

测试报告

No. XMNML1901637203

日期: 2019年11月27日 第1页,共34页

好利来(中国)电子科技股份有限公司&好利来(厦门)电路保护科技有限公司
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本报告中样品001~006和008的测试结果和照片引用自报告XMNML1901637201。

以下测试之样品是由申请者所提供及确认:用于 5RF.5RT.5EF.5ET.SCH.SCT.SRT RoHS& Pb Free 系列的材料

SGS工作编号: XMN1911008128PC - XM

样品接收日期: 2019年11月11日

测试周期: 2019年11月11日 - 2019年11月26日

测试要求: 根据客户要求测试

测试方法: 请参见下一页

测试结果: 请参见下一页

结论: 基于所送样品的指定部位进行的测试, 镉、铅、汞、六价铬、多溴联苯(PBBs)、多溴二苯醚(PBDEs)、邻苯二甲酸酯(如邻苯二甲酸二丁酯(DBP)、邻苯二甲酸丁苯酯(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))的测试结果符合欧盟RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863的限值要求。

通标标准技术服务有限公司厦门分公司
授权签名

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测试结果:

测试样品描述:

样品编号	SGS样品ID	描述
SN1	XMN19-016372.001	红棕色塑料帽 (被称为“塑料帽”)
SN2	XMN19-016372.002	黑色塑料壳 (被称为“底座”)
SN3	XMN19-016372.003	铜色金属引脚 (去掉银色金属镀层) (被称为“底座引线”)
SN4	XMN19-016372.004	金属引脚上的银色金属镀层 (被称为“引线镀层”)
SN5	XMN19-016372.005	银色金属丝 (被称为“线材2”)
SN6	XMN19-016372.006	白色线 (被称为“玻纤”)
SN7	XMN19-016372.007	浅棕色沙子 (被称为“石英砂”)
SN8	XMN19-016372.008	银色金属丝 (被称为“焊锡”)
SN9	XMN19-016372.009	棕色小颗粒 (被称为“凹凸棒土”)

备注:

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

RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015 和 IEC 62321-8:2017, 采用 ICP-OES, UV-Vis 和 GC-MS 进行分析。

测试项目	限值	单位	MDL	001	002	006
镉 (Cd)	100	mg/kg	2	ND	ND	ND
铅 (Pb)	1,000	mg/kg	2	ND	ND	ND
汞 (Hg)	1,000	mg/kg	2	ND	ND	ND
六价铬(Cr(VI))	1,000	mg/kg	8	ND	ND	ND
多溴联苯之和(PBBs)	1,000	mg/kg	-	ND	ND	ND
一溴联苯	-	mg/kg	5	ND	ND	ND
二溴联苯	-	mg/kg	5	ND	ND	ND
三溴联苯	-	mg/kg	5	ND	ND	ND
四溴联苯	-	mg/kg	5	ND	ND	ND
五溴联苯	-	mg/kg	5	ND	ND	ND
六溴联苯	-	mg/kg	5	ND	ND	ND
七溴联苯	-	mg/kg	5	ND	ND	ND



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测试项目	限值	单位	MDL	001	002	006
八溴联苯	-	mg/kg	5	ND	ND	ND
九溴联苯	-	mg/kg	5	ND	ND	ND
十溴联苯	-	mg/kg	5	ND	ND	ND
多溴二苯醚之和(PBDEs)	1,000	mg/kg	-	ND	ND	ND
一溴二苯醚	-	mg/kg	5	ND	ND	ND
二溴二苯醚	-	mg/kg	5	ND	ND	ND
三溴二苯醚	-	mg/kg	5	ND	ND	ND
四溴二苯醚	-	mg/kg	5	ND	ND	ND
五溴二苯醚	-	mg/kg	5	ND	ND	ND
六溴二苯醚	-	mg/kg	5	ND	ND	ND
七溴二苯醚	-	mg/kg	5	ND	ND	ND
八溴二苯醚	-	mg/kg	5	ND	ND	ND
九溴二苯醚	-	mg/kg	5	ND	ND	ND
十溴二苯醚	-	mg/kg	5	ND	ND	ND
邻苯二甲酸二丁酯 (DBP)	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(2-乙基己基)酯(DEHP)	1000	mg/kg	50	ND	ND	ND
邻苯二甲酸二异丁酯(DIBP)	1000	mg/kg	50	ND	ND	ND

测试项目	限值	单位	MDL	007	009
镉 (Cd)	100	mg/kg	2	ND	ND
铅 (Pb)	1,000	mg/kg	2	ND	ND
汞 (Hg)	1,000	mg/kg	2	ND	ND
六价铬(Cr(VI))	1,000	mg/kg	8	ND	ND
多溴联苯之和(PBBs)	1,000	mg/kg	-	ND	ND
一溴联苯	-	mg/kg	5	ND	ND
二溴联苯	-	mg/kg	5	ND	ND
三溴联苯	-	mg/kg	5	ND	ND
四溴联苯	-	mg/kg	5	ND	ND
五溴联苯	-	mg/kg	5	ND	ND
六溴联苯	-	mg/kg	5	ND	ND
七溴联苯	-	mg/kg	5	ND	ND
八溴联苯	-	mg/kg	5	ND	ND
九溴联苯	-	mg/kg	5	ND	ND
十溴联苯	-	mg/kg	5	ND	ND
多溴二苯醚之和(PBDEs)	1,000	mg/kg	-	ND	ND
一溴二苯醚	-	mg/kg	5	ND	ND
二溴二苯醚	-	mg/kg	5	ND	ND
三溴二苯醚	-	mg/kg	5	ND	ND



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测试项目	限值	单位	MDL	007	009
四溴二苯醚	-	mg/kg	5	ND	ND
五溴二苯醚	-	mg/kg	5	ND	ND
六溴二苯醚	-	mg/kg	5	ND	ND
七溴二苯醚	-	mg/kg	5	ND	ND
八溴二苯醚	-	mg/kg	5	ND	ND
九溴二苯醚	-	mg/kg	5	ND	ND
十溴二苯醚	-	mg/kg	5	ND	ND
邻苯二甲酸二丁酯 (DBP)	1000	mg/kg	50	ND	ND
邻苯二甲酸丁苄酯(BBP)	1000	mg/kg	50	ND	ND
邻苯二甲酸二(2-乙基己基)酯(DEHP)	1000	mg/kg	50	ND	ND
邻苯二甲酸二异丁酯(DIBP)	1000	mg/kg	50	ND	ND

备注:

- (1)最大允许限值引用自RoHS指令(EU) 2015/863。IEC 62321系列等同于 EN 62321系列
https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25
- (2) 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。
- (3) DEHP, BBP, DBP 和 DIBP的限制不适用于玩具产品, 因为No.1907/2006附录XVII第51条已对玩具产品中的DEHP, BBP, DBP 和 DIBP含量进行了限制。

RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考IEC 62321-4:2013+A1:2017, IEC 62321-5:2013, IEC 62321-7-1:2015, 采用 ICP-OES 和 UV-Vis 进行分析。

测试项目	限值	单位	MDL	003	005	008
镉 (Cd)	100	mg/kg	2	ND	ND	ND
铅 (Pb)	1,000	mg/kg	2	3	13	11
汞 (Hg)	1,000	mg/kg	2	ND	ND	ND
六价铬(Cr(VI))▼	-	µg/cm ²	0.10	ND	ND	ND

备注:

- (1) 最大允许限值引用自RoHS指令(EU) 2015/863。IEC 62321系列等同于 EN 62321系列
https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25
- (2) ▼=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,



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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,样品的六价铬测试结果仅能代表测试时样品含六价铬的状态。

RoHS指令2011/65/EU附录II的修正指令(EU) 2015/863

测试方法: 参考IEC 62321-4:2013+A1:2017, IEC62321-5:2013, IEC 62321-7-1:2015, 采用 ICP-OES 和 UV-Vis 进行分析。

测试项目	限值	单位	MDL	004
镉 (Cd)	100	mg/kg	10	ND
汞 (Hg)	1,000	mg/kg	10	ND
铅 (Pb)	1,000	mg/kg	10	64
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。

IEC 62321系列等同于 EN 62321 系列

https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

(2) ▼ = 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;

元素分析

测试方法: SGS内部方法 (GZTC CHEM-TOP-004-01, 参考EPA 3052: 1996), 采用ICP-OES进行分析。

测试项目	单位	MDL	001	002	006
锑 (Sb)	mg/kg	10	ND	ND	ND
砷 (As)	mg/kg	10	ND	ND	ND

测试项目	单位	MDL	007	009
锑 (Sb)	mg/kg	10	ND	ND
砷 (As)	mg/kg	10	ND	ND

卤素



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测试方法: 参考EN 14582:2016, 用IC分析。

测试项目	单位	MDL	001	002	006
氟 (F)	mg/kg	50	ND	ND	163
氯 (Cl)	mg/kg	50	ND	ND	92
溴 (Br)	mg/kg	50	ND	ND	ND
碘 (I)	mg/kg	50	ND	ND	ND

石棉

测试方法: 参考ISO 22262-1:2012, 用PLM分析。

测试项目	CAS NO.	单位	MDL	001	002
温石棉	12001-29-5/13220	% (m/m)	0.1	阴性	阴性
铁石棉	12172-73-5	% (m/m)	0.1	阴性	阴性
青石棉	12001-28-4	% (m/m)	0.1	阴性	阴性
直闪石	77536-67-5	% (m/m)	0.1	阴性	阴性
透闪石	77536-68-6	% (m/m)	0.1	阴性	阴性
阳起石	77536-66-4	% (m/m)	0.1	阴性	阴性

备注:

- (1) 阴性表示未检出石棉, 阳性表示检出石棉。
- (2) 若PLM结果为阳性, 用XRD确认。

铋 (Sb) 和 铍 (Be)

测试方法: SGS内部方法 (GZTC CHEM-TOP-009-01, 参考EPA 3050B:1996), 采用ICP-OES进行分析。

测试项目	单位	MDL	003	004	005
铋 (Sb)	mg/kg	10	ND	ND	ND
砷 (As)	mg/kg	10	ND	ND	ND

测试项目	单位	MDL	008
铋 (Sb)	mg/kg	10	ND
砷 (As)	mg/kg	10	ND



多氯萘(PCNs)

测试方法: SGS内部方法(GZTC CHEM-TOP-032-01, 参考EPA 8082A:2007 和 EPA 8270E:2017), 采用GC-ECD/GC-MS进行分析。

测试项目	单位	MDL	001	002
1-氯萘	mg/kg	5	ND	ND
2-氯萘	mg/kg	5	ND	ND
1,4-二氯萘	mg/kg	5	ND	ND
1,5-二氯萘	mg/kg	5	ND	ND
1,2-二氯萘	mg/kg	5	ND	ND
1,8-二氯萘	mg/kg	5	ND	ND
1,2,3-三氯萘	mg/kg	5	ND	ND
1,2,3,4-四氯萘	mg/kg	5	ND	ND
1,2,3,4,6-五氯萘	mg/kg	5	ND	ND
八氯萘	mg/kg	5	ND	ND

六氯丁二烯

测试方法: SGS内部方法(GZTC CHEM-TOP-251-01, 参考EPA方法3550C:2007), 采用GC-MS进行分析。

测试项目	CAS NO.	单位	MDL	001	002
六氯丁二烯	87-68-3	mg/kg	10	ND	ND

ODS

测试方法: SGS内部方法(GZTC CHEM-TOP-201-01, 参考US EPA 方法5021A:2014), 采用HS-GC-MS进行分析。

测试项目	CAS NO.	单位	MDL	001	002
CFC					
CFC-11	75-69-4	mg/kg	0.1	ND	ND
CFC-12	75-71-8	mg/kg	0.1	ND	ND
CFC-113	76-13-1	mg/kg	0.1	ND	ND
CFC-114	76-14-2	mg/kg	0.1	ND	ND
CFC-13	75-72-9	mg/kg	0.1	ND	ND



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测试项目	CAS NO.	单位	MDL	001	002
CFC-111	354-56-3	mg/kg	0.1	ND	ND
CFC-112	76-11-9	mg/kg	0.1	ND	ND
CFC-112	76-12-0	mg/kg	0.1	ND	ND
CFC-113	354-58-5	mg/kg	0.1	ND	ND
CFC-114	374-07-2	mg/kg	0.1	ND	ND
CFC-115	76-15-3	mg/kg	0.1	ND	ND
CFC-211	422-78-6	mg/kg	0.1	ND	ND
CFC-212	661-96-1	mg/kg	0.1	ND	ND
CFC-213	1652-89-7	mg/kg	0.1	ND	ND
CFC-214	677-68-9	mg/kg	0.1	ND	ND
CFC-215	1599-41-3	mg/kg	0.1	ND	ND
CFC-215	76-17-5	mg/kg	0.1	ND	ND
CFC-216	661-97-2	mg/kg	0.1	ND	ND
CFC-216	1652-80-8	mg/kg	0.1	ND	ND
CFC-217	422-86-6	mg/kg	0.1	ND	ND
HCFC					
HCFC-21	75-43-4	mg/kg	0.1	ND	ND
HCFC-22	75-45-6	mg/kg	0.1	ND	ND
HCFC-123	306-83-2	mg/kg	0.1	ND	ND
HCFC-124	2837-89-0	mg/kg	0.1	ND	ND
HCFC-141b	1717-00-6	mg/kg	0.1	ND	ND
HCFC-142b	75-68-3	mg/kg	0.1	ND	ND
HCFC-31	593-70-4	mg/kg	0.1	ND	ND
HCFC-121	354-14-3	mg/kg	0.1	ND	ND
HCFC-122	354-21-2	mg/kg	0.1	ND	ND
HCFC-123a	354-23-4	mg/kg	0.1	ND	ND
HCFC-124a	354-25-6	mg/kg	0.1	ND	ND
HCFC-131	359-28-4	mg/kg	0.1	ND	ND
HCFC-131a	811-95-0	mg/kg	0.1	ND	ND
HCFC-132a	471-43-2	mg/kg	0.1	ND	ND
HCFC-132b	1649-08-7	mg/kg	0.1	ND	ND
HCFC-133a	75-88-7	mg/kg	0.1	ND	ND
HCFC-221	422-26-4	mg/kg	0.1	ND	ND
HCFC-222	422-30-0	mg/kg	0.1	ND	ND
HCFC-223	422-52-6	mg/kg	0.1	ND	ND
HCFC-224	422-54-8	mg/kg	0.1	ND	ND
HCFC-225ca	422-56-0	mg/kg	0.1	ND	ND
HCFC-225cb	507-55-1	mg/kg	0.1	ND	ND
HCFC-226	431-87-8	mg/kg	0.1	ND	ND
HCFC-231	421-94-3	mg/kg	0.1	ND	ND



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测试报告

No. XMNML1901637203

日期: 2019年11月27日 第9页,共34页

测试项目	CAS NO.	单位	MDL	001	002
HCFC-232	460-89-9	mg/kg	0.1	ND	ND
HCFC-233	7125-84-0	mg/kg	0.1	ND	ND
HCFC-234	425-94-5	mg/kg	0.1	ND	ND
HCFC-235	460-92-4	mg/kg	0.1	ND	ND
HCFC-241	666-27-3	mg/kg	0.1	ND	ND
HCFC-242	460-63-9	mg/kg	0.1	ND	ND
HCFC-243	338-75-0	mg/kg	0.1	ND	ND
HCFC-244	679-85-6	mg/kg	0.1	ND	ND
HCFC-251	421-41-0	mg/kg	0.1	ND	ND
HCFC-252	819-00-1	mg/kg	0.1	ND	ND
HCFC-253	460-35-5	mg/kg	0.1	ND	ND
HCFC-261	7799-56-6	mg/kg	0.1	ND	ND
HCFC-261	420-97-3	mg/kg	0.1	ND	ND
HCFC-271	430-55-7	mg/kg	0.1	ND	ND
HCFC-262	102738-79-4	mg/kg	0.1	ND	ND
HCFC-262	420-99-5	mg/kg	0.1	ND	ND
HBFC					
CHF ₂ Br	1511-62-2	mg/kg	0.1	ND	ND
CH ₂ FBr	373-52-4	mg/kg	0.1	ND	ND
C ₂ HFBr ₄	-	mg/kg	0.1	ND	ND
C ₂ HF ₂ Br ₃	377-34-9	mg/kg	0.1	ND	ND
C ₂ HF ₃ Br ₂	354-04-1	mg/kg	0.1	ND	ND
C ₂ HF ₄ Br	-	mg/kg	0.1	ND	ND
C ₂ H ₂ FBr ₃	-	mg/kg	0.1	ND	ND
C ₂ H ₂ F ₂ Br ₂	75-82-1	mg/kg	0.1	ND	ND
C ₂ H ₂ F ₃ Br	421-06-7	mg/kg	0.1	ND	ND
C ₂ H ₃ FBr ₂	358-97-4	mg/kg	0.1	ND	ND
C ₂ H ₃ F ₂ Br	359-07-9	mg/kg	0.1	ND	ND
C ₂ H ₄ FBr	762-49-2	mg/kg	0.1	ND	ND
C ₃ HFBr ₆	-	mg/kg	0.1	ND	ND
C ₃ HF ₂ Br ₅	-	mg/kg	0.1	ND	ND
C ₃ HF ₃ Br ₄	-	mg/kg	0.1	ND	ND
C ₃ HF ₄ Br ₃	-	mg/kg	0.1	ND	ND
C ₃ HF ₅ Br ₂	431-78-7	mg/kg	0.1	ND	ND
C ₃ HF ₆ Br	2252-78-0	mg/kg	0.1	ND	ND
C ₃ H ₂ FBr ₅	-	mg/kg	0.1	ND	ND
C ₃ H ₂ F ₂ Br ₄	-	mg/kg	0.1	ND	ND
C ₃ H ₂ F ₃ Br ₃	421-90-9	mg/kg	0.1	ND	ND
C ₃ H ₂ F ₄ Br ₂	460-86-6	mg/kg	0.1	ND	ND
C ₃ H ₂ F ₅ Br	32778-10-2	mg/kg	0.1	ND	ND



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测试报告

No. XMNML1901637203

日期: 2019年11月27日 第10页,共34页

测试项目	CAS NO.	单位	MDL	001	002
C ₃ H ₃ FBr ₄	-	mg/kg	0.1	ND	ND
C ₃ H ₃ F ₂ Br ₃	-	mg/kg	0.1	ND	ND
C ₃ H ₃ F ₃ Br ₂	431-21-0	mg/kg	0.1	ND	ND
C ₃ H ₃ F ₄ Br	679-84-5	mg/kg	0.1	ND	ND
C ₃ H ₄ FBr ₃	-	mg/kg	0.1	ND	ND
C ₃ H ₄ F ₂ Br ₂	460-25-3	mg/kg	0.1	ND	ND
C ₃ H ₄ F ₃ Br	460-32-2	mg/kg	0.1	ND	ND
C ₃ H ₅ FBr ₂	453-00-9	mg/kg	0.1	ND	ND
C ₃ H ₅ F ₂ Br	420-89-3	mg/kg	0.1	ND	ND
C ₃ H ₆ FBr	-	mg/kg	0.1	ND	ND
Halon					
Halon 1211	353-59-3	mg/kg	0.1	ND	ND
Halon 1301	75-63-8	mg/kg	0.1	ND	ND
Halon 2402	124-73-2	mg/kg	0.1	ND	ND
Others					
二溴氟甲烷	1868-53-7	mg/kg	0.1	ND	ND
一溴甲烷	74-83-9	mg/kg	0.1	ND	ND
溴氯甲烷	74-97-5	mg/kg	0.1	ND	ND
HFC					
HFC-23	75-46-7	mg/kg	0.1	ND	ND
HFC-32	75-10-5	mg/kg	0.1	ND	ND
HFC-41	593-53-3	mg/kg	0.1	ND	ND
HFC-43-10mee	-	mg/kg	0.1	ND	ND
HFC-125	354-33-6	mg/kg	0.1	ND	ND
HFC-134	359-35-3	mg/kg	0.1	ND	ND
HFC-134a	811-97-2	mg/kg	0.1	ND	ND
HFC-152a	75-37-6	mg/kg	0.1	ND	ND
HFC-143	420-46-2	mg/kg	0.1	ND	ND
HFC-143a	430-66-0	mg/kg	0.1	ND	ND
HFC-227ea	-	mg/kg	0.1	ND	ND
HFC-236cb	-	mg/kg	0.1	ND	ND
HFC-236ea	431-63-0	mg/kg	0.1	ND	ND
HFC-236fa	690-39-1	mg/kg	0.1	ND	ND
HFC-245ca	679-86-7	mg/kg	0.1	ND	ND
HFC-245fa	-	mg/kg	0.1	ND	ND
HFC-365mfc	-	mg/kg	0.1	ND	ND
HFC-161	353-36-6	mg/kg	0.1	ND	ND
HFC-152	-	mg/kg	0.1	ND	ND
PFC					
全氟甲烷	75-73-0	mg/kg	0.1	ND	ND



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测试报告

No. XMNML1901637203

日期: 2019年11月27日 第11页,共34页

测试项目	CAS NO.	单位	MDL	001	002
全氟乙烷	76-16-4	mg/kg	0.1	ND	ND
全氟丙烷	76-19-7	mg/kg	0.1	ND	ND
全氟丁烷	355-25-9	mg/kg	0.1	ND	ND
全氟戊烷	678-26-2	mg/kg	0.1	ND	ND
全氟己烷	355-42-0	mg/kg	0.1	ND	ND
全氟环丁烷	115-25-3	mg/kg	0.1	ND	ND
CHC					
1,3-二氯丙烷	142-28-9	mg/kg	0.1	ND	ND
2,2-二氯丙烷	594-20-7	mg/kg	0.1	ND	ND
四氯化碳	56-23-5	mg/kg	0.1	ND	ND
氯乙烷	75-00-3	mg/kg	0.1	ND	ND
三氯甲烷	67-66-3	mg/kg	0.1	ND	ND
一氯甲烷	74-87-3	mg/kg	0.1	ND	ND
顺1,2-二氯乙烯	156-59-2	mg/kg	0.1	ND	ND
顺1,3-二氯丙烯	10061-01-5	mg/kg	0.1	ND	ND
六氯丁二烯	87-68-3	mg/kg	0.1	ND	ND
二氯甲烷	75-09-2	mg/kg	0.1	ND	ND
四氯乙烯	127-18-4	mg/kg	0.1	ND	ND
反1,2-二氯乙烯	156-60-5	mg/kg	0.1	ND	ND
反1,3-二氯丙烯	10061-02-6	mg/kg	0.1	ND	ND
三氯乙烯	79-01-6	mg/kg	0.1	ND	ND
1,1,1,2-四氯乙烷	630-20-6	mg/kg	0.1	ND	ND
1,1,1-三氯乙烷	71-55-6	mg/kg	0.1	ND	ND
1,1,2,2-四氯乙烷	79-34-5	mg/kg	0.1	ND	ND
1,1,2-三氯乙烷	79-00-5	mg/kg	0.1	ND	ND
1,1-二氯乙烷	75-34-3	mg/kg	0.1	ND	ND
1,1-二氯乙烯	75-35-4	mg/kg	0.1	ND	ND
1,1-二氯丙烯	563-58-6	mg/kg	0.1	ND	ND
1,2,3-三氯丙烷	96-18-4	mg/kg	0.1	ND	ND
1,2-二氯乙烷	107-06-2	mg/kg	0.1	ND	ND
1,2-二氯丙烷	78-87-5	mg/kg	0.1	ND	ND
六氟化硫	2551-62-4	mg/kg	0.1	ND	ND

富马酸二甲酯(DMF)

测试方法: SGS 内部方法 (GZTC CHEM-TOP-095), 用GC-MS分析。



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测试报告

No. XMNML1901637203

日期: 2019年11月27日 第12页,共34页

测试项目	单位	MDL	001	002
富马酸二甲酯(DMF)	mg/kg	0.1	ND	ND

六溴环十二烷(HBCDD)

测试方法: 参考IEC 62321-6:2015, 用GC-MS分析。

测试项目	单位	MDL	001	002
六溴环十二烷(HBCDD)	mg/kg	10	ND	ND

多氯三联苯(PCTs)

测试方法: SGS内部方法(GZTC CHEM-TOP-032-01, 参考EPA 8082A:2007 和 EPA 8270E:2017), 采用GC-ECD/GC-MS进行分析。

测试项目	单位	MDL	001	002
Aroclor 5432	mg/kg	5	ND	ND
Aroclor 5442	mg/kg	5	ND	ND
Aroclor 5460	mg/kg	5	ND	ND

偶氮

测试方法: 参照ISO 14362-1:2017, 采用GC-MS/HPLC-DAD进行分析。
确定4-氨基偶氮苯(CAS No.:60 09 3) 参照ISO 14362-3:2017, 采用GC MS/HPLC DAD 进行分析。

测试项目	CAS NO.	限值	单位	MDL	001	
					方法A	方法B
4-氨基联苯	92-67-1	30	mg/kg	5	ND	ND
联苯胺	92-87-5	30	mg/kg	5	ND	ND
4-氯邻甲苯	95-69-2	30	mg/kg	5	ND	ND



测试报告

No. XMNML1901637203

日期: 2019年11月27日 第13页,共34页

测试项目	CAS NO.	限值	单位	MDL	001	
					方法A	方法B
2-萘胺	91-59-8	30	mg/kg	5	ND	ND
邻氨基二甲基偶氮苯	97-56-3	30	mg/kg	5	ND	ND
2-氨基-4-硝基甲苯	99-55-8	30	mg/kg	5	ND	ND
对氯苯胺	106-47-8	30	mg/kg	5	ND	ND
2,4-二氨基苯甲醚	615-05-4	30	mg/kg	5	ND	ND
4,4'-二氨基二苯甲烷	101-77-9	30	mg/kg	5	ND	ND
3,3'-二氯联苯胺	91-94-1	30	mg/kg	5	ND	ND
3,3'-二甲氧基联苯胺	119-90-4	30	mg/kg	5	ND	ND
3,3'-二甲基联苯胺	119-93-7	30	mg/kg	5	ND	ND
3,3'-二甲基-4,4'-二氨基二苯甲烷	838-88-0	30	mg/kg	5	ND	ND
3-氨基对甲苯甲醚(p-克利酞)	120-71-8	30	mg/kg	5	ND	ND
4,4'-次甲基-双-(2-氯苯胺)	101-14-4	30	mg/kg	5	ND	ND
4,4'-二氨基二苯醚	101-80-4	30	mg/kg	5	ND	ND



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Xiamen Branch Testing Laboratory

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测试报告

No. XMNML1901637203

日期: 2019年11月27日 第14页,共34页

测试项目	CAS NO.	限值	单位	MDL	001	
					方法A	方法B
4,4'-二氨基二苯硫醚	139-65-1	30	mg/kg	5	ND	ND
邻甲苯胺	95-53-4	30	mg/kg	5	ND	ND
2,4-二氨基甲苯	95-80-7	30	mg/kg	5	ND	ND
2,4,5-三甲苯胺	137-17-7	30	mg/kg	5	ND	ND
4-氨基偶氮苯	60-09-3	30	mg/kg	5	ND	ND
邻甲氧基苯胺	90-04-0	30	mg/kg	5	ND	ND
2,4-二甲基苯胺	95-68-1	30	mg/kg	5	ND	ND
2,6-二甲基苯胺	87-62-7	30	mg/kg	5	ND	ND
评论					符合	符合

测试项目	CAS NO.	限值	单位	MDL	002	
					方法A	方法B
4-氨基联苯	92-67-1	30	mg/kg	5	ND	ND
联苯胺	92-87-5	30	mg/kg	5	ND	ND



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测试报告

No. XMNML1901637203

日期: 2019年11月27日 第15页,共34页

测试项目	CAS NO.	限值	单位	MDL	002	
					方法A	方法B
4-氯邻甲苯	95-69-2	30	mg/kg	5	ND	ND
2-萘胺	91-59-8	30	mg/kg	5	ND	ND
邻氨基二甲基偶氮苯	97-56-3	30	mg/kg	5	ND	ND
2-氨基-4-硝基甲苯	99-55-8	30	mg/kg	5	ND	ND
对氯苯胺	106-47-8	30	mg/kg	5	ND	ND
2,4-二氨基苯甲醚	615-05-4	30	mg/kg	5	ND	ND
4,4'-二氨基二苯甲烷	101-77-9	30	mg/kg	5	ND	ND
3,3'-二氯联苯胺	91-94-1	30	mg/kg	5	ND	ND
3,3'-二甲氧基联苯胺	119-90-4	30	mg/kg	5	ND	ND
3,3'-二甲基联苯胺	119-93-7	30	mg/kg	5	ND	ND
3,3'-二甲基-4,4'-二氨基二苯甲烷	838-88-0	30	mg/kg	5	ND	ND
3-氨基对甲苯甲醚(p-克利酞)	120-71-8	30	mg/kg	5	ND	ND
4,4'-次甲基-双-(2-氯苯胺)	101-14-4	30	mg/kg	5	ND	ND



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测试报告

No. XMNML1901637203

日期: 2019年11月27日 第16页,共34页

测试项目	CAS NO.	限值	单位	MDL	002	
					方法A	方法B
4,4'-二氨基二苯醚	101-80-4	30	mg/kg	5	ND	ND
4,4'-二氨基二苯硫醚	139-65-1	30	mg/kg	5	ND	ND
邻甲苯胺	95-53-4	30	mg/kg	5	ND	ND
2,4-二氨基甲苯	95-80-7	30	mg/kg	5	ND	ND
2,4,5-三甲苯胺	137-17-7	30	mg/kg	5	ND	ND
4-氨基偶氮苯	60-09-3	30	mg/kg	5	ND	ND
邻甲氧基苯胺	90-04-0	30	mg/kg	5	ND	ND
2,4-二甲基苯胺	95-68-1	30	mg/kg	5	ND	ND
2,6-二甲基苯胺	87-62-7	30	mg/kg	5	ND	ND
评论					符合	符合

备注:

- (1) 方法A表示直接还原法, 直接还原是指根据ISO 14362-1:2017条款10.2和相关条款提取和还原。方法B表示脱色提取法, 脱色提取是指根据ISO 14362-1:2017条款10.1和相关条款进行染料萃取和还原。
- (2) ISO 14362-1:2017方法会使4-氨基偶氮苯(CAS No.:60 09 3)在本实验条件下进一步裂解为非禁用的胺: 苯胺和1,4-苯二胺, 因此, 采用ISO 14362-3:2017方法验证4-氨基偶氮苯的存在。
- (3) 最大允许限值引用自1907/2006/EC Reach附录XVII的修正指令——552/2009/EC第43条(前身为2002/61/EC)。
- (4) 4-氨基联苯(CAS No.:92-67-1), 2-萘胺(CAS No.:91-59-8), 2,4-二氨基苯甲醚(CAS



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No.:615-05-4)有检出时, 如果没有进一步的信息(如染料的化学结构)提供, 并不能确认使用了禁用的偶氮染料。

当样品中含有聚氨酯材料(如含PU泡沫、PU涂层和PU胶印)时, 某些胺类, 若4,4'-二氨基二苯甲烷(MDA, CAS No.:101-77-9) 和 2,4-二氨基甲苯(TDA, CAS No.:95-80-7) 有检出, 并不能确认其来自PU材料而非禁用偶氮染料。

当样品中含有胶印时, 若4,4'-二氨基二苯甲烷(MDA, CAS No.:101-77-9) 有检出, 需要注意该物质可能不是来源于禁用的偶氮染料, 而是来源于其它物料, 如化学固色剂。

短链氯化石蜡(C10-C13) (SCCPs)

测试方法: SGS内部方法(GZTC CHEM-TOP-096-02, 参考US EPA方法 3550C:2007), 用GC-NCI-MS / GC-ECD分析。

测试项目	单位	MDL	001
短链氯化石蜡(C10-C13) (SCCPs)	mg/kg	50	ND

测试项目	单位	MDL	002
短链氯化石蜡(C10-C13) (SCCPs)	mg/kg	50	ND

多氯联苯(PCBs)

测试方法: SGS内部方法(GZTC CHEM-TOP-032-01, 参考EPA 8082A:2007 和 EPA 8270E:2017), 采用GC-ECD/GC-MS进行分析。

测试项目	CAS NO.	单位	MDL	001
2,4,4'-三氯联苯 (PCB 28)	7012-37-5	mg/kg	0.5	ND
2,2',5,5'-四氯联苯 (PCB 52)	35693-99-3	mg/kg	0.5	ND
2,2',4,5,5'-五氯联苯(PCB 101)	37680-73-2	mg/kg	0.5	ND
2,3',4,4',5-五氯联苯(PCB 118)	31508-00-6	mg/kg	0.5	ND
2,2',3,4,4',5'-六氯联苯 (PCB 138)	35065-28-2	mg/kg	0.5	ND
2,2',4,4',5,5'-六氯联苯 (PCB 153)	35065-27-1	mg/kg	0.5	ND
2,2',3,4,4',5,5'-七氯联苯 (PCB 180)	35065-29-3	mg/kg	0.5	ND

测试项目	CAS NO.	单位	MDL	002
2,4,4'-三氯联苯 (PCB 28)	7012-37-5	mg/kg	0.5	ND
2,2',5,5'-四氯联苯 (PCB 52)	35693-99-3	mg/kg	0.5	ND
2,2',4,5,5'-五氯联苯(PCB 101)	37680-73-2	mg/kg	0.5	ND
2,3',4,4',5-五氯联苯(PCB 118)	31508-00-6	mg/kg	0.5	ND
2,2',3,4,4',5'-六氯联苯 (PCB 138)	35065-28-2	mg/kg	0.5	ND
2,2',4,4',5,5'-六氯联苯 (PCB 153)	35065-27-1	mg/kg	0.5	ND
2,2',3,4,4',5,5'-七氯联苯 (PCB 180)	35065-29-3	mg/kg	0.5	ND



测试报告

No. XMNML1901637203

日期: 2019年11月27日 第18页,共34页

有机锡化合物

测试方法: 参考ISO 17353: 2004, 用GC-MS分析。

测试项目	单位	MDL	001
二丁基锡(DBT)	mg/kg	0.02	ND
三丁基锡(TBT)	mg/kg	0.02	ND
二辛基锡(DOT)	mg/kg	0.02	ND

测试项目	单位	MDL	002
二丁基锡(DBT)	mg/kg	0.02	ND
三丁基锡(TBT)	mg/kg	0.02	ND
二辛基锡(DOT)	mg/kg	0.02	ND

全氟辛烷磺酰基化合物(PFOS)

测试方法: SGS内部方法 (GZTC CHEM-TOP-062-04, 参考US EPA方法 3550C:2007), 用 LC-MS分析。

测试项目	CAS NO.	单位	MDL	001
全氟辛烷磺酸及其衍生物 (PFOS)^	-	mg/kg	10	ND

测试项目	CAS NO.	单位	MDL	002
全氟辛烷磺酸及其衍生物 (PFOS)^	-	mg/kg	10	ND

备注:

(1)(EC) No 850/2004 补充指令 (EU) No 757/2010的要求:

第4章 (1) (b) 款适用于PFOS浓度等于或低于10mg/kg (0.001%重量比) 的物质或配制品。

第4章 (1) (b) 款适用于PFOS浓度低于0.1% (重量比) 的半成品, 成品或者它们的部件, 以含有PFOS的结构或特殊部件的局部结构计算, 对于纺织品和其它涂层的材料, PFOS的量低于1µg/m²。

(2) ^全氟辛烷磺酸(PFOS)及其衍生物包含全氟辛烷磺酸(PFOS)、全氟辛基磺酰胺(PFOSA)、2- (N-乙基全氟辛基磺酰胺) 乙醇(EtFOSE)、N-甲基全氟辛烷磺酰胺(MeFOSA)、N-乙基全氟辛烷磺酰胺(EtFOSA)和2- (N-甲基全氟辛基磺酰胺) 乙醇(MeFOSE)。

邻苯二甲酸盐(或酯)

测试方法: 参考EN 14372: 2004的方法测定, 采用GC-MS进行分析。



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测试报告

No. XMNML1901637203

日期: 2019年11月27日 第19页,共34页

测试项目	CAS NO.	单位	MDL	001	002
邻苯二甲酸二丁酯 (DBP)	84-74-2	%	0.003	ND	ND
邻苯二甲酸丁苄酯 (BBP)	85-68-7	%	0.003	ND	ND
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	117-81-7	%	0.003	ND	ND
邻苯二甲酸二异壬酯 (DINP)	28553-12-0 / 68515-48-0	%	0.010	ND	ND
邻苯二甲酸二正辛酯 (DNOP)	117-84-0	%	0.003	ND	ND
邻苯二甲酸二异癸酯 (DIDP)	26761-40-0 / 68515-49-1	%	0.010	ND	ND
邻苯二甲酸二异丁酯 (DIBP)	84-69-5	%	0.003	ND	ND
邻苯二甲酸二正己酯 (DnHP)	84-75-3	%	0.003	ND	ND

备注:

(1)DBP、BBP、DEHP、DIBP参考信息: 1907/2006/EC Reach 附录XVII的修正指令——2018/2005/EU 第51条的要求:

i) 不允许DBP、BBP、DEHP、DIBP单一质量浓度或质量浓度总和等于或高于0.1%的可塑性物料用于玩具和儿童护理品。

ii) 当玩具和儿童护理品中的可塑性物料含DBP、BBP、DEHP单一质量浓度或质量浓度总和等于或高于0.1%时, 不得投放市场。另外, 当玩具和儿童护理品中的可塑性物料含DIBP单一质量浓度或DBP、BBP、DEHP、DIBP质量浓度总和等于或高于0.1%时, 2020年7月7日后不得投放市场。

iii) 当成品中的可塑性物料含DBP、BBP、DEHP、DIBP单一质量浓度或质量浓度总和等于或高于0.1%时, 2020年7月7日后不得投放市场。

详细信息请参见Regulation (EU) No 2018/2005

(2)DINP、DNOP、DIDP参考信息: 1907/2006/EC Reach 附录XVII的修正指令——552/2009/EC 第52条 (前身为2005/84/EC) 的要求:

i) 不允许DINP、DNOP、DIDP质量浓度高于0.1%的可塑性物料用于可放入儿童口中的玩具和儿童护理品。

ii) 当可放入儿童口中的玩具和儿童护理品中的可塑性物料含DINP, DNOP, DIDP质量浓度高于0.1%时, 不得投放市场。



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详细信息请参见Regulation (EC) No 552/2009

阻燃剂含量

测试方法: SGS内部方法 (GZTC CHEM-TOP-149-04, 参考EPA 3550C:2007), 采用GC-MS和HPLC-DAD/MS进行分析。

测试项目	CAS NO.	单位	MDL	001	002
磷酸三(1,3-二氯-2-丙基)酯(TDCPP)	13674-87-8	mg/kg	5	ND	ND
磷酸三(2-氯乙基)酯(TCEP)	115-96-8	mg/kg	5	ND	ND
磷酸三(1-氯-2-丙基)酯(TCPP)	13674-84-5	mg/kg	5	ND	ND

备注: 测试由SGS广州化学实验室操作。

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。



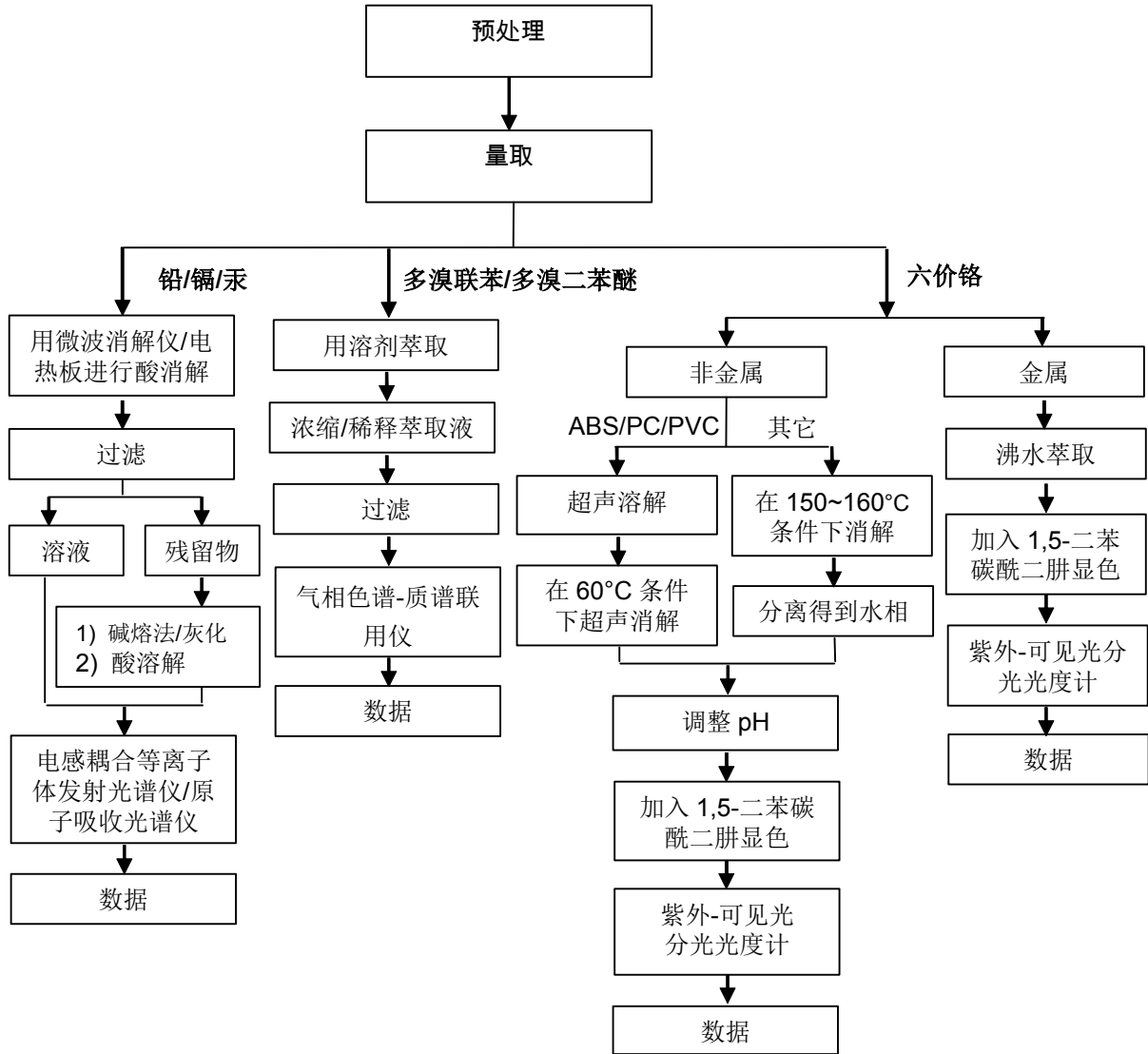
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附件

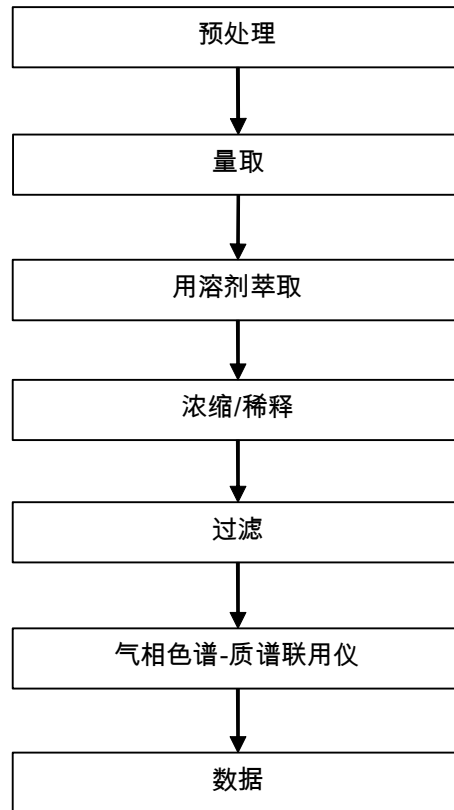
Pb/Cd/Hg/Cr⁶⁺/PBBs/PBDEs 测试流程图

样品按照下述流程被完全消解（六价铬和多溴联苯/多溴二苯醚测试除外）。



附件

Phthalates 测试流程图



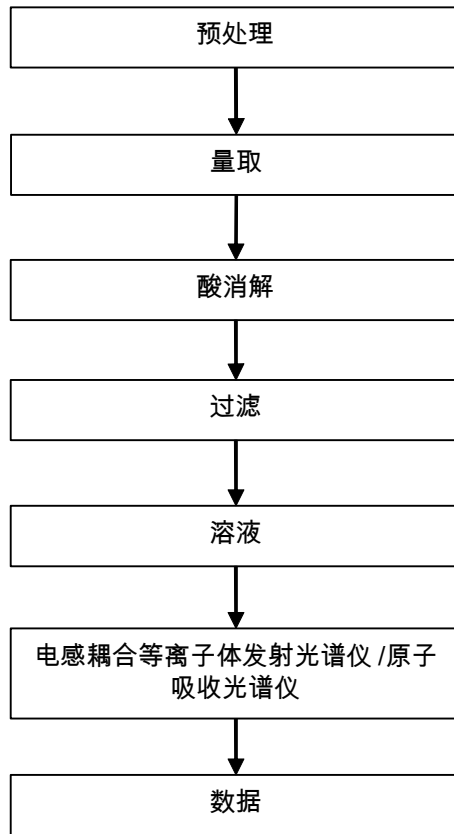
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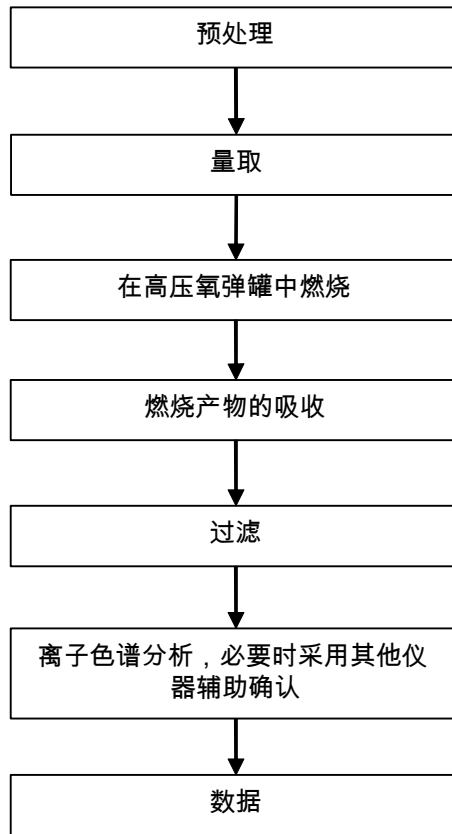
元素测试流程图

样品按照下述流程被完全消解。



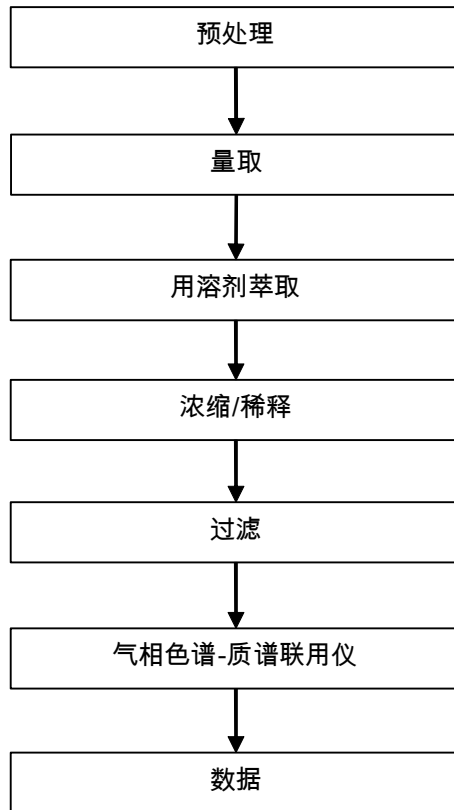
附件

Halogen 测试流程图



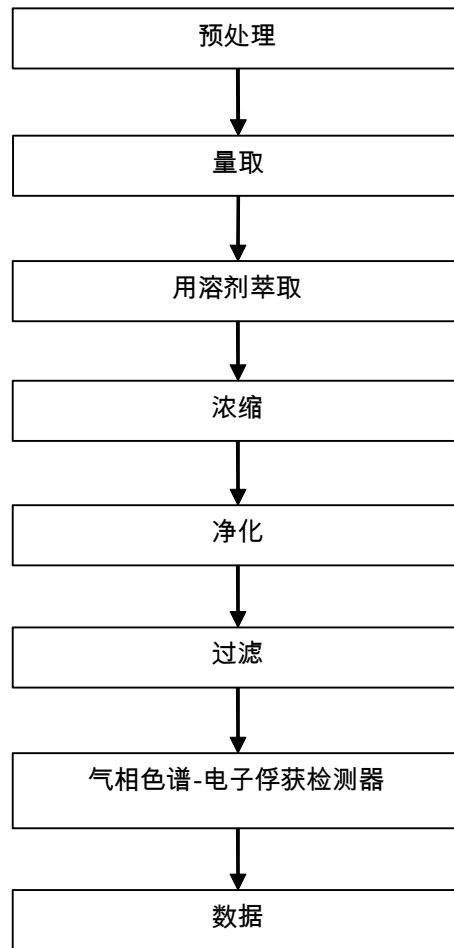
附件

HBCDD 测试流程图



附件

SCCP 测试流程图

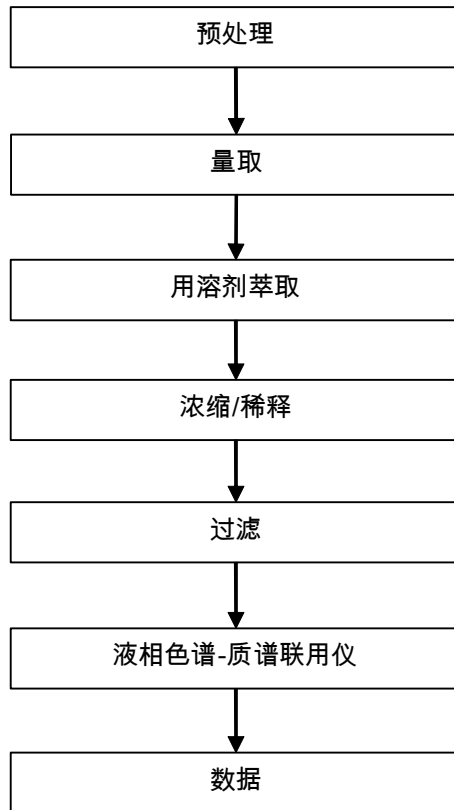


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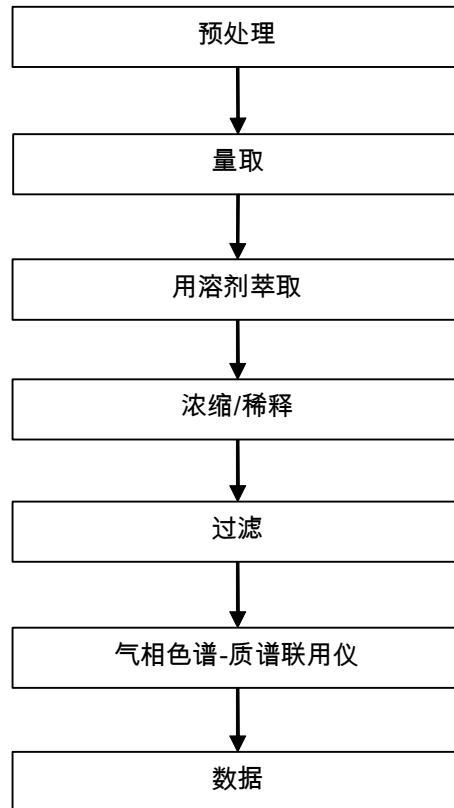
附件

PFOS 测试流程图



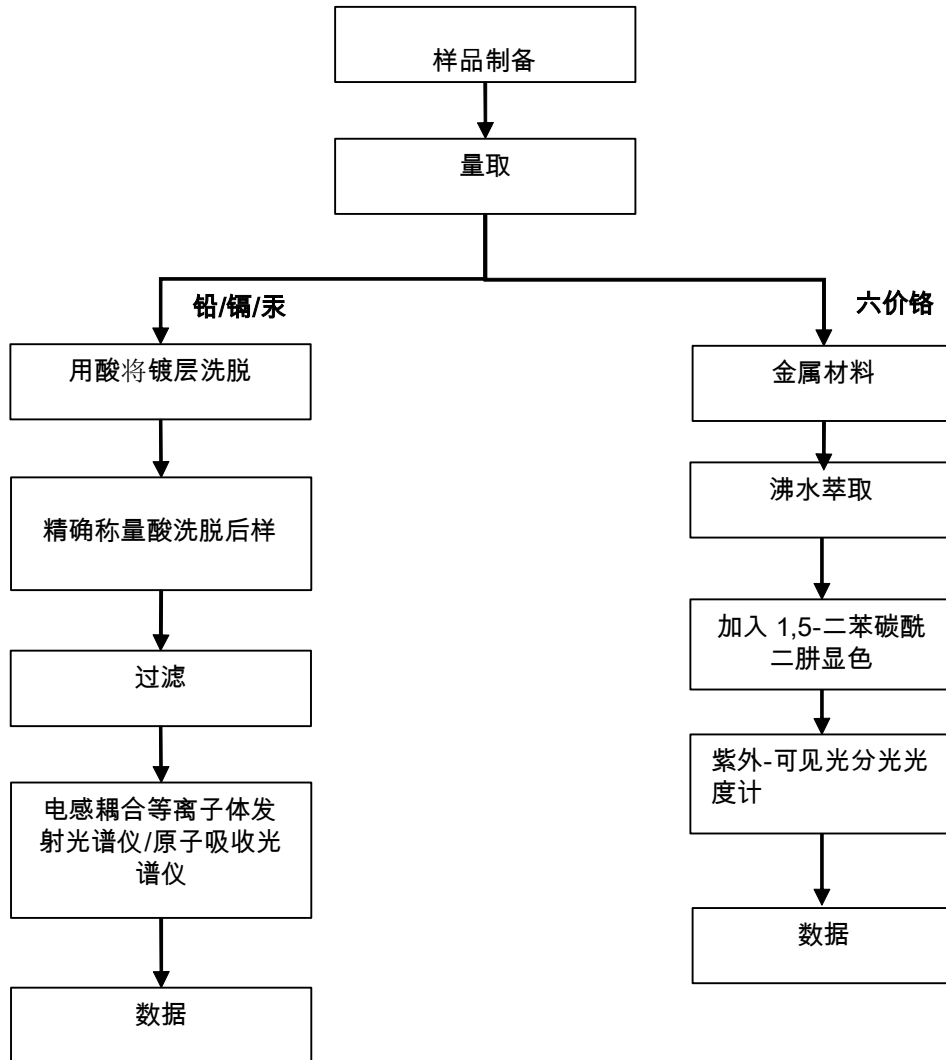
附件

Dimethyl Fumarate 测试流程图



附件

镀层样品中铅/镉/汞/六价格的测试流程图



样品照片:



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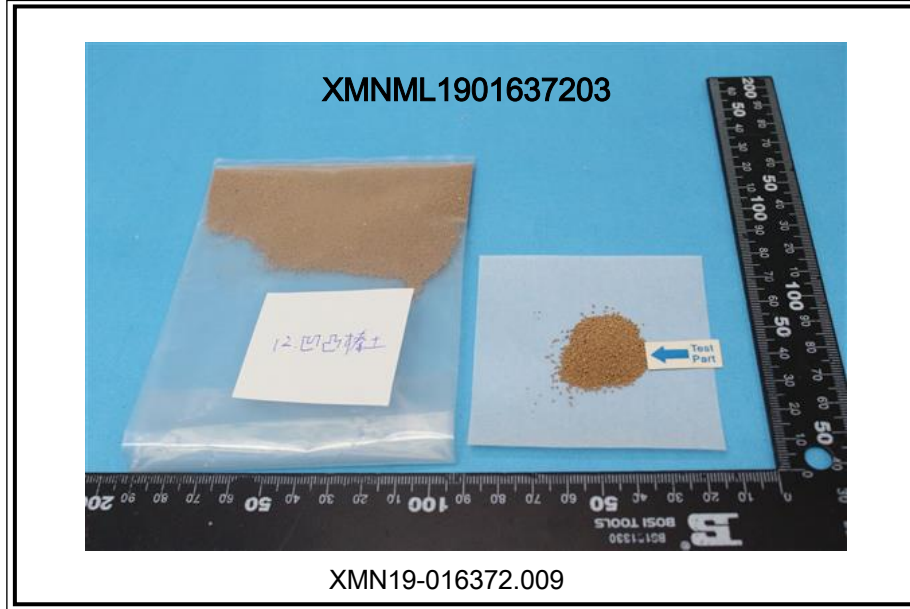




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