



中国认可
国际互认
检测
TESTING
CNAS L6478



检测报告 TEST REPORT

报告编号/ Report No. : WTH24F11280398C
任务号/ Job No. : SHW2411291210CJ
委托方/ Applicant : 肇庆市立得电子有限公司
LEDTECH ELECTRONICS CORPORATION
地址/ Address : 广东省肇庆市端州区瓏西路西、桂园路北 (22 区)
(Zone 22) Guiyuan Rd. North, Jixi Rd. West, Duanzhou District,
Zhaoqing City, Guangdong Province, China
样品名称/ Sample Name : LED DISPLAY
检测要求/ Test Requested : 根据客户要求, 参照欧盟 RoHS 指令 2011/65/EU 及其修订指令
EU 2015/863, 测试送检样品中的铅、镉、汞、六价铬、多溴联
苯、多溴二苯醚、DEHP、DBP、BBP、DIBP 的含量。
As specified by client, with reference to EU RoHS Directive
2011/65/EU and its amendment Directive EU 2015/863, to
determine the Pb, Cd, Hg, Cr⁶⁺, PBBs, PBDEs, DEHP, DBP,
BBP, DIBP content in the submitted sample.
检测方法/ Test Method : 参见报告下页/ Refer to next page (s)
检测结论/ Test Conclusion : 符合/ Pass
样品接收日期/ Date of Receipt sample : 2024-11-29
检测周期/ Testing period : 2024-11-29 ~ 2024-12-04
报告日期/ Date of Issue : 2024-12-04
检测结果/ Test Result : 参见报告下页/ Refer to next page (s)

报告制作/ Prepared By:

佛山市沃特测试技术服务有限公司

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佛山市沃特测试技术服务有限公司

授权签字人

Signed for and on behalf of

Waltek Testing Group (Foshan) Co., Ltd.

梁志聪

梁志聪/Swing Liang

佛山市沃特测试技术服务有限公司/ Waltek Testing Group (Foshan) Co., Ltd.

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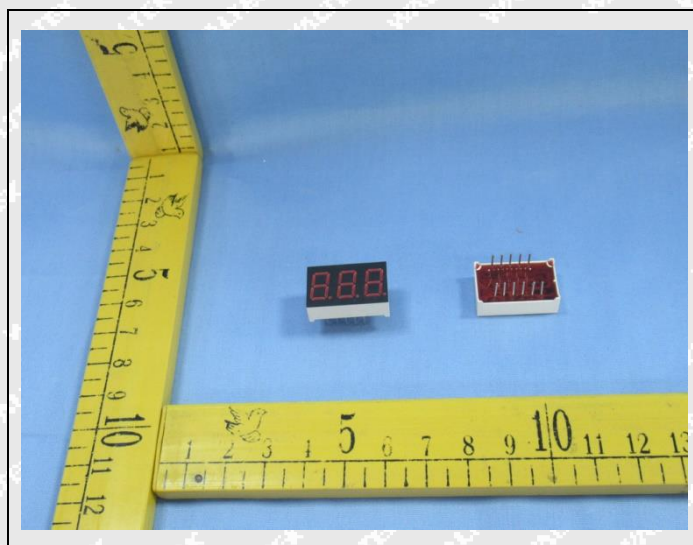
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样品图片 / Sample Photo:



WALTEK



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测试结果/ Test Results:

检测方法/仪器/ Test Method/Equipment:

- 参考 IEC 62321-5:2013, 使用 ICP-OES 检测铅, 镉含量
- 参考 IEC 62321-4:2013+AMD1:2017 CSV, 使用 ICP-OES 检测汞含量
- 参考 IEC 62321-7-2:2017, 使用 UV-Vis 检测六价铬含量
- 参考 IEC 62321-6:2015, 使用 GC-MS 检测多溴联苯, 多溴二苯醚含量
- 参考 IEC 62321-8:2017, 使用 GC-MS 检测 DEHP, DBP, BBP, DIBP 含量
- With reference to IEC 62321-5:2013, determination of Pb, Cd by ICP-OES
- With reference to IEC 62321-4:2013+AMD1:2017 CSV, determination of Hg by ICP-OES
- With reference to IEC 62321-7-2:2017, determination of Cr⁶⁺ by UV-Vis
- With reference to IEC 62321-6:2015, determination of PBBs, PBDEs by GC-MS
- With reference to IEC 62321-8:2017, determination of DEHP, DBP, BBP, DIBP by GC-MS

