

## 測試報告 Test Report

號碼(No.) : CR/2009/80024 日期(Date) : 2009/08/11 頁數(Page) : 1 of 7

宏祥電子股份有限公司

AVANT ELECTRONICS CORPORATION

台北縣新店市中正路501-14號2樓

2F, NO. 501-14, ZHONGZHENG RD., XINDIAN CITY, TAIPEI COUNTY 231, TAIWAN.



以下測試樣品係由客戶送樣，且由客戶聲稱並經客戶確認如下 (The following samples was/were submitted and identified by/on behalf of the client as) :

樣品名稱(Sample Description) : 液晶系列純錫電鍍產品 (LCD SERIES PB-FREE PRODUCTS)  
樣品型號(Style/Item No.) : SAP1024B, SBN1661G\_M18, SCN6400G, SCN0080G\_A, SDN8000G, SDN0080G, SDN8080G, SEN6A39, SEN6A40, SAP3305, SBN0064G, SBN6400G  
收件日期(Sample Receiving Date) : 2009/08/04  
測試期間(Testing Period) : 2009/08/04 TO 2009/08/11

=====  
測試結果(Test Results) : 請見下一頁 (Please refer to next pages).

Chenyu Kung / Operation Manager  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory – Taipei

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### 測試結果(Test Results)

測試部位(PART NAME) NO.1 : 整體混測 (3款) (MIXED ALL PARTS (THREE KINDS))

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				NO.1
蒽 / Anthracene (CAS No.: 000120-12-7)	mg/kg	參考ZLS standard ZEK 01.2-08方法, 以氣相層析質譜儀檢測. / With reference to ZEK 01.2-08.	0.2	n.d.
4,4' - 二氨基二苯甲烷 / 4,4' - Diaminodiphenylmethane (CAS No.: 000101-77-9)	mg/kg	參考EN 14362-1: 2003方法, 以氣相層析質譜儀檢測. / With reference to EN 14362-1: 2003. Analyzed by GC/MS.	3	n.d.
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 000084-74-2)	%	本測試參考EN 14372: 2004, 以氣相層析儀/質譜儀檢測之. / With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸甲苄基丁酯 / BBP (Benzyl butyl phthalate) (CAS No.: 000085-68-7)	%	本測試參考EN 14372: 2004, 以氣相層析儀/質譜儀檢測之. / With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	n.d.
鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate) (CAS No.: 000117-81-7)	%	本測試參考EN 14372: 2004, 以氣相層析儀/質譜儀檢測之. / With reference to EN 14372: 2004. Analysis was performed by GC/MS.	0.003	n.d.
二甲苯麝香 / 5-tert-butyl-2,4,6-trinitro-m-xylene (Musk Xylene) (CAS No.: 000081-15-2)	mg/kg	參考US EPA 3550C:1996方法, 以氣相層析質譜儀檢測. / With reference to US EPA 3550C:1996. Analyzed by GC/MS.	10	n.d.
六溴環十二烷及所有主要被辨別出的異構物 / Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified ( $\alpha$ - HBCDD, $\beta$ - HBCDD, $\gamma$ - HBCDD) (CAS No.: 025637-99-4 and 003194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	mg/kg	參考US EPA 3540C:1996方法, 以氣相層析質譜儀檢測. / With reference to US EPA 3540C:1996. Analyzed by GC/MS.	5	n.d.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				NO.1
短鏈氯化石蠟 / Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) (CAS No.: 085535-84-8)	mg/kg	參考US EPA 3540C:1996方法, 以氣 相層析質譜儀檢測. / With reference to US EPA 3540C:1996. Analyzed by GC/MS.	100	n.d.
三丁基錫 / Tributyl Tin (TBT) (CAS No.: 000688-73-3)	mg/kg	參考ISO 17353: 2004方法, 以氣相 層析儀/火焰光度偵測器檢測./ With reference to ISO 17353: 2004. Analyzed by GC/FPD.	0.03	n.d.
三丁基錫氧化物 / Bis(tributyltin)oxide*** (CAS No.: 000056-35-9)	mg/kg	參考ISO 17353: 2004方法, 以氣相 層析儀/火焰光度偵測器檢測./ With reference to ISO 17353: 2004. Analyzed by GC/FPD.	-	n.d.
二氧化鈷 / Cobalt dichloride (CAS No.: 007646-79-9)	mg/kg	參考SGS內部方法RSTS-EE-SVHC-002, 用感應耦合電漿原子發射光譜儀檢 測. / SGS In-House method-RSTS- EE-SVHC-002. Analyzed by ICP- AES.	5	n.d.
砷 / Arsenic (As)	mg/kg	參考US EPA 3052:1996方法, 用感應 耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3052:1996. Analyzed by ICP-AES.	2	n.d.
五氧化二砷 / Diarsenic pentaoxide*** (CAS No.: 001303-28-2)	mg/kg	參考US EPA 3052:1996方法, 用感應 耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3052:1996. Analyzed by ICP-AES.	-	n.d.
三氧化二砷 / Diarsenic trioxide*** (CAS No.: 001327-53-3)	mg/kg	參考US EPA 3052:1996方法, 用感應 耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3052:1996. Analyzed by ICP-AES.	-	n.d.
三乙基砷酸鹽 / Triethyl arsenate*** (CAS No.: 015606-95-8)	mg/kg	參考US EPA 3052:1996方法, 用感應 耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3052:1996. Analyzed by ICP-AES.	-	n.d.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				NO.1
鉛 / Lead (Pb)	mg/kg	參考US EPA 3052:1996方法, 用感應 耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3052:1996. Analyzed by ICP-AES.	2	n.d.
砷酸氫鉛 / Lead hydrogen arsenate*** (CAS No.: 007784-40-9)	mg/kg	參考US EPA 3052:1996方法, 用感應 耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3052:1996. Analyzed by ICP-AES.	-	n.d.
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考US EPA 3060A:1996方法, 用UV- VIS做分析. / With reference to US EPA 3060A:1996. Analyzed by UV-Vis.	2	n.d.
重鉻酸鈉 / Sodium dichromate*** (CAS No.: 010588-01-9(*))	mg/kg	參考US EPA 3060A:1996方法, 用UV- VIS做分析. / With reference to US EPA 3060A:1996. Analyzed by UV-Vis.	-	n.d.
環十二烷 / Cyclododecane (CAS No.: 000294-62-2)	mg/kg	參考US EPA 5021方法, 以氣相層析 質譜儀(GC/MS)檢測. / With reference to US EPA 5021 method. Analysis was performed by GC/MS.	5	n.d.

