg/kg	5	ND	ND	ND
三溴二苯醚 (TriBDE)	-	mg/kg	5	ND	ND	ND
四溴二苯醚 (TetraBDE)	-	mg/kg	5	ND	ND	ND
五溴二苯醚 (PentaBDE)	-	mg/kg	5	ND	ND	ND
六溴二苯醚 (HexaBDE)	-	mg/kg	5	ND	ND	ND
七溴二苯醚 (HeptaBDE)	-	mg/kg	5	ND	ND	ND
八溴二苯醚 (OctaBDE)	-	mg/kg	5	ND	ND	ND
九溴二苯醚 (NonaBDE)	-	mg/kg	5	ND	ND	ND
十溴二苯醚 (DecaBDE)	-	mg/kg	5	ND	ND	ND
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	1000	mg/kg	50	ND	ND	ND
邻苯二甲酸丁苄酯 (BBP)	1000	mg/kg	50	ND	ND	ND
邻苯二甲酸二丁酯 (DBP)	1000	mg/kg	50	ND	ND	ND
邻苯二甲酸二异丁酯 (DIBP)	1000	mg/kg	50	ND	ND	ND

检测项目	限值	单位	MDL	A8	A9	A38
铅 (Pb)	1000	mg/kg	2	ND	ND	ND
汞 (Hg)	1000	mg/kg	2	ND	ND	ND
镉 (Cd)	100	mg/kg	2	ND	ND	ND
六价铬 (Cr(VI))	1000	mg/kg	8	ND	ND	ND
多溴联苯之和 (PBB)	1000	mg/kg	-	ND	ND	ND
一溴联苯 (MonoBB)	-	mg/kg	5	ND	ND	ND
二溴联苯 (DiBB)	-	mg/kg	5	ND	ND	ND
三溴联苯 (TriBB)	-	mg/kg	5	ND	ND	ND
四溴联苯 (TetraBB)	-	mg/kg	5	ND	ND	ND
五溴联苯 (PentaBB)	-	mg/kg	5	ND	ND	ND
六溴联苯 (HexaBB)	-	mg/kg	5	ND	ND	ND
七溴联苯 (HeptaBB)	-	mg/kg	5	ND	ND	ND
八溴联苯 (OctaBB)	-	mg/kg	5	ND	ND	ND
九溴联苯 (NonaBB)	-	mg/kg	5	ND	ND	ND
十溴联苯 (DecaBB)	-	mg/kg	5	ND	ND	ND
多溴二苯醚之和 (PBDE)	1000	mg/kg	-	ND	ND	ND
一溴二苯醚 (MonoBDE)	-	mg/kg	5	ND	ND	ND
二溴二苯醚 (DiBDE)	-	mg/kg	5	ND	ND	ND



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检测项目	限值	单位	MDL	A8	A9	A38
三溴二苯醚 (TriBDE)	-	mg/kg	5	ND	ND	ND
四溴二苯醚 (TetraBDE)	-	mg/kg	5	ND	ND	ND
五溴二苯醚 (PentaBDE)	-	mg/kg	5	ND	ND	ND
六溴二苯醚 (HexaBDE)	-	mg/kg	5	ND	ND	ND
七溴二苯醚 (HeptaBDE)	-	mg/kg	5	ND	ND	ND
八溴二苯醚 (OctaBDE)	-	mg/kg	5	ND	ND	ND
九溴二苯醚 (NonaBDE)	-	mg/kg	5	ND	ND	ND
十溴二苯醚 (DecaBDE)	-	mg/kg	5	ND	ND	ND
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	1000	mg/kg	50	ND	ND	ND
邻苯二甲酸丁苄酯 (BBP)	1000	mg/kg	50	ND	ND	ND
邻苯二甲酸二丁酯 (DBP)	1000	mg/kg	50	ND	ND	ND
邻苯二甲酸二异丁酯 (DIBP)	1000	mg/kg	50	ND	ND	ND