检测项目 Test Item(s)	单位 Unit	定量限 LOQ	结果 Result(s)	限值 Limit
			No.(1+2+3) [#]	
铅(Pb)/ Lead(Pb)	mg/kg	2	ND	600
镉(Cd)/ Cadmium(Cd)	mg/kg	2	ND	60
汞(Hg)/ Mercury(Hg)	mg/kg	2	ND	600
六价铬(Cr ⁶⁺)/ Hexavalent Chromium(Cr ⁶⁺)	mg/kg	8	ND	600
多溴联苯(PBBs)/ Polybrominated Biphenyls(PBBs)	mg/kg	--	ND	600
一溴联苯/ Mono-bromobiphenyl	mg/kg	5	ND	--
二溴联苯/ Di-bromobiphenyl	mg/kg	5	ND	--
三溴联苯/ Tri-bromobiphenyl	mg/kg	5	ND	--
四溴联苯/ Tetra-bromobiphenyl	mg/kg	5	ND	--
五溴联苯/ Penta-bromobiphenyl	mg/kg	5	ND	--
六溴联苯/ Hexa-bromobiphenyl	mg/kg	5	ND	--
七溴联苯/ Hepta-bromobiphenyl	mg/kg	5	ND	--
八溴联苯/ Octa-bromobiphenyl	mg/kg	5	ND	--
九溴联苯/ Nona-bromobiphenyl	mg/kg	5	ND	--
十溴联苯/ Deca-bromobiphenyl	mg/kg	5	ND	--
多溴二苯醚(PBDEs)/ Polybrominated Diphenyl Ethers(PBDEs)	mg/kg	--	ND	600
一溴二苯醚/ Mono-bromodiphenyl ether	mg/kg	5	ND	--
二溴二苯醚/ Di-bromodiphenyl ether	mg/kg	5	ND	--
三溴二苯醚/ Tri-bromodiphenyl ether	mg/kg	5	ND	--
四溴二苯醚/ Tetra-bromodiphenyl ether	mg/kg	5	ND	--
五溴二苯醚/ Penta-bromodiphenyl ether	mg/kg	5	ND	--
六溴二苯醚/ Hexa-bromodiphenyl ether	mg/kg	5	ND	--



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检测项目 Test Item(s)	单位 Unit	定量限 LOQ	结果 Result(s)	限值 Limit
			No.(1+2+3) [#]	
七溴二苯醚/ Hepta-bromodiphenyl ether	mg/kg	5	ND	--
八溴二苯醚/ Octa-bromodiphenyl ether	mg/kg	5	ND	--
九溴二苯醚/ Nona-bromodiphenyl ether	mg/kg	5	ND	--
十溴二苯醚/ Deca-bromodiphenyl ether	mg/kg	5	ND	--
邻苯二甲酸二(2-乙基己基)酯(DEHP)/ Di-(2-ethylhexyl) phthalate(DEHP)	mg/kg	50	ND	600
邻苯二甲酸二丁酯(DBP)/ Dibutyl phthalate(DBP)	mg/kg	50	ND	600
邻苯二甲酸丁苄酯(BBP)/ Butylbenzyl phthalate(BBP)	mg/kg	50	ND	600
邻苯二甲酸二异丁酯(DIBP)/ Di-iso-butyl phthalate(DIBP)	mg/kg	50	ND	600
结论 / Conclusion	--	--	符合 Pass	--

检测方法/仪器/ Test Method/Equipment:

- 参考 IEC 62321-5:2013, 使用 ICP-OES 检测铅, 镉含量
- 参考 IEC 62321-4:2013+AMD1:2017 CSV, 使用 ICP-OES 检测汞含量
- 参考 IEC 62321-7-1:2015, 使用 UV-Vis 检测六价铬含量
- With reference to IEC 62321-5:2013, determination of Pb, Cd by ICP-OES
- With reference to IEC 62321-4:2013+AMD1:2017 CSV, determination of Hg by ICP-OES
- With reference to IEC 62321-7-1:2015, determination of Cr⁶⁺ by UV-Vis

检测项目 Test Item(s)	单位 Unit	定量限 LOQ	结果 Result(s)	限值 Limit
			No.4	
铅(Pb)/ Lead(Pb)	mg/kg	2	ND	600
镉(Cd)/ Cadmium(Cd)	mg/kg	2	ND	60
汞(Hg)/ Mercury(Hg)	mg/kg	2	ND	600
六价铬(Cr ⁶⁺)/ Hexavalent Chromium(Cr ⁶⁺)	µg/cm ²	0.10	阴性 Negative	<0.10
结论 / Conclusion	--	--	符合 Pass	--



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备注/ Note:

(1) $\mu\text{g}/\text{cm}^2$ = 微克每平方厘米/ $\mu\text{g}/\text{cm}^2$ = microgram per square centimeter

(2) mg/kg (毫克每千克) = ppm (百万分之)/ mg/kg (milligram per kilogram) = ppm (parts per million)

(3)ND=未检出, 检测值小于定量限/ ND=Not Detected or lower than limit of quantitation

(4)LOQ =定量限/ LOQ =Limit of quantitation

(5)"--"=未规定/ "--"=Not regulated

(6)#= 依据申请方要求, 对样品按等质量比例进行混合测试, 基于混合测试部件中的最小样品质量计算测试结果。/ #=

As per applicant's requirement, the testing was conducted based on mixed components by weight in equal ratio, results are calculated by the minimum weight of mixed components.

(7)限值要求由客户提供。/ The limits were provided by client.

(8)根据 IEC 62321-7-1: 2015 沸水萃取:

ND* =阴性, 表示涂层不存在 Cr^{6+} , 即在沸水萃取溶液中六价铬浓度小于 $0.10\mu\text{g}/\text{cm}^2$

不确定 = 即在沸水萃取溶液中六价铬浓度大于或等于 $0.10\mu\text{g}/\text{cm}^2$ 和小于或等于 $0.13\mu\text{g}/\text{cm}^2$

阳性 = 表示涂层存在 Cr^{6+} , 即在沸水萃取溶液中六价铬浓度大于 $0.13\mu\text{g}/\text{cm}^2$

关于金属样品的保存条件和生产日期将不能被采用, 其测试结果只能证明当下方法测试下样品是否存在/不存在 Cr^{6+} 。

According to IEC 62321-7-1:2015, boiling water extraction:

ND* = Negative, Absence of Cr^{6+} coating, the detected concentration in boiling water extraction solution is less than $0.10\mu\text{g}/\text{cm}^2$.

Inconclusive = the detected concentration in boiling water extraction solution is greater than or equal to $0.10\mu\text{g}/\text{cm}^2$ and less than or equal to $0.13\mu\text{g}/\text{cm}^2$.

Positive = Presence of Cr^{6+} coating, the detected concentration in boiling water extraction solution is greater than $0.13\mu\text{g}/\text{cm}^2$.

Information on storage conditions and production date of the tested sample is unavailable and thus Cr^{6+} results represent status of the sample at the time of testing.

