



ICP Test Report Certification Packet

Company Name: Littelfuse, Inc.

Product Type: Surface Mount Varistors

Product Series: VxxxxMHS/ MLE/MLAxxxxNR Series

Issue Date: September 3, 2013

It is hereby certified by Littelfuse, Inc. that there is neither RoHS (EU Directive 2002/95/EC, 2011/65/EU)-restricted substance nor such use, for materials to be used for unit parts, for packing/packaging materials, and for additives and the like in the manufacturing processes.

In addition, it is hereby reported to you that the parts and sub-materials, the materials to be used for unit parts, the packing/packaging materials, and the additives and the like in the manufacturing processes, are all composed of the following components.

Issued by: *David Huang*

< DGLF Environmental, Health & Safety Engineer >

(1) Parts, sub-materials and unit parts

This document covers the Surface Mount Varistors MHS/MLE/MLAxxxxNR compliant series products manufactured by Littelfuse, Inc.

Please see Table 1 for raw materials used.

(2) The ICP data on all measurable substances

Please see appropriate pages as identified in Table 1

Remarks:

Pb (lead) contained in glass of electronic components and is categorized as exempt under 7c-1 of the RoHS Annex.



Table 1: List of Raw Materials covered by this report

Parts	P/N	Raw Material Description	Page
1	N/A	Zinc Oxide	3-9
2	N/A	Glass – Sintered Flux	10-16
3	N/A	Internal Electrode – Conductive Paste (RoHS Test)	17-22
4	N/A	Internal Electrode – Conductive Paste (Halogen Test)	23-26
5	N/A	Overcoat – Solder resist	27-44
6	N/A	Additive A846	45-51
7	N/A	End Termination Ag Paste	52-61
8	N/A	External Electrode - Nickel	62-74
9	N/A	External Electrode - Tin	75-95

測試報告 Test Report

號碼(No.) : CE/2012/B3832

日期(Date) : 2012/11/28

頁數(Page) : 1 of 7

合僑貿易股份有限公司
HO CHAR TRADING CORPORATION
桃園縣中壢市興平路70號
NO. 70, HSING PING RD., JUNGLI CITY, TAIWAN R. O. C.



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) : ZINC OXIDE 氧化鋅
批號(Lot No.) : 9855
收件日期(Sample Receiving Date) : 2012/11/21
測試期間(Testing Period) : 2012/11/21 TO 2012/11/28

測試需求(Test Requested) : (1) 依據客戶要求，參考RoHS 2011/65/EU Annex II 指令進行鎘、鉛、汞、六價鉻、多溴聯苯、多溴聯苯醚測試。(As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs contents in the submitted sample.)
(2) 依據客戶指定，進行鹵素-氟、氯、溴、碘測試。(As specified by client, to test Halogen-Fluorine, Chlorine, Bromine, Iodine contents in the submitted sample.)

測試方法(Test Method) : 請見下一頁 (Please refer to next pages).

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

結論(Conclusion) : 根據客戶所提供的樣品，其鎘、鉛、汞、六價鉻、多溴聯苯及多溴聯苯醚的測試結果符合RoHS指令2002/95/EC的更新指令2011/65/EU之要求 (Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Hexavalent Chromium Cr(VI), PBBs and PBDEs comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.)


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

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Test Report

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合僑貿易股份有限公司
HO CHAR TRADING CORPORATION
桃園縣中壢市興平路70號
NO. 70, HSING PING RD., JUNGLI CITY, TAIWAN R. O. C.



測試結果(Test Results)

測試部位(PART NAME) No.1 : 白色粉末 (WHITE POWDER)

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)	法規 限值 (Limit)
				No.1	
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321: 2008方法, 以感應 耦合電漿原子發射光譜儀檢測。/ With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	100
鉛 / Lead (Pb)	mg/kg	參考IEC 62321: 2008方法, 以感應 耦合電漿原子發射光譜儀檢測。/ With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	1000
汞 / Mercury (Hg)	mg/kg	參考IEC 62321: 2008方法, 以感應 耦合電漿原子發射光譜儀檢測。/ With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	1000
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考IEC 62321: 2008方法, 以UV- VIS檢測。/ With reference to IEC 62321: 2008 and performed by UV- VIS.	2	n.d.	1000
鹵素 / Halogen					
鹵素 (氟) / Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	參考BS EN 14582:2007, 以離子層析 儀分析。/ With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.	-
鹵素 (氯) / Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)			50	n.d.	-
鹵素 (溴) / Halogen-Bromine (Br) (CAS No.: 10097-32-2)			50	n.d.	-
鹵素 (碘) / Halogen-Iodine (I) (CAS No.: 14362-44-8)			50	n.d.	-

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桃園縣中壢市興平路70號
NO. 70, Hsing Ping Rd., Jungli City, Taiwan R. O. C.