检测项目	限值	单位	MDL	A39
铅 (Pb)	1000	mg/kg	2	ND
汞 (Hg)	1000	mg/kg	2	ND
镉 (Cd)	100	mg/kg	2	ND
六价铬 (Cr(VI))	1000	mg/kg	8	ND
多溴联苯之和 (PBB)	1000	mg/kg	-	ND
一溴联苯 (MonoBB)	-	mg/kg	5	ND
二溴联苯 (DiBB)	-	mg/kg	5	ND
三溴联苯 (TriBB)	-	mg/kg	5	ND
四溴联苯 (TetraBB)	-	mg/kg	5	ND
五溴联苯 (PentaBB)	-	mg/kg	5	ND
六溴联苯 (HexaBB)	-	mg/kg	5	ND
七溴联苯 (HeptaBB)	-	mg/kg	5	ND
八溴联苯 (OctaBB)	-	mg/kg	5	ND
九溴联苯 (NonaBB)	-	mg/kg	5	ND
十溴联苯 (DecaBB)	-	mg/kg	5	ND
多溴二苯醚之和 (PBDE)	1000	mg/kg	-	ND
一溴二苯醚 (MonoBDE)	-	mg/kg	5	ND
二溴二苯醚 (DiBDE)	-	mg/kg	5	ND
三溴二苯醚 (TriBDE)	-	mg/kg	5	ND
四溴二苯醚 (TetraBDE)	-	mg/kg	5	ND
五溴二苯醚 (PentaBDE)	-	mg/kg	5	ND
六溴二苯醚 (HexaBDE)	-	mg/kg	5	ND
七溴二苯醚 (HeptaBDE)	-	mg/kg	5	ND
八溴二苯醚 (OctaBDE)	-	mg/kg	5	ND
九溴二苯醚 (NonaBDE)	-	mg/kg	5	ND
十溴二苯醚 (DecaBDE)	-	mg/kg	5	ND
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	1000	mg/kg	50	ND
邻苯二甲酸丁苄酯 (BBP)	1000	mg/kg	50	ND
邻苯二甲酸二丁酯 (DBP)	1000	mg/kg	50	ND



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检测项目	限值	单位	MDL	A39
邻苯二甲酸二异丁酯 (DIBP)	1000	mg/kg	50	ND

备注:

- (1) 最大允许限值引用自 RoHS 指令(EU) 2015/863。
- (2) IEC 62321 系列等同于 EN 62321 系列。
- (3) 2021年7月22号开始, DEHP, BBP, DBP 和 DIBP 的限制适用于医疗器械, 包括体外医疗器械, 监控仪表, 包括工业监测和控制仪器。
- (4)▲根据客户提供的声明, 编号 A4 中的铅(Pb)被欧盟 RoHS 指令 2011/65/EU 豁免, 相应豁免条文(请以英文原文为准) |ANNEX III 7(c)-I|: 电子电气元件中玻璃或陶瓷材料(电容中陶瓷介质除外)所含的铅, 如压电设备、玻璃或陶瓷复合元件。
更多豁免相关信息, 可以从以下链接获取:
<https://rohs.sgsonline.com.cn/PDFLinks/zh-cn/RSTS-TP-037%20RoHS%20Exemption%20%28CN%29.pdf>

欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863- 铅、汞、镉、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)、邻苯二甲酸二丁酯 (DBP)、邻苯二甲酸丁苄酯(BBP)、邻苯二甲酸二(2-乙基己基)酯 (DEHP)和邻苯二甲酸二异丁酯(DIBP)

检测方法: 参考滴定法, IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, IEC 62321-6:2015 和 IEC 62321-8:2017, 采用 ICP-OES, UV-Vis 和 GC-MS 进行分析。

检测项目	限值	单位	MDL	A26
镉 (Cd)	100	mg/kg	2	ND
铅(Pb)	0.1	%	-	92.1▲
汞 (Hg)	1000	mg/kg	2	ND
六价铬 (Cr(VI))▼	-	µg/cm ²	0.10	ND
多溴联苯之和 (PBB)	1000	mg/kg	-	ND
一溴联苯 (MonoBB)	-	mg/kg	5	ND
二溴联苯 (DiBB)	-	mg/kg	5	ND
三溴联苯 (TriBB)	-	mg/kg	5	ND
四溴联苯 (TetraBB)	-	mg/kg	5	ND
五溴联苯 (PentaBB)	-	mg/kg	5	ND
六溴联苯 (HexaBB)	-	mg/kg	5	ND
七溴联苯 (HeptaBB)	-	mg/kg	5	ND
八溴联苯 (OctaBB)	-	mg/kg	5	ND
九溴联苯 (NonaBB)	-	mg/kg	5	ND
十溴联苯 (DecaBB)	-	mg/kg	5	ND
多溴二苯醚之和 (PBDE)	1000	mg/kg	-	ND
一溴二苯醚 (MonoBDE)	-	mg/kg	5	ND
二溴二苯醚 (DiBDE)	-	mg/kg	5	ND
三溴二苯醚 (TriBDE)	-	mg/kg	5	ND
四溴二苯醚 (TetraBDE)	-	mg/kg	5	ND
五溴二苯醚 (PentaBDE)	-	mg/kg	5	ND
六溴二苯醚 (HexaBDE)	-	mg/kg	5	ND
七溴二苯醚 (HeptaBDE)	-	mg/kg	5	ND
八溴二苯醚 (OctaBDE)	-	mg/kg	5	ND



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检测项目	限值	单位	MDL	A26
九溴二苯醚 (NonaBDE)	-	mg/kg	5	ND
十溴二苯醚 (DecaBDE)	-	mg/kg	5	ND
邻苯二甲酸二丁酯 (DBP)	1000	mg/kg	50	ND
邻苯二甲酸丁苄酯 (BBP)	1000	mg/kg	50	ND
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	1000	mg/kg	50	ND
邻苯二甲酸二异丁酯 (DIBP)	1000	mg/kg	50	ND

备注:

(1) 最大允许极限值引用自RoHS指令(EU) 2015/863。

(2) IEC 62321系列等同于 EN 62321系列

(3) ▼ = a. 当六价铬的浓度高于0.13 µg/cm²时, 样品为阳性, 即含有六价铬;

b. 当六价铬的浓度为ND(低于0.10 µg/cm²)时, 样品为阴性, 即未检测到六价铬;

c. 当六价铬的浓度介于0.10 µg/cm²与0.13 µg/cm²之间时, 无法直接判定是否检测到六价铬, 因不同个体的样品表面差异可能会影响测定结果;

由于未获知样品的存储条件和生产日期, 样品的六价铬检测结果仅能代表检测时样品含六价铬的状态。

(4)▲根据客户提供的声明, 编号A26中的铅(Pb)被欧盟RoHS指令2011/65/EU豁免, 相应豁免条文(请以英文原文为准) |ANNEX III 7(a) |: 高熔点型焊料中的铅(即铅含量等于或大于85%的铅基合金焊料)。

更多豁免相关信息, 可以从以下链接获取:

<https://rohs.sgsonline.com.cn/PDFLinks/zh-cn/RSTS-TP-037%20RoHS%20Exemption%20%28CN%29.pdf>

欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863-铅、汞、镉、六价铬、多溴联苯 (PBB)、多溴二苯醚 (PBDE)、邻苯二甲酸二(2-乙基己基)酯 (DEHP)、邻苯二甲酸丁苄酯 (BBP)、邻苯二甲酸二丁酯 (DBP)和邻苯二甲酸二异丁酯 (DIBP)

检测方法: 参考 IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, IEC 62321-6:2015 和 IEC 62321-8:2017, 采用 ICP-OES/AAS, UV-Vis 和 GC-MS 进行分析。

检测项目	限值	单位	MDL	A1	A10	A11
铅 (Pb)	1000	mg/kg	2	31	7	14
汞 (Hg)	1000	mg/kg	2	ND	ND	ND
镉 (Cd)	100	mg/kg	2	ND	ND	ND
六价铬 (Cr(VI))▼	-	µg/cm ²	0.10	ND	ND	ND
多溴联苯之和 (PBB)	1000	mg/kg	-	ND	ND	ND
一溴联苯 (MonoBB)	-	mg/kg	5	ND	ND	ND
二溴联苯 (DiBB)	-	mg/kg	5	ND	ND	ND
三溴联苯 (TriBB)	-	mg/kg	5	ND	ND	ND
四溴联苯 (TetraBB)	-	mg/kg	5	ND	ND	ND
五溴联苯 (PentaBB)	-	mg/kg	5	ND	ND	ND
六溴联苯 (HexaBB)	-	mg/kg	5	ND	ND	ND
七溴联苯 (HeptaBB)	-	mg/kg	5	ND	ND	ND
八溴联苯 (OctaBB)	-	mg/kg	5	ND	ND	ND
九溴联苯 (NonaBB)	-	mg/kg	5	ND	ND	ND
十溴联苯 (DecaBB)	-	mg/kg	5	ND	ND	ND
多溴二苯醚之和 (PBDE)	1000	mg/kg	-	ND	ND	ND
一溴二苯醚 (MonoBDE)	-	mg/kg	5	ND	ND	ND



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检测项目	限值	单位	MDL	A1	A10	A11
二溴二苯醚 (DiBDE)	-	mg/kg	5	ND	ND	ND
三溴二苯醚 (TriBDE)	-	mg/kg	5	ND	ND	ND
四溴二苯醚 (TetraBDE)	-	mg/kg	5	ND	ND	ND
五溴二苯醚 (PentaBDE)	-	mg/kg	5	ND	ND	ND
六溴二苯醚 (HexaBDE)	-	mg/kg	5	ND	ND	ND
七溴二苯醚 (HeptaBDE)	-	mg/kg	5	ND	ND	ND
八溴二苯醚 (OctaBDE)	-	mg/kg	5	ND	ND	ND
九溴二苯醚 (NonaBDE)	-	mg/kg	5	ND	ND	ND
十溴二苯醚 (DecaBDE)	-	mg/kg	5	ND	ND	ND
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	1000	mg/kg	50	ND	ND	ND
邻苯二甲酸丁苄酯 (BBP)	1000	mg/kg	50	ND	ND	ND
邻苯二甲酸二丁酯 (DBP)	1000	mg/kg	50	ND	ND	ND
邻苯二甲酸二异丁酯 (DIBP)	1000	mg/kg	50	ND	ND	ND

备注:

- (1) 最大允许极限值引用自RoHS指令(EU) 2015/863。
- (2) IEC 62321系列等同于 EN 62321系列。
- (3) ▼ =
 - a. 当六价铬的浓度高于0.13 µg/cm²时, 样品为阳性, 即含有六价铬;
 - b. 当六价铬的浓度为ND (低于0.10 µg/cm²) 时, 样品为阴性, 即未检测到六价铬;
 - c. 当六价铬的浓度介于0.10 µg/cm²与0.13 µg/cm²之间时, 无法直接判定是否检测到六价铬, 因不同个体的样品表面差异可能会影响测定结果。

由于未获知样品的存储条件和生产日期, 样品的六价铬检测结果仅能代表检测时样品含六价铬的状态。

除非另有说明, 参照 ILAC-G8:09/2019, 使用简单接受 (w=0) 的二元判定规则进行符合性判定。
 除非另有说明, 此报告结果仅对检测的样品负责。本报告未经本公司书面许可, 不可部分复制。
 检测报告仅用于客户科研、教学、内部质量控制、产品研发等目的, 仅供内部参考。



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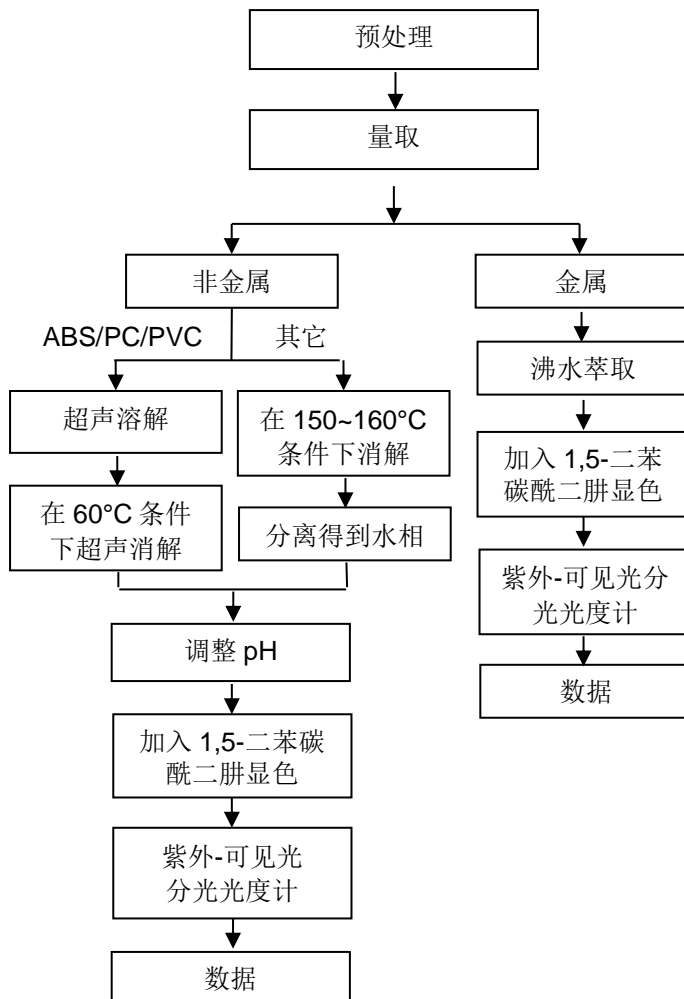
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元素检测流程图

样品按照下述流程被完全消解



六价铬检测流程图



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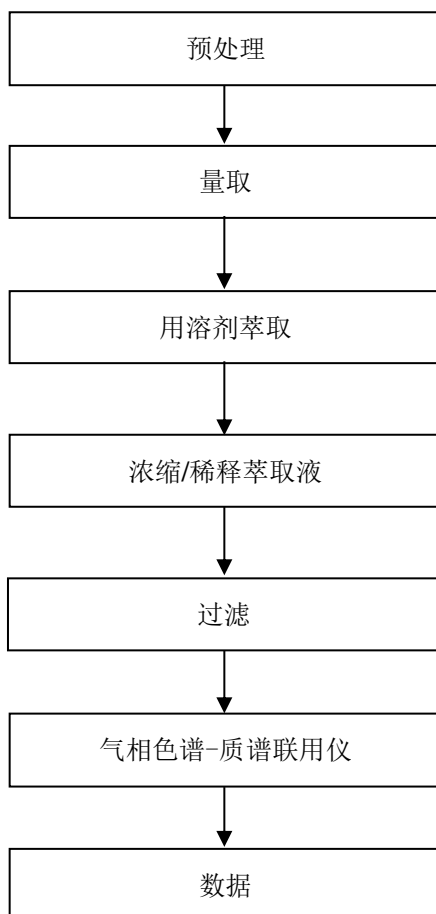
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PBBs/PBDEs 检测流程图



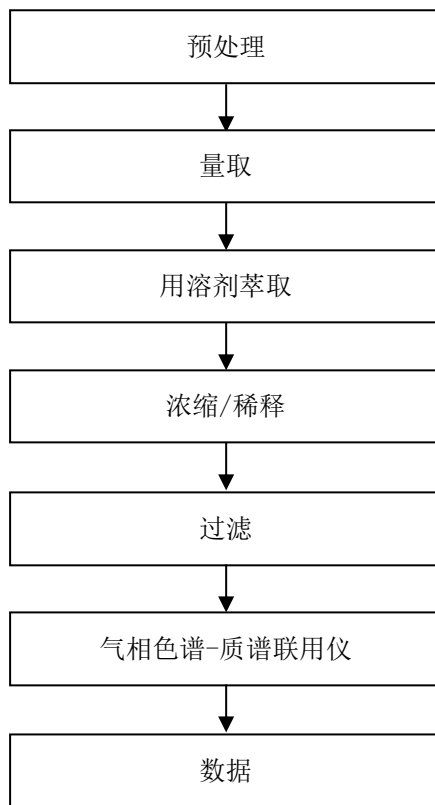
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Phthalates 检测流程图



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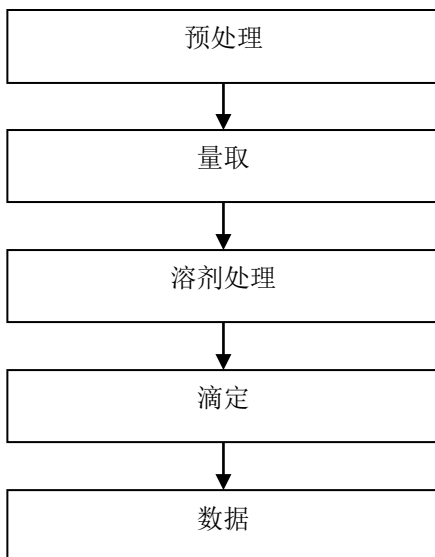
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滴定检测流程图



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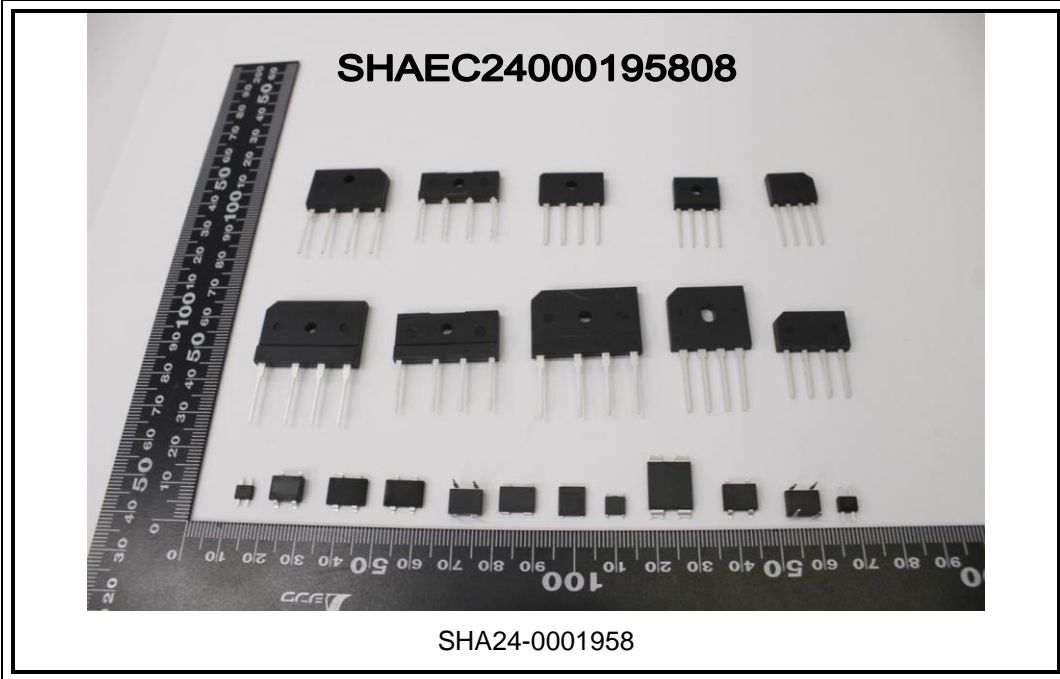
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编号: SHAEC24000195808

日期: 2024年01月19日

第13页, 共18页

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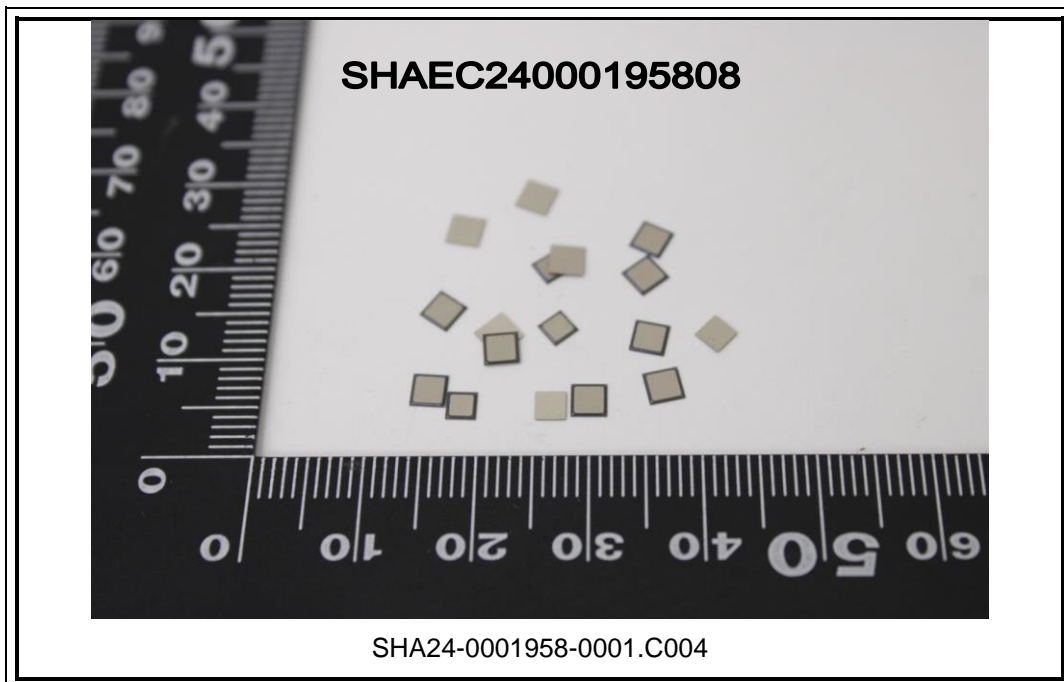
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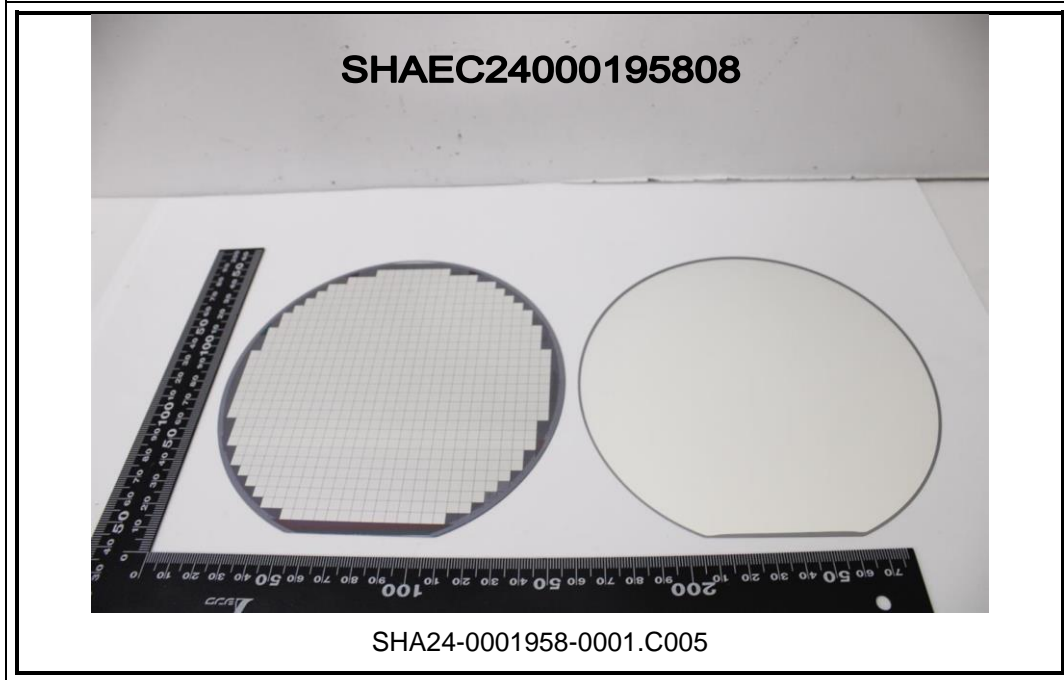
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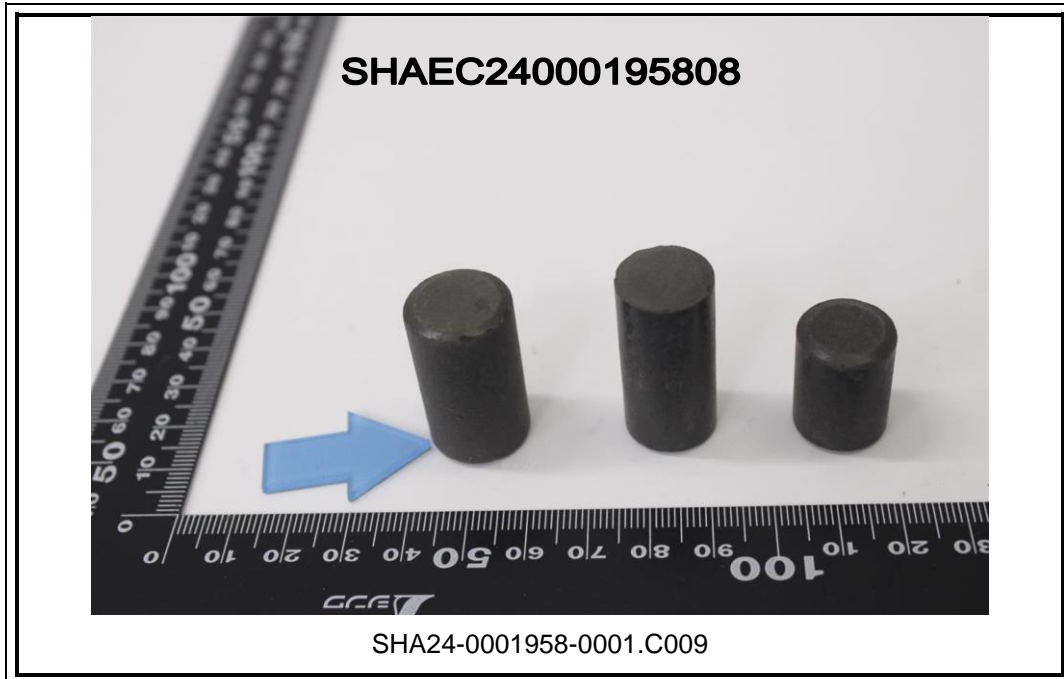
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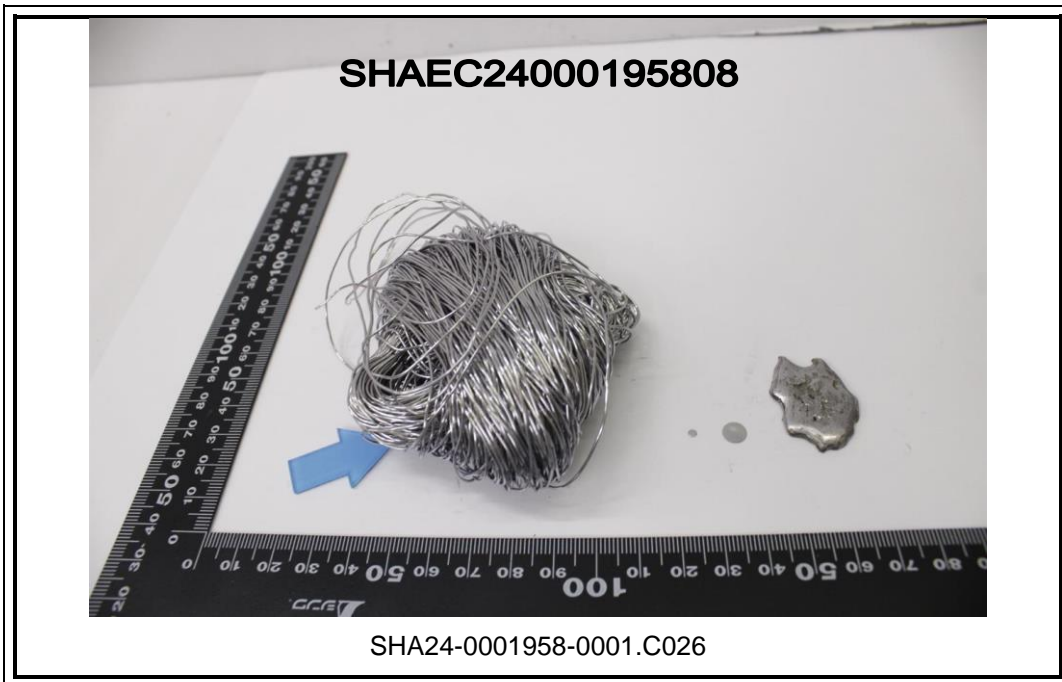
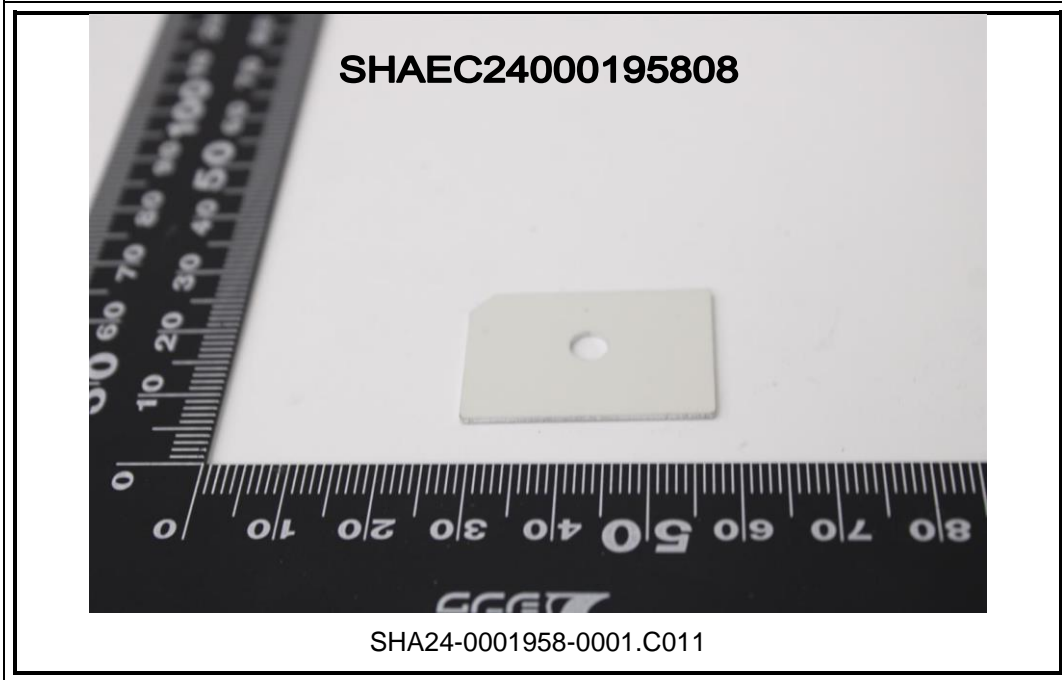
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