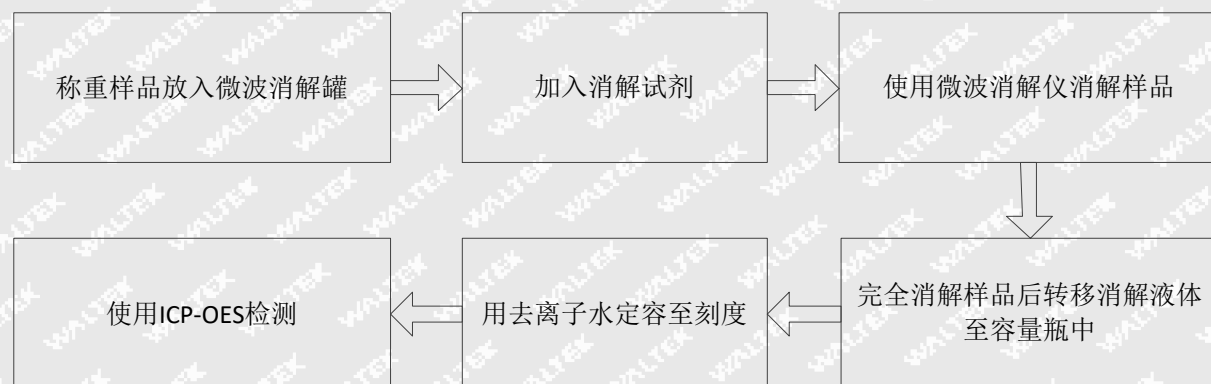


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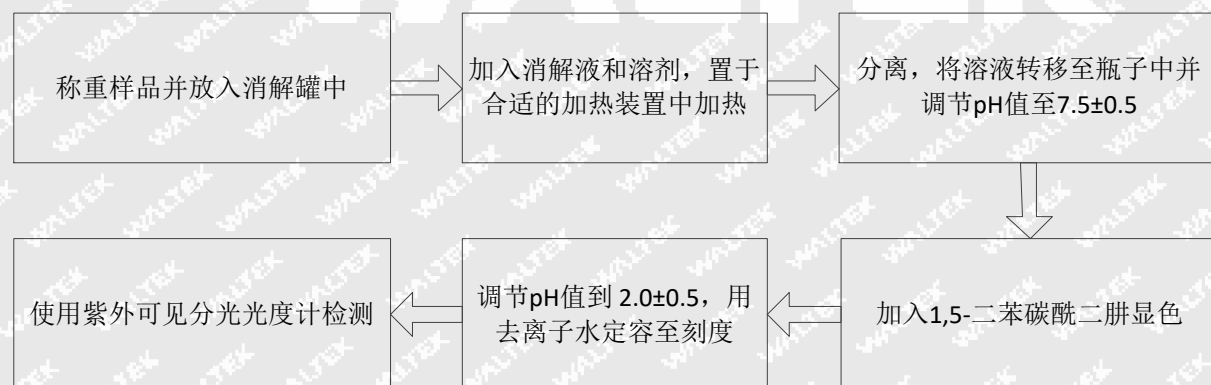
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测试流程图 / Testing Flow chart:

铅(Pb)、镉(Cd)、汞(Hg)



六价铬(Cr⁶⁺)