### 備註(Note) :

1. mg/kg = ppm
2. n.d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. "-" = Not Regulated (無規格值)
5. \*\*\*: 該物質是由"三丁基錫"或各別元素(例如: 砷、鉛或六價鉻)之測試結果計算得知。  
其MDL是針對"三丁基錫"或元素(例如: 砷、鉛或六價鉻)之評估. /

The substance was calculated by the test results of Tributyl Tin or element (Ex. Arsenic, Lead or Cr (VI) respectively). The MDL was evaluated for Tributyl Tin or element (Ex. Arsenic, Lead or Cr(VI) respectively).

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AX = A × F

AX	A	F
五氧化二砷 / Diarsenic pentaoxide	砷 / Arsenic	1.5339
三氧化二砷 / Diarsenic trioxide		1.3203
三乙基砷酸鹽 / Triethyl arsenate		3.0179
砷酸氫鉛 / Lead hydrogen arsenate		4.6332
	鉛 / Lead	1.6753
重鉻酸鈉 / Sodium dichromate	六價鉻 / Hexavalent Chromium Cr(VI)	2.5192
三丁基錫氧化物 / Bis(tributyltin)oxide	三丁基錫 / Tributyl Tin (TBT)	1.0276

"砷酸氫鉛"之濃度是取砷及鉛兩者各別換算出砷酸氫鉛濃度，並取其之最小值最為最後出報告之依據。

(Regarding lead hydrogen arsenate lead and arsenic are tested and used for the calculation of the separated concentration of lead hydrogen arsenate. The final concentration of lead hydrogen arsenate for the report uses the minimum value of above-mentioned two concentration of lead hydrogen arsenate.)

- (\*)：重鉻酸鈉二水合物(CAS No.: 007789-12-0)含量 = 重鉻酸鈉含量 × 1.1374  
(conc. of Sodium dichromate dihydrate = conc. of sodium dichromate × 1.1374)
- 樣品的測試是基於申請人要求混合測試，報告中的混合測試結果不代表其中個別單一材質的含量。  
(The samples was/were analyzed on behalf of the applicant as mixing sample in one testing.  
The above results was/were only given as the informality value.)

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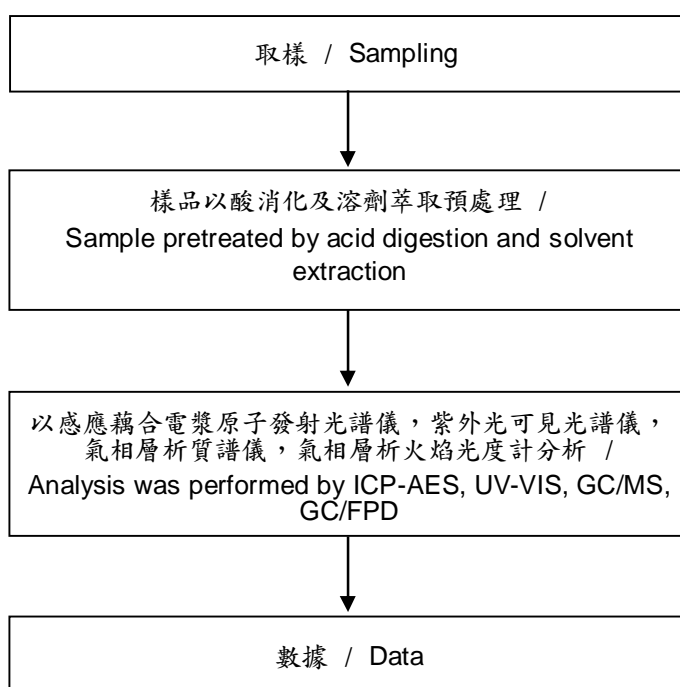
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### 分析流程圖 / Analytical flow chart



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\*\* 報告結尾 \*\*

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