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)	法規 限值 (Limit)
				No.1	
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321: 2008方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.	1000
一溴聯苯 / Monobromobiphenyl			5	n.d.	-
二溴聯苯 / Dibromobiphenyl			5	n.d.	-
三溴聯苯 / Tribromobiphenyl			5	n.d.	-
四溴聯苯 / Tetrabromobiphenyl			5	n.d.	-
五溴聯苯 / Pentabromobiphenyl			5	n.d.	-
六溴聯苯 / Hexabromobiphenyl			5	n.d.	-
七溴聯苯 / Heptabromobiphenyl			5	n.d.	-
八溴聯苯 / Octabromobiphenyl			5	n.d.	-
九溴聯苯 / Nonabromobiphenyl			5	n.d.	-
十溴聯苯 / Decabromobiphenyl			5	n.d.	-
多溴聯苯醚總和 / Sum of PBDEs			-	n.d.	1000
一溴聯苯醚 / Monobromodiphenyl ether			5	n.d.	-
二溴聯苯醚 / Dibromodiphenyl ether			5	n.d.	-
三溴聯苯醚 / Tribromodiphenyl ether			5	n.d.	-
四溴聯苯醚 / Tetrabromodiphenyl ether			5	n.d.	-
五溴聯苯醚 / Pentabromodiphenyl ether			5	n.d.	-
六溴聯苯醚 / Hexabromodiphenyl ether			5	n.d.	-
七溴聯苯醚 / Heptabromodiphenyl ether			5	n.d.	-
八溴聯苯醚 / Octabromodiphenyl ether			5	n.d.	-
九溴聯苯醚 / Nonabromodiphenyl ether	5	n.d.	-		
十溴聯苯醚 / Decabromodiphenyl ether	5	n.d.	-		

備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
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)

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合僑貿易股份有限公司

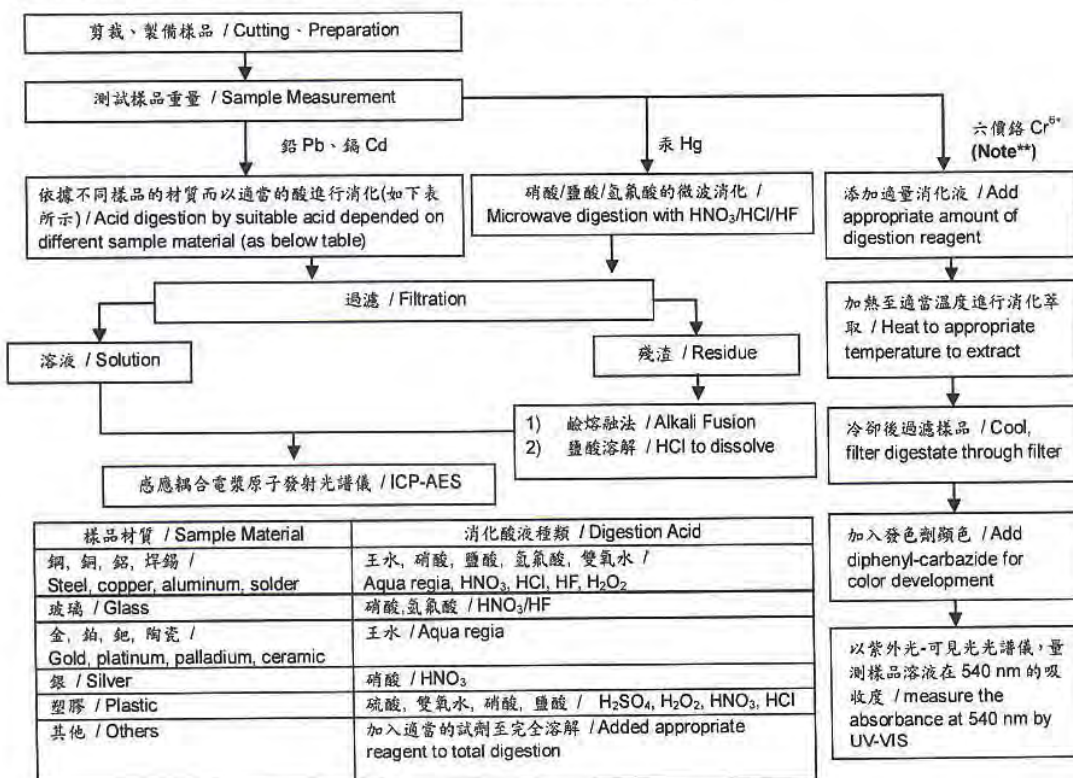
HO CHAR TRADING CORPORATION

桃園縣中壢市興平路70號

NO. 70, Hsing Ping Rd., Jungli City, Taiwan R. O. C.



- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



Note:** (1) 針對非金屬材料加入鹼性消化液，加熱至 90~95°C 萃取。 / For non-metallic material, add alkaline digestion reagent and heat to 90~95°C.

(2) 針對金屬材料加入純水，加熱至沸騰萃取。 / For metallic material, add pure water and heat to boiling.

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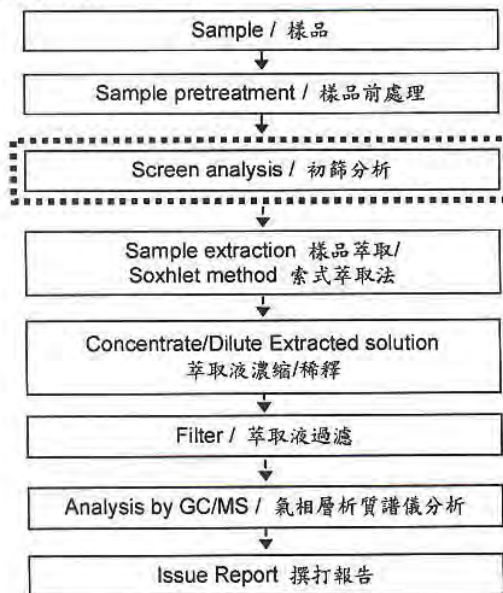
頁數(Page) : 5 of 7

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HO CHAR TRADING CORPORATION
桃園縣中壢市興平路70號
NO. 70, HSING PING RD., JUNGLI CITY, TAIWAN R. O. C.



多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
 - 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang
- 初次測試程序 / First testing process →
- 選擇性篩檢程序 / Optional screen process>
- 確認程序 / Confirmation process - - ->



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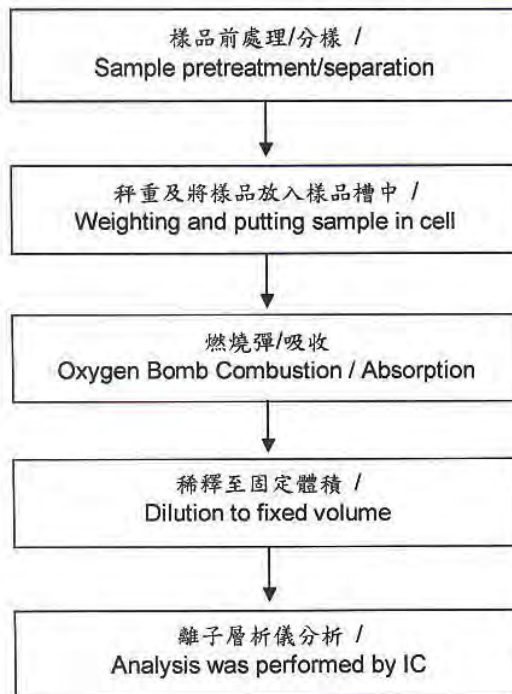
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鹵素分析流程圖 / Analytical flow chart of halogen content

- 測試人員：陳恩臻 / Name of the person who made measurement: Rita Chen
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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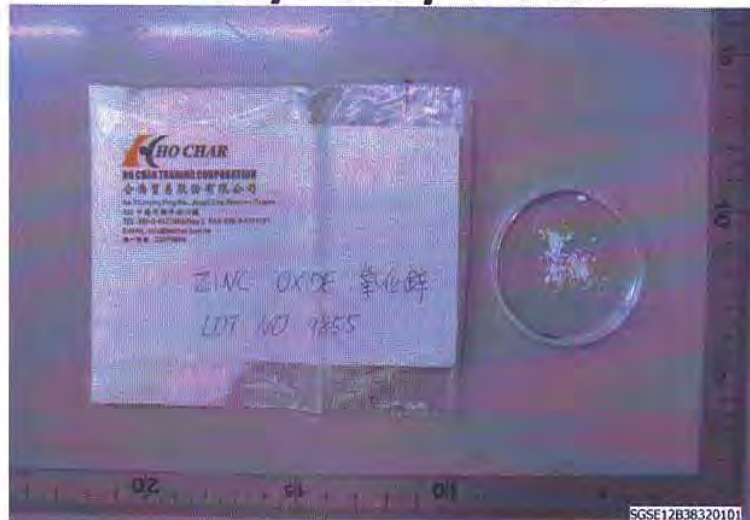
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NO. 70, HSING PING RD., JUNGLI CITY, TAIWAN R. O. C.



* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。*
(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2012/B3832



** 報告結尾(End of Report) **

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Test Report 測試報告

Number : TWNC00323570
報告號碼

Date 日期 : Jul 24, 2013

Applicant 申請廠商: Inpaq Technology Co.,Ltd.
No. 11, Ke-Yi St.,
Chunan, Miaoli, Taiwan, R.O.C.