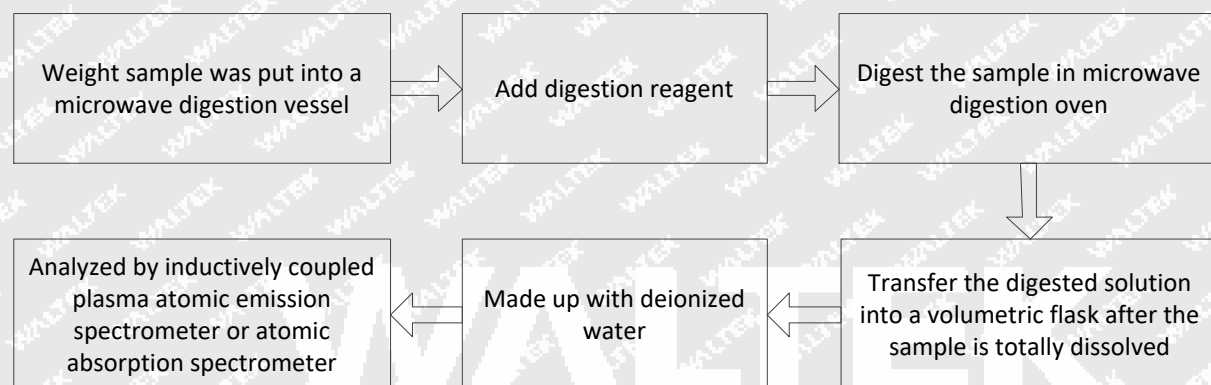
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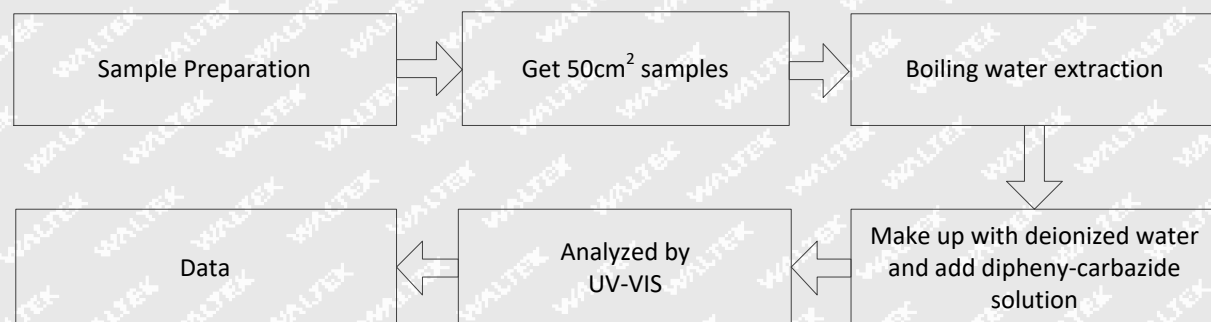
多溴联苯(PBBs)、多溴二苯醚(PBDEs)、邻苯二甲酸二丁酯(DBP)、邻苯二甲酸丁苄酯(BBP)、邻苯二甲酸二(2-乙基己基)酯(DEHP)、邻苯二甲酸二异丁酯(DIBP)



Lead(Pb), Cadmium(Cd), Mercury(Hg)



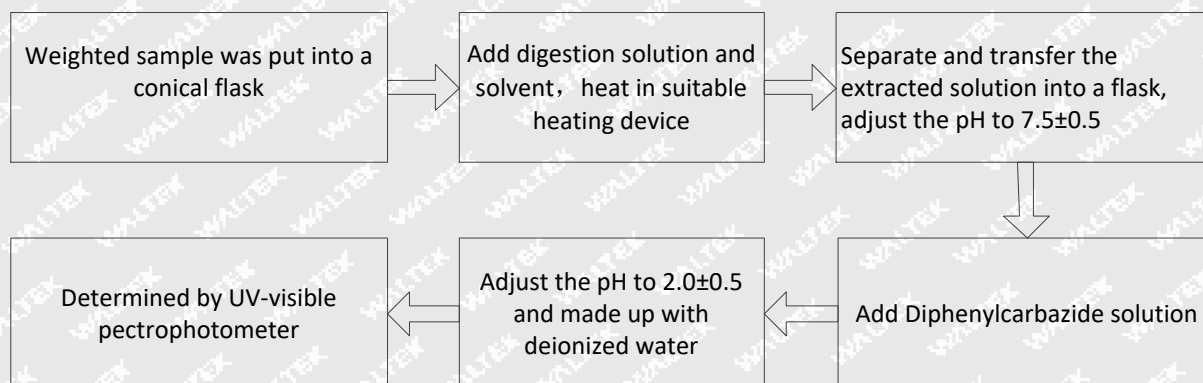
Hexavalent Chromium(Cr^{6+})



