

检测报告

编号: SHAEC23004601106

日期: 2023 年 05 月 04 日

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客户名称: 光宝光电(常州)有限公司
客户地址: 江苏省常州市武进高新技术产业开发区阳湖路 88 号

样品名称: 光耦合器
型号: LTV-8XX
客户参考信息: LTV-2503-X, LTV-80XX, LTV-821X, MOC30XX, 4NXX, LTV-7XX, CNY17-XX, CNY17F-XX, LTV-721X, H11LX, LTV-725X, LTV-35XT, LTV-17XX, LTV-2301, LTV-3D1, LTV-2XX, LTV-1XXX, LTV-MX01, LTV-M4XX, LTV-MXXX, LTV-155E, LTV-152, LTV-0X01, LTV-20X, LTV-0XXL, LTV-04XX, LTV-0314, 6N13X, LTV-31X0, LTV-822X, LTV-82X, LTV-T350, LTV-2530, LTV-2630, LTV-4506, LTV-W13X, LTV-WT350, LTV-W31XX, LTV-W45XX, LTV-316J, LTV-33XJ

以上样品及信息由客户提供。

SGS 工作编号: SHP23-000399
样品接收时间: 2023 年 04 月 18 日
检测周期: 2023 年 04 月 18 日 ~ 2023 年 05 月 04 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(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、镉和六价铬	符合
双酚类	见检测结果
元素	见检测结果

通标标准技术服务(上海)有限公司
授权签名

Jenny Lan 兰柳珍
批准签署人

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Testing Center-Chemical Laboratory

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检测要求	结论
卤素	见检测结果
六溴环十二烷(HBCDD)	见检测结果
聚氯乙烯 (PVC)	见检测结果
全氟辛酸磺酸及其衍生物(PFOS)和全氟辛酸(PFOA)及其盐	见检测结果
邻苯二甲酸盐(或酯)	见检测结果
多环芳香烃 (PAHs)	见检测结果

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	SHA23-0046011-0001.C001	黑色本体
SN2	A2	SHA23-0046011-0001.C002	银色金属

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(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 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	A1
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1000	mg/kg	2	4
汞 (Hg)	1000	mg/kg	2	ND
六价铬(Cr(VI))	1000	mg/kg	8	ND
多溴联苯之和(PBBs)	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



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 Testing Center-Chemical Laboratory

3rd Building, No. 889 Yishan Road Xuhui District, Shanghai China 200233

中国·上海·徐汇区宜山路889号3号楼 邮编: 200233

t E&E (86-21) 61402553 f E&E (86-21) 64953679 www.sgsgroup.com.cn

t HL (86-21) 61402594 f HL (86-21) 61156899 e sgs.china@sgs.com

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检测项目	限值	单位	MDL	A1
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(PBDEs)	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) 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。

欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863-铅、汞、镉和六价铬

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

检测项目	限值	单位	MDL	A2
镉 (Cd)	100	mg/kg	2	ND
铅 (Pb)	1000	mg/kg	2	22
汞 (Hg)	1000	mg/kg	2	ND
六价铬(Cr(VI))▼	-	µg/cm ²	0.10	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。



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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测试时样品含六价铬的状态。

双酚类

检测方法: 参考 SGS 内部方法, 采用 LC-MS 或 LC-MS/MS 进行分析。

检测项目	CAS No.	单位	MDL	A1
双酚 A(BPA)	80-05-7	mg/kg	0.1	ND
双酚 S (BPS)	80-09-1	mg/kg	0.1	ND
双酚 F(BPF)	620-92-8	mg/kg	0.1	ND
双酚 AF(BPAF)	1478-61-1	mg/kg	0.1	ND
双酚 B (BPB)	77-40-7	mg/kg	0.1	ND
双酚 E (BPE)	2081-08-5	mg/kg	0.1	ND
双酚 AP(BPAP)	1571-75-1	mg/kg	0.1	ND
双酚 Z (BPZ)	843-55-0	mg/kg	0.1	ND

元素

检测方法: 参考 US EPA 3052:1996, 采用 ICP-OES 进行分析。

检测项目	单位	MDL	A1
铍(Be)	mg/kg	5	ND
锑(Sb)	mg/kg	10	7850

检测方法: 参考 US EPA 3050B:1996, 采用 ICP-OES/AAS 进行分析。

检测项目	单位	MDL	A2
铍(Be)	mg/kg	5	ND
锑(Sb)	mg/kg	10	ND

卤素

检测方法: 参考 EN 14582:2016, 采用 IC 进行分析。

检测项目	单位	MDL	A1
氟 (F)	mg/kg	20	ND
氯 (Cl)	mg/kg	50	151
溴 (Br)	mg/kg	50	4131
碘 (I)	mg/kg	50	ND

六溴环十二烷(HBCDD)

检测方法: 参考 IEC 62321-9:2021, 采用 GC-MS 进行分析。



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检测项目	CAS No.	单位	MDL	A1
六溴环十二烷 (HBCDD)	134237-50-6 /134237-51-7 /134237-52-8 /25637-99-4 /3194-55-6	mg/kg	20	ND

聚氯乙烯 (PVC)

检测方法: 参考 SGS 内部方法, 采用 FTIR/HATR 进行分析。

检测项目	A1
聚氯乙烯 (PVC)	阴性

备注:

(1) 阴性=未检测到 PVC, 阳性= 已检测到 PVC。

全氟辛烷磺酸及其衍生物(PFOS)和全氟辛酸(PFOA)及其盐

检测方法: 参考 CEN/TS 15968:2010, 采用 HPLC-MS 或 LC-MS/MS 进行分析。

检测项目	CAS No.	单位	MDL	A1	A2
全氟辛烷磺酸 (PFOS) 及衍生物	-	mg/kg	-	ND	ND
全氟辛烷磺酸(PFOS)^	1763-23-1	mg/kg	10	ND	ND
N-乙基全氟辛烷磺酰胺(N-Et-FOSA)	4151-50-2	mg/kg	10	ND	ND
N-甲基全氟辛烷磺酰胺(N-Me-FOSA)	31506-32-8	mg/kg	10	ND	ND
N-乙基全氟辛烷磺酰胺乙醇(EtFOSE)	1691-99-2	mg/kg	10	ND	ND
2-(N-甲基全氟辛基磺酰胺)乙醇(MeFOSE)	24448-09-7	mg/kg	10	ND	ND
全氟辛基磺酰胺(PFOA)	754-91-6	mg/kg	10	ND	ND
全氟辛酸 (PFOA) 及其盐+	-	mg/kg	10	ND	ND

备注:

(1) + PFOA 及其盐包含 PFOA-Na (CAS No.: 335-95-5), PFOA-K (CAS No.: 2395-00-8), PFOA-Ag (CAS No.: 335-93-3), PFOA-F (CAS No.: 335-66-0) 和 APFO (CAS No.: 3825-26-1);

(2) ^ 全氟辛烷磺酸 (PFOS)包含 PFOS-K (CAS No.: 2795-39-3), PFOS-Li (CAS No.: 29457-72-5), PFOS-NH₄ (CAS No.: 29081-56-9), PFOS-NH(OH)₂ (CAS No.: 70225-14-8), PFOS-N(C₂H₅)₄ (CAS No.: 56773-42-3), PFOS-DDA (CAS No.:251099-16-8) 和 POSF (CAS No.: 307-35-7)**邻苯二甲酸盐(或酯)**

检测方法: 参考 EN 14372:2004, 采用 GC-MS 进行分析。

检测项目	CAS No.	单位	MDL	A1
邻苯二甲酸二异壬酯 (DINP)	28553-12-0 /68515-48-0	%	0.010	ND



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检测项目	CAS No.	单位	MDL	A1
邻苯二甲酸二正辛酯 (DNOP)	117-84-0	%	0.003	ND
邻苯二甲酸二异癸酯 (DIDP)	26761-40-0 /68515-49-1	%	0.010	ND
邻苯二甲酸二正己酯(DnHP)	84-75-3	%	0.003	ND

多环芳香烃 (PAHs)

检测方法: 参考 AfPS GS 2019:01 PAK, 采用 GC-MS 进行分析。

检测项目	CAS No.	单位	MDL	A1
苯并(a)芘 (BaP)	50-32-8	mg/kg	0.1	ND
苯并(e)芘 (BeP)	192-97-2	mg/kg	0.1	ND
苯并(a)蒽 (BaA)	56-55-3	mg/kg	0.1	ND
苯并(b)荧蒽 (BbF)	205-99-2	mg/kg	0.1	ND
苯并(j)荧蒽 (BjF)	205-82-3	mg/kg	0.1	ND
苯并(k)荧蒽 (BkF)	207-08-9	mg/kg	0.1	ND
蒽 (CHR)	218-01-9	mg/kg	0.1	ND
二苯并(a,h)蒽 (DBA)	53-70-3	mg/kg	0.1	ND
苯并(g,h,i)芘(二苯并(a,h)芘) (BPE)	191-24-2	mg/kg	0.1	ND
茚并(1,2,3-c,d)芘 (IPY)	193-39-5	mg/kg	0.1	ND
菲 (PHE)	85-01-8	mg/kg	0.1	ND
芘 (PYR)	129-00-0	mg/kg	0.1	ND
蒽 (ANT)	120-12-7	mg/kg	0.1	ND
荧蒽 (FLT)	206-44-0	mg/kg	0.1	ND
4 项多环芳香烃总和[菲 (PHE), 芘 (PYR), 蒽 (ANT), 荧蒽 (FLT)]	-	mg/kg	-	ND
萘 (NAP)	91-20-3	mg/kg	0.1	ND
15 项多环芳香烃总和	-	mg/kg	-	ND
材料分类	-	-	-	-

备注:

AfPS(德国产品安全委员会): 认证对多环芳香烃的要求

参数 单位: mg/kg	1 类	2 类		3 类	
	设计意图为放入口中的材料, 或与皮肤长期接触 (超过 30 秒) 的材料用于 -2009/48/EC 定义的玩具, 或 -供 3 岁以下儿童 a,b 使用。	不属于第 1 类, 设计意图或可预见 ^d 与皮肤长期接触 (超过 30 秒) 或短期重复接触 ^e 的材料		不属于第 1 和 2 类, 设计意图或可预见与皮肤短期接触 (不超过 30 秒) 材料	
		a. 供儿童使用的产品	b. 其他产品	a. 供儿童使用的产品	b. 其他产品
苯并(a)芘 (BaP)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
苯并(e)芘 (BeP)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
苯并(a)蒽 (BaA)	< 0.2	< 0.2	< 0.5	< 0.5	< 1



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中国·上海·徐汇区宜山路889号3号楼 邮编: 200233

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苯并(b)荧蒽 (BbF)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
苯并(j)荧蒽 (BjF)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
苯并(k)荧蒽 (BkF)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
蒽 (CHR) ,mg/kg	< 0.2	< 0.2	< 0.5	< 0.5	< 1
二苯并(a,h)蒽 (DBA)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
苯并(g,h,i)苉(二苯并(a,h)苉) (BPE)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
苉苯(1,2,3-c,d)苉 (IPY)	< 0.2	< 0.2	< 0.5	< 0.5	< 1
菲 (PHE), 苉 (PYR), 蒽 (ANT), 荧蒽 (FLT)	< 1 (总和)	< 5 (总和)	< 10 (总和)	< 20 (总和)	< 50 (总和)
萘 (NAP)	< 1	< 2		< 10	
15 PAH 之和	< 1	< 5	< 10	< 20	< 50

注释:

^a 儿童是指法定年龄未满 14 周岁的人。

^b 供儿童使用包括儿童的主动接触或被动接触。

^c “短期重复接触”的定义摘自 REACH 附录 XVII 第 50 条修正案 ((EC) No. 1272/2013)。

^d 根据德国产品安全法 (ProdSG) (第一章第 2 条第 28 款) 的定义, “可预见的使用”是指将产品投放市场的人无意但可以合理预见的方式使用产品。

备注:

德国产品安全委员会 (AfPS) 于 2020 年 4 月 10 日发布了关于多环芳香烃 (PAHs) 的新文件 (AfPS GS 2019:01 PAK), 该文件将于 2020 年 7 月 1 日起用于 GS-MARK 认证。

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。

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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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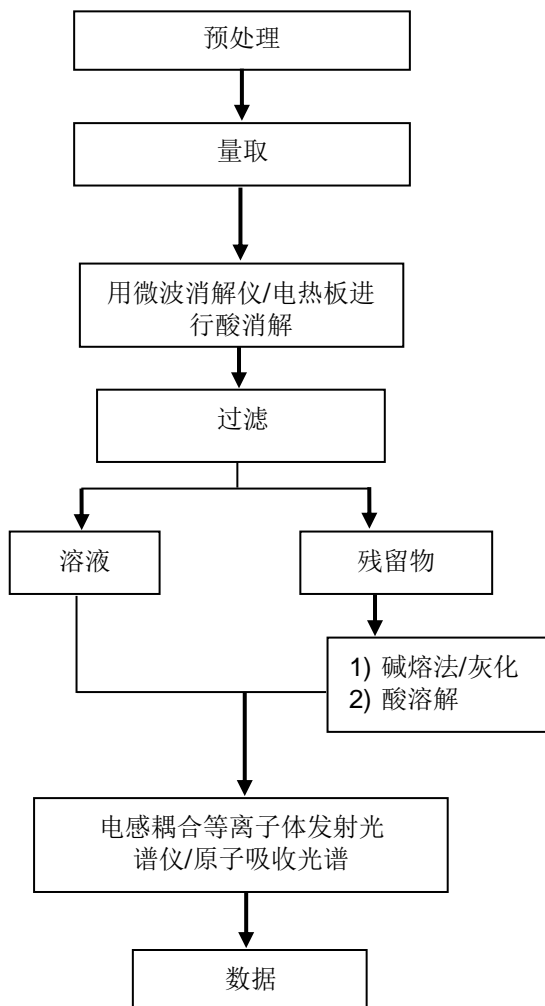
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附件

元素检测流程图

样品按照下述流程被完全消解



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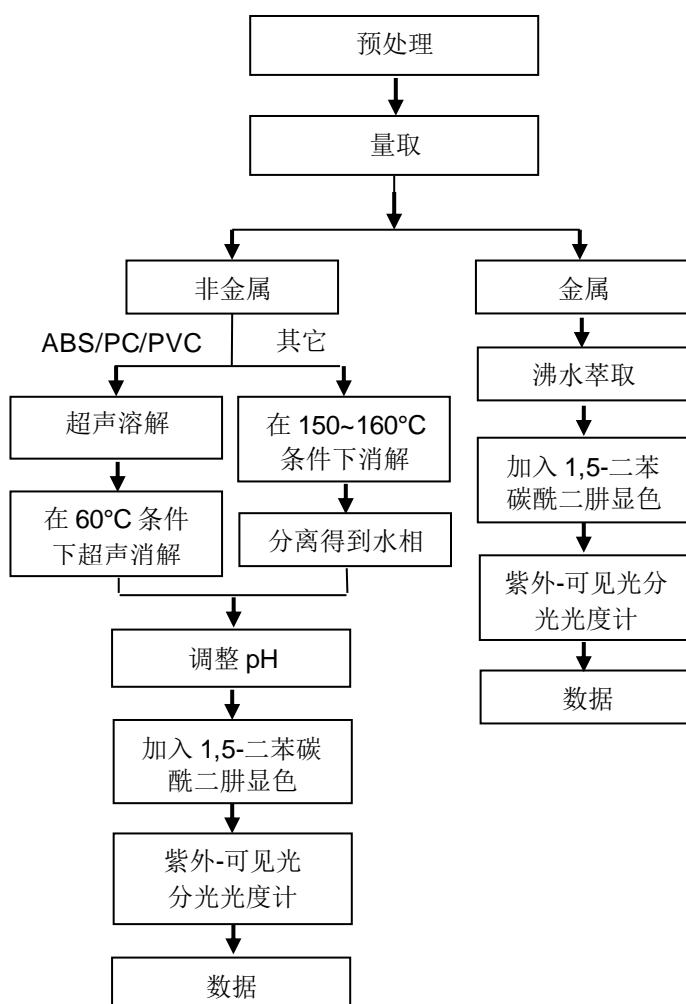
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六价铬检测流程图



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检验检测专用章
Inspection & Testing Services
Testing Center-Chemical Laboratory

3rd Building, No. 889 Yishan Road Xuhui District, Shanghai China 200233
中国·上海·徐汇区宜山路889号3号楼 邮编: 200233

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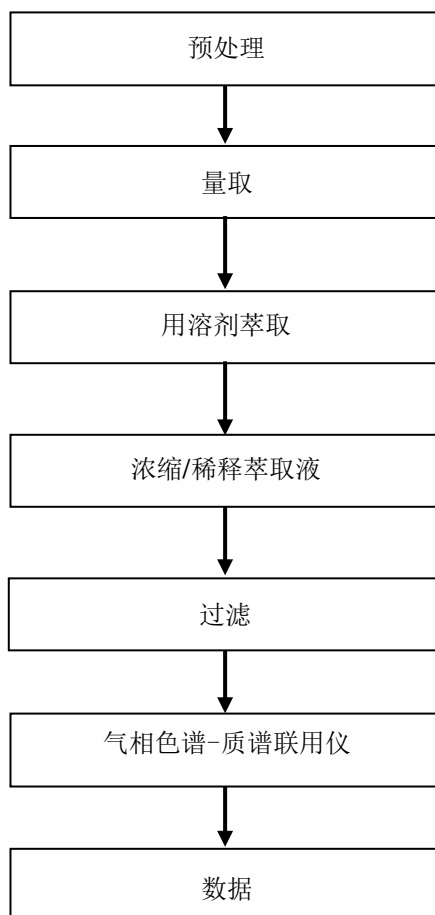
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PBBs/PBDEs 检测流程图



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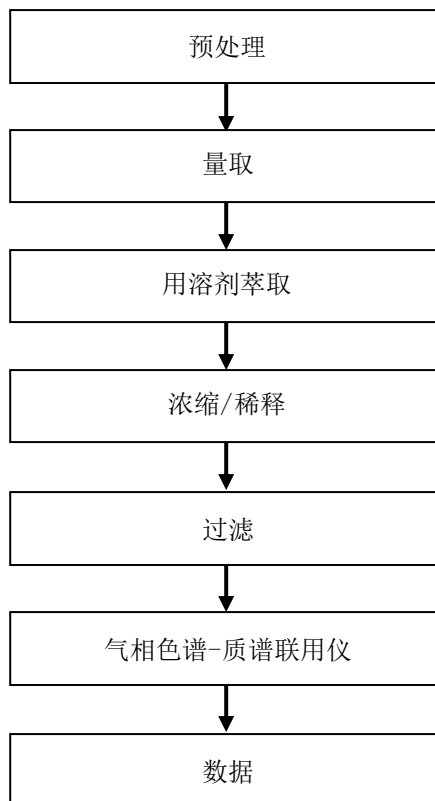
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Phthalates 检测流程图



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Testing Center-Chemical Laboratory

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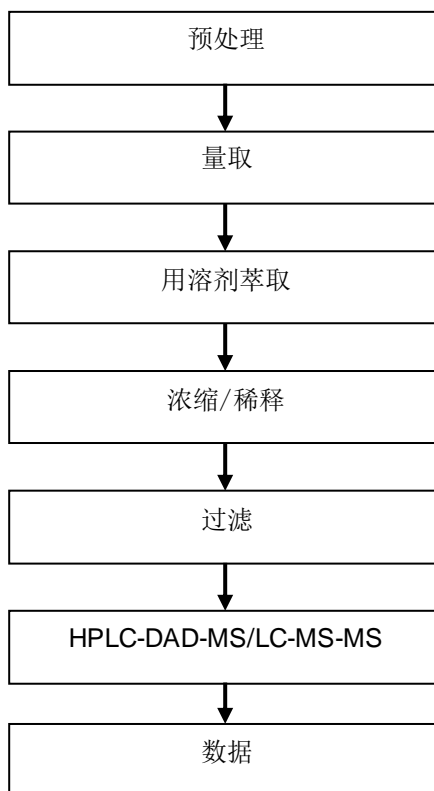
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BPA 检测流程图



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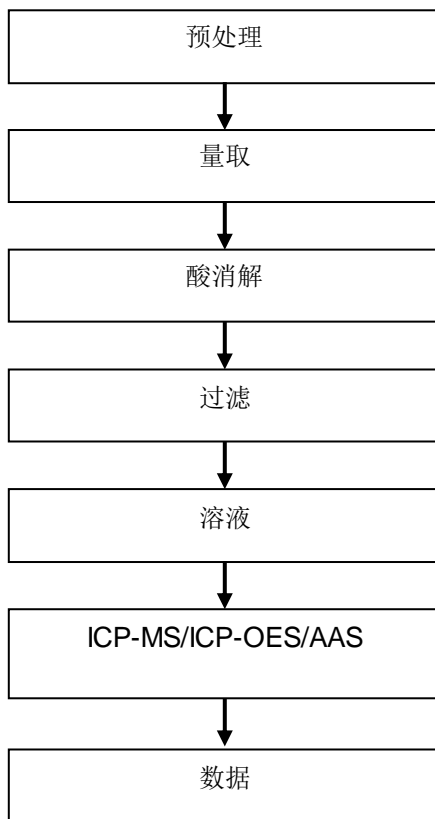
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元素检测流程图



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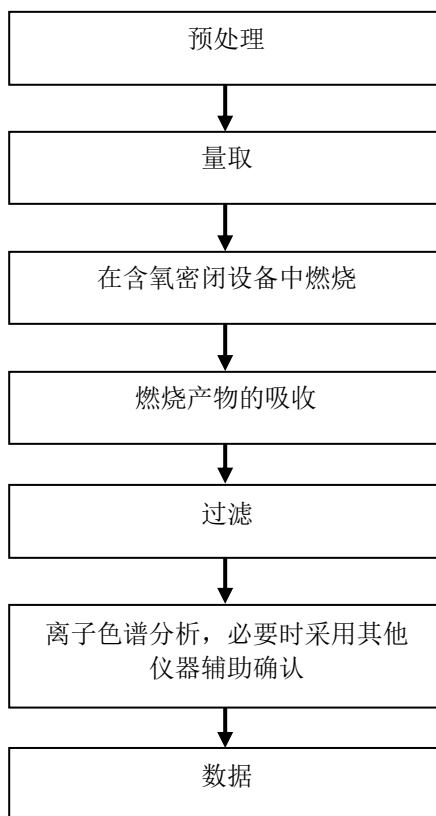
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卤素检测流程图

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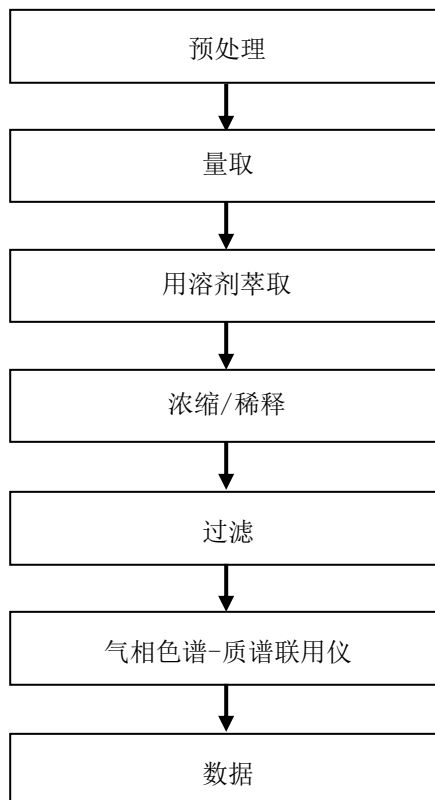
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HBCDD 检测流程图



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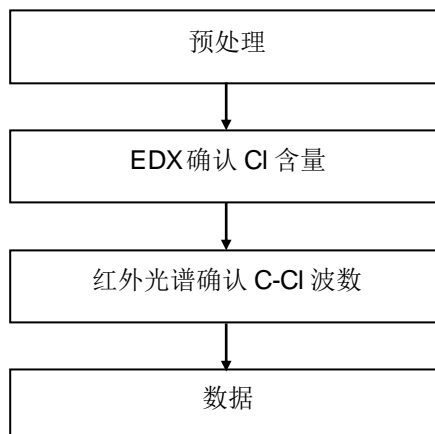
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PVC 检测流程图



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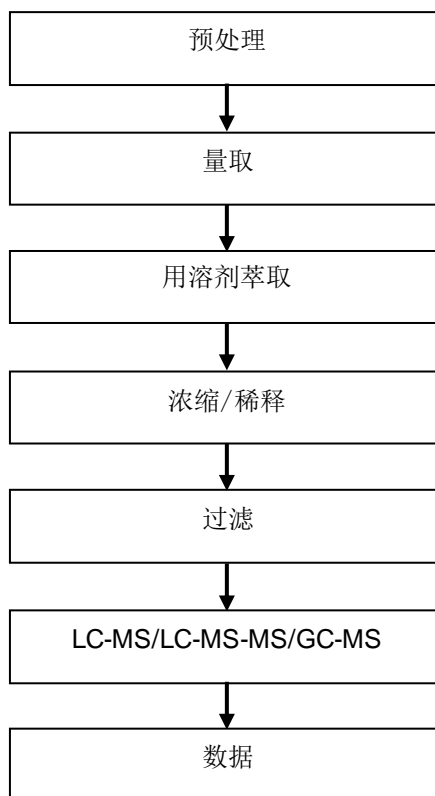
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PFASs/ PFOS/PFOA 检测流程图



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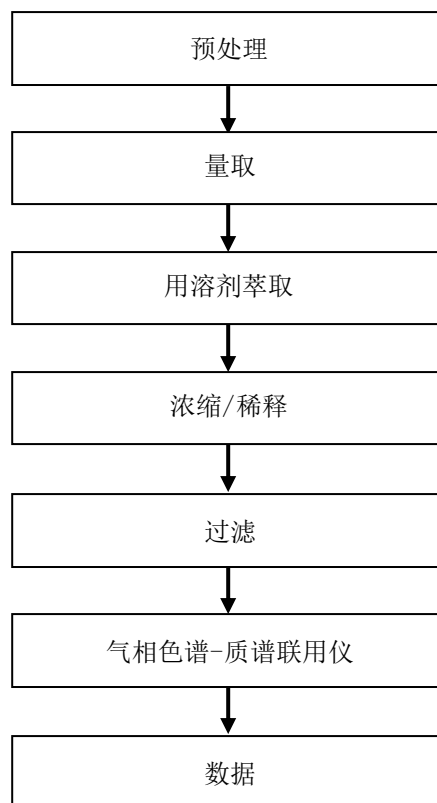
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SGS-CHINA
Technical Services (Shanghai) Co., Ltd.
Testing Center-Chemical Laboratory

3rd Building, No. 889 Yishan Road Xuhui District, Shanghai China 200233
中国·上海·徐汇区宜山路889号3号楼 邮编: 200233

t E&E (86-21) 61402553 f E&E (86-21) 64953679 www.sgsgroup.com.cn
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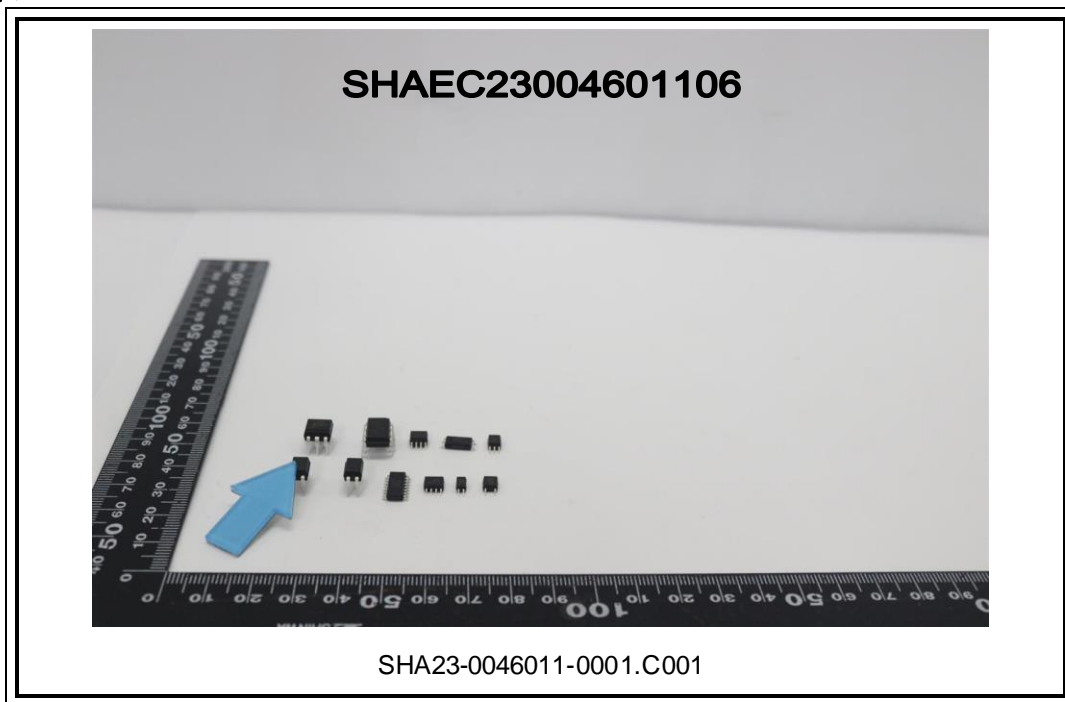
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