Sample Description 樣品敘述:

One (1) group of submitted samples said to be :

以下測試樣品乃供應商所提供及確認 :

Sample Description : G02

樣品名稱

Date Sample Received : Jul 17, 2013

收件日期

Date Test Started : Jul 17, 2013

開始測試日期

Test Conducted 測試執行 :

As requested by the applicant, for details please refer to attached pages.

依申請商之要求, 細節請參考附頁 .

Authorized by:
On Behalf of Intertek Testing Services
Taiwan Limited



K. Y. Liang
Director



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Intertek Testing Services Taiwan Ltd.

8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.

全國公證檢驗股份有限公司

11492 台北市內湖區瑞光路 423 號 8 樓

Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report 測試報告

Number : TWNC00323570
報告號碼

Test Conducted 測試執行
Test Result Summary 測試結果 :

Test Item 測試項目	Unit 單位	Test Method 測試方法	Result 結果	RL
			White powder	
Heavy Metal 重金屬				
Cadmium (Cd) content 鎘含量	ppm	With reference to IEC 62321:2008, by microwave digestion and determined by ICP-OES. 參考 IEC 62321:2008, 以微波消化法消化樣品並用感應耦合電漿原子發射光譜儀分析。	ND	2
Lead (Pb) content 鉛含量	ppm	With reference to IEC 62321:2008, by microwave digestion and determined by ICP-OES. 參考 IEC 62321:2008, 以微波消化法消化樣品並用感應耦合電漿原子發射光譜儀分析。	146005	2
Mercury (Hg) content 汞含量	ppm	With reference to IEC 62321:2008, by microwave digestion and determined by ICP-OES. 參考 IEC 62321:2008, 以微波消化法消化樣品並用感應耦合電漿原子發射光譜儀分析。	ND	2
Chromium VI (Cr ⁶⁺) content 六價鉻含量	ppm	With reference to IEC 62321:2008, by alkaline digestion and determined by UV-Vis Spectrophotometer. 參考 IEC 62321:2008, 以鹼液消化並用紫外光-可見光分光光度計分析。	ND	1



Test Report 測試報告

Number : TWNC00323570
報告號碼

Test Conducted 測試執行

Test Item 測試項目	Unit 單位	Test Method 測試方法	Result 結果	RL
			White powder	
Polybrominated Biphenyls (PBBs) 多溴聯苯				
Monobrominated Biphenyls (MonoBB) 單溴聯苯	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD. confirmation when necessary. 參考 IEC 62321: 2008, 以溶劑萃取並用氣相層析質譜儀分析, 必要時會以高效能液相層析-二極體陣列偵檢器進行確認。	ND	5
Dibrominated Biphenyls (DiBB) 二溴聯苯	ppm		ND	5
Tribrominated Biphenyls (TriBB) 三溴聯苯	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB) 四溴聯苯	ppm		ND	5
Pentabrominated Biphenyls (PentaBB) 五溴聯苯	ppm		ND	5
Hexabrominated Biphenyls (HexaBB) 六溴聯苯	ppm		ND	5
Heptabrominated Biphenyls (HeptaBB) 七溴聯苯	ppm		ND	5
Octabrominated Biphenyls (OctaBB) 八溴聯苯	ppm		ND	5
Nonabrominated Biphenyls (NonaBB) 九溴聯苯	ppm		ND	5
Decabrominated Biphenyl (DecaBB) 十溴聯苯	ppm		ND	5
Polybrominated Diphenyl Ethers (PBDEs) 多溴聯苯醚				
Monobrominated Diphenyl Ethers (MonoBDE) 單溴聯苯醚	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD. confirmation when necessary. 參考 IEC 62321: 2008, 以溶劑萃取並用氣相層析質譜儀分析, 必要時會以高效能液相層析-二極體陣列偵檢器進行確認。	ND	5
Dibrominated Diphenyl Ethers (DiBDE) 二溴聯苯醚	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE) 三溴聯苯醚	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE) 四溴聯苯醚	ppm		ND	5
Pentabrominated Diphenyl Ethers (PentaBDE) 五溴聯苯醚	ppm		ND	5
Hexabrominated Diphenyl Ethers (HexaBDE) 六溴聯苯醚	ppm		ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE) 七溴聯苯醚	ppm		ND	5
Octabrominated Diphenyl Ethers (OctaBDE) 八溴聯苯醚	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE) 九溴聯苯醚	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE) 十溴聯苯醚	ppm		ND	5



Test Report 測試報告

Number : TWNC00323570
報告號碼

Test Conducted 測試執行

Test Item 測試項目	Unit 單位	Test Method 測試方法	Result 結果	RL
			White powder	
Halogen Content 鹵素含量				
Fluorine (F) 氟	ppm	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by ion chromatography. 參考 EN 14582:2007，以氧彈燃燒集氣法並用離子層析儀分析。	ND	50
Chlorine (Cl) 氯	ppm		ND	50
Bromine (Br) 溴	ppm		ND	50
Iodine (I) 碘	ppm		ND	50

Remarks: ppm = parts per million based on weight of tested sample = mg/kg
備註 百萬分之一，依據測試樣品重量計算 = 毫克/公斤
ND = Not detected 未檢測出
RL = Reporting Limit, quantitation limit of analyte in sample
報告極限，測試樣品之定量偵測極限

Responsibility of Chemist 分析人員 : Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received 樣品收件日期 : Jul 17, 2013

Test Period 樣品測試期間 : Jul 17, 2013 To Jul 23, 2013

RoHS Limit RoHS 限值

Restricted Substances 限用物質	Limits 限值
Cadmium (Cd) content 鎘含量	0.01% (100ppm)
Lead (Pb) content 鉛含量	0.1% (1000ppm)
Mercury (Hg) content 汞含量	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) content 六價鉻含量	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs) 多溴聯苯	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs) 多溴聯苯醚	0.1% (1000ppm)

The limits were quoted from Annex II of 2011/65/EU for homogeneous material.
本限值係依據歐盟指令 2011/65/EU 附錄二針對均質材質所訂定。

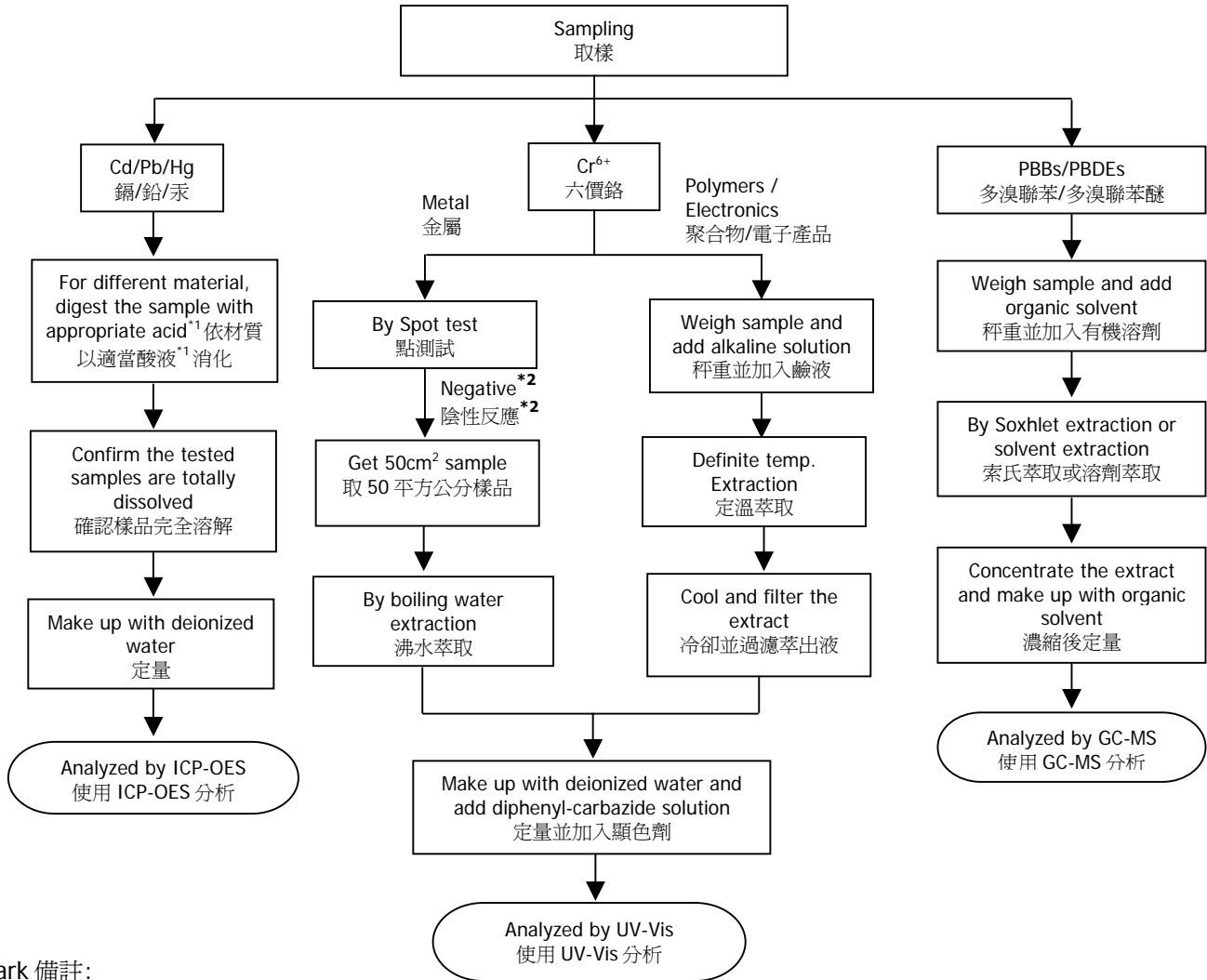


Test Report 測試報告

Number : TWNC00323570
報告號碼

Test Conducted 測試執行
Measurement Flowchart 測試流程圖:

Test for Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents RoHS 六項測試
Reference Method 參考方法: IEC 62321 edition 1.0:2008



Remark 備註:

*1: List of Appropriate Acid 各材質添加酸液如下表:

Material 材質	Acid Added for Digestion 添加酸液種類
Polymers 聚合物	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃ 硝酸、鹽酸、氫氟酸、雙氧水、硼酸
Metals 金屬	HNO ₃ , HCl, HF 硝酸、鹽酸、氫氟酸
Electronics 電子產品	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄ 硝酸、鹽酸、雙氧水、氟硼酸

*2: If the result of spot test is positive, Chromium VI would be determined as detected.
若點測試的結果為陽性反應，則直接判定為測試樣品含有六價鉻。

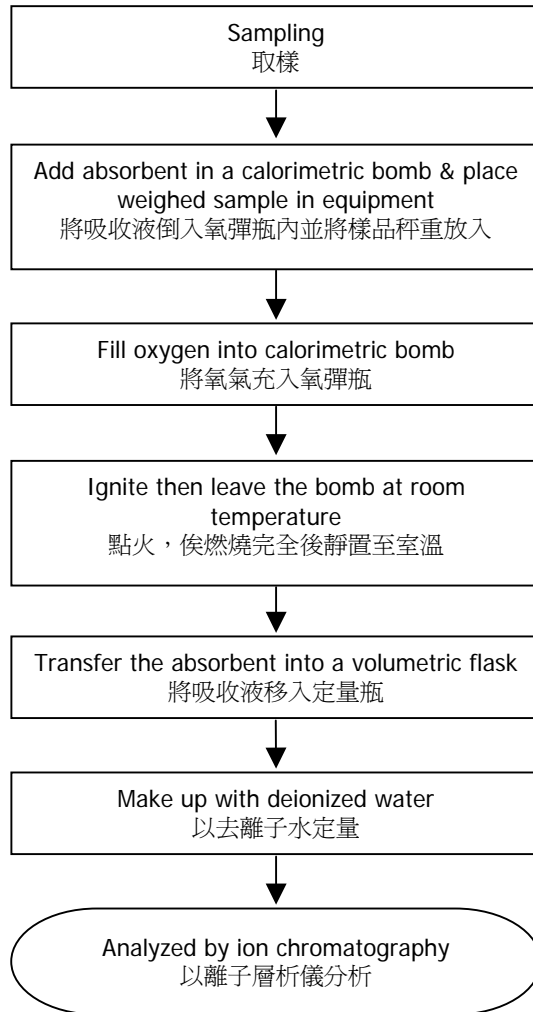


Test Report 測試報告

Number : TWNC00323570
報告號碼

Test Conducted 測試執行
Measurement Flowchart 測試流程圖:

Test for Halogen Content 鹵素測試
Reference Method 參考方法 : EN 14582



Test Report 測試報告

Number : TWNC00323570
報告號碼



End of Report

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測試報告 Test Report

號碼(No.) : KA/2013/80213 日期(Date) : 2013/08/09

頁數(Page): 1 of 6

昭榮化學工業株式會社

SHOEI CHEMICAL INC.

東京都新宿區 西新宿 2-1-1新宿三井BUILDING, 163-0443

SHINJUKU MITSUI BUILDING, 1-1, NISHI-SHINJUKU 2-CHOME SHINJUKU-KU, TOKYO 163-0443, JAPAN

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) : SHOEI CONDUCTIVE PASTE
樣品型號(Style/Item No.) : ML-3902
收件日期(Sample Receiving Date) : 2013/08/06
測試期間(Testing Period) : 2013/08/06 TO 2013/08/09
送樣廠商(Sample Submitted By) : 昭榮化學工業株式會社 (SHOEI CHEMICAL INC.)

=====
測試需求(Test Requested) : 依據客戶要求，參考RoHS 2011/65/EU Annex II 指令進行鎘，鉛，汞，六價鉻，多溴聯苯，多溴聯苯醚測試。(As specified by client, with reference to RoHS Directive 2011/65/EU Annex II to determine Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs contents in the submitted sample.)
測試方法(Test Method) : 請見下一頁 (Please refer to next pages).
測試結果(Test Results) : 請見下一頁 (Please refer to next pages).


Ray Chang / Asst. Manager
Signed for and on behalf of
SGS Taiwan Limited



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測試報告 Test Report

號碼(No.) : KA/2013/80213 日期(Date) : 2013/08/09

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SHOEI CHEMICAL INC.

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SHINJUKU MITSUI BUILDING, 1-1, NISHI-SHINJUKU 2-CHOME SHINJUKU-KU, TOKYO 163-0443, JAPAN

測試結果(Test Results)

測試部位(PART NAME)No.1 : 黑色 SHOEI CONDUCTIVE PASTE (BLACK SHOEI CONDUCTIVE PASTE)

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
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321-5: 2013方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n.d.
鉛 / Lead (Pb)	mg/kg	參考IEC 62321-5: 2013方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5: 2013 and performed by ICP-AES.	2	n.d.
汞 / Mercury (Hg)	mg/kg	參考IEC 62321-4: 2013方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-4: 2013 and performed by ICP-AES.	2	n.d.
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考IEC 62321: 2008方法, 以UV-VIS檢測. / With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321: 2008方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.
一溴聯苯 / Monobromobiphenyl	mg/kg		5	n.d.
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n.d.
三溴聯苯 / Tribromobiphenyl	mg/kg		5	n.d.
四溴聯苯 / Tetrabromobiphenyl	mg/kg		5	n.d.
五溴聯苯 / Pentabromobiphenyl	mg/kg		5	n.d.
六溴聯苯 / Hexabromobiphenyl	mg/kg		5	n.d.
七溴聯苯 / Heptabromobiphenyl	mg/kg		5	n.d.
八溴聯苯 / Octabromobiphenyl	mg/kg		5	n.d.
九溴聯苯 / Nonabromobiphenyl	mg/kg		5	n.d.
十溴聯苯 / Decabromobiphenyl	mg/kg	5	n.d.	

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測試報告 Test Report

號碼(No.) : KA/2013/80213 日期(Date) : 2013/08/09

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SHOEI CHEMICAL INC.

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SHINJUKU MITSUI BUILDING, 1-1, NISHI-SHINJUKU 2-CHOME SHINJUKU-KU, TOKYO 163-0443, JAPAN

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
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	參考IEC 62321: 2008方法, 以氣相層析/質譜 儀檢測. / With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg		5	n.d.
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg		5	n.d.
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg		5	n.d.
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg		5	n.d.
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg		5	n.d.
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n.d.
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg		5	n.d.
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg		5	n.d.
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg		5	n.d.
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg	5	n.d.	

備註(Note):

1. mg/kg = ppm ; 0.1wt% = 1000ppm
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)

測試報告 Test Report

號碼(No.) : KA/2013/80213 日期(Date) : 2013/08/09

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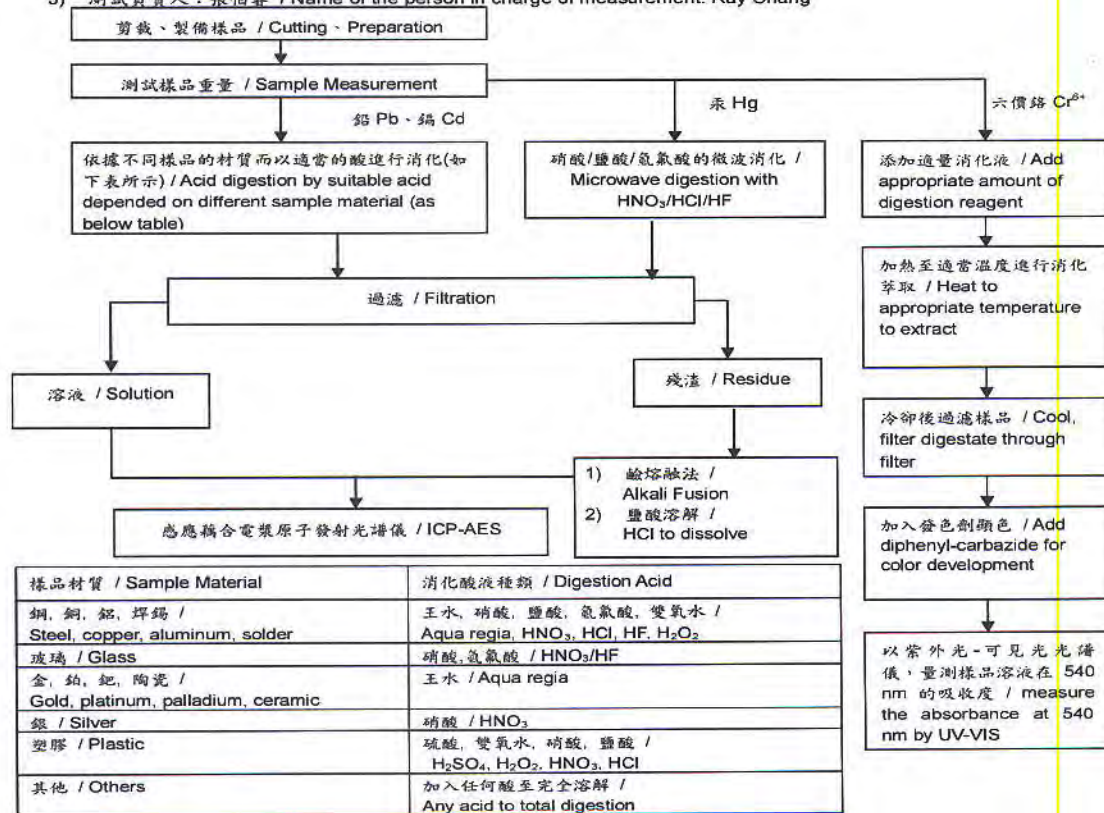
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) 測試人員：張俊雄 / Name of the person who made measurement: Alex Chang
- 3) 測試負責人：張伯霖 / Name of the person in charge of measurement: Ray Chang



- Note** :**
- (1) 針對非金屬材料加入鹼性消化液，加熱至 90~95°C 萃取。 / For non-metallic material, add alkaline digestion reagent and heat to 90~95°C.
 - (2) 針對金屬材料加入純水，加熱至沸騰萃取。 / For metallic material, add pure water and heat to boiling.

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測試報告 Test Report

號碼(No.) : KA/2013/80213 日期(Date) : 2013/08/09

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SHOEI CHEMICAL INC.

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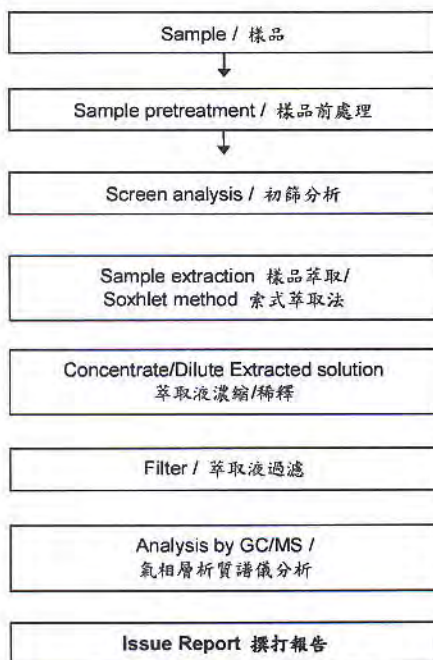
多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 測試人員：曹嘉琪 / Name of the person who made measurement: Anson Tsao
- 測試負責人：張伯容 / Name of the person in charge of measurement: Ray Chang

初次測試程序 / First testing process →

選擇性篩檢程序 / Optional screen process

確認程序 / Confirmation process



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* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。*

(The tested sample / part is marked by an arrow if it's shown on the photo.)

KA/2013/80213



** 報告結尾 (End of Report) **

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測試報告 Test Report

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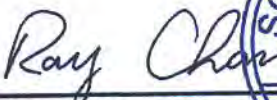
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SHINJUKU MITSUI BUILDING, 1-1, NISHI-SHINJUKU 2-CHOME SHINJUKU-KU, TOKYO 163-0443, JAPAN

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)	:	SHOEI CONDUCTIVE PASTE
樣品型號(Style/Item No.)	:	ML-3902
收件日期(Sample Receiving Date)	:	2013/08/06
測試期間(Testing Period)	:	2013/08/06 TO 2013/08/09
送樣廠商(Sample Submitted By)	:	昭榮化學工業株式會社 (SHOEI CHEMICAL INC.)

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


Ray Chang / Asst. Manager
Signed for and on behalf of
SGS Taiwan Limited



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測試報告

Test Report

號碼(No.) : KA/2013/80214 日期(Date) : 2013/08/09 頁數(Page) : 2 of 4

昭榮化學工業株式會社
SHOEI CHEMICAL INC.

東京都新宿區 西新宿 2-1-1新宿三井BUILDING, 163-0443
SHINJUKU MITSUI BUILDING, 1-1, NISHI-SHINJUKU 2-CHOME SHINJUKU-KU, TOKYO 163-0443, JAPAN

測試結果(Test Results)

測試部位(PART NAME) NO.1 : 黑色 SHOEI CONDUCTIVE PASTE (BLACK SHOEI CONDUCTIVE PASTE)

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
鹵素 / Halogen				
鹵素 (氟) / Halogen-Fluorine (F) (CAS No.: 014762-94-8)	mg/kg	參考BS EN 14582:2007, 以離子層析儀 分析. / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
鹵素 (氯) / Halogen-