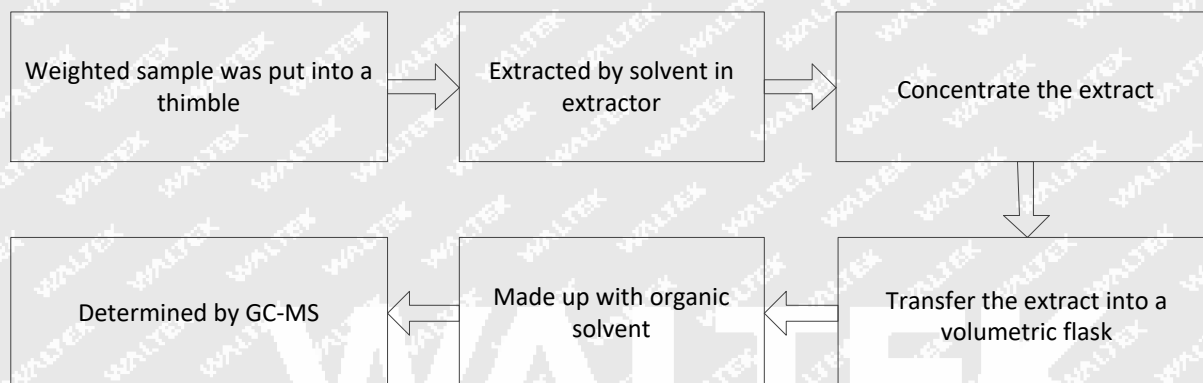


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Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Dibutyl phthalate(DBP), Butylbenzyl phthalate(BBP), Di-(2-ethylhexyl) phthalate(DEHP), Di-iso-butyl phthalate(DIBP)

**样品描述 / Specimen Description:**

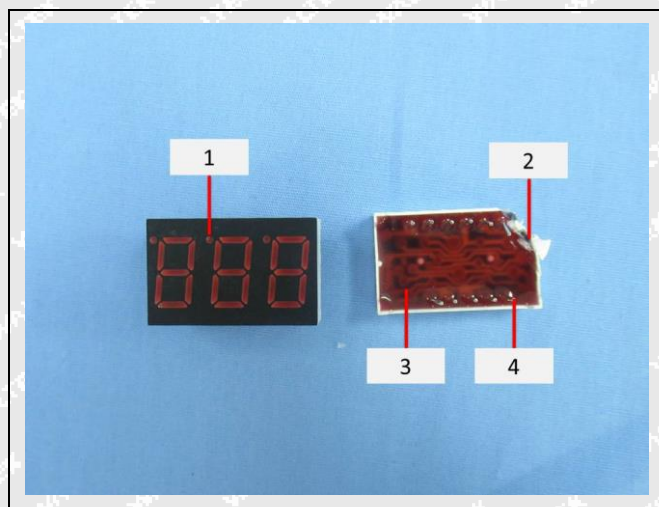
样品编号 Specimen No.	样品描述 Specimen Description
1	带黑色涂层的白色塑料壳（数码管） White plastic shell with black coating(nixie tube)
2	黑色电路板（数码管） Black PCB(nixie tube)
3	红色透明环氧树脂（数码管） Red transparent epoxy resin(nixie tube)
4	银色金属插脚（数码管） Silvery metal pin(nixie tube)



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测试部位图片/ Photograph of parts tested:



备注/ Remarks:

1. 检验检测结果仅对测试样品负责;
The results shown in this test report refer only to the sample(s) tested;
2. 报告未经本司的书面批准不得部分复制;
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The report would be invalid without specific stamp of test institute and the signatures of compiler and approver;
4. 委托单位及地址, 样品和样品信息由委托方提供, 委托方应对其真实性负责, 沃特未核实其真实性;
The Applicant name and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which Waltek hasn't verified;
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The sample material information (Model No. information) is provided by client, not verified by test laboratory. The samples of reference Model No. are not tested. Test laboratory not responsible for the accuracy, appropriateness, completeness and authenticity of the information provided by client.

=====报告结束/ End of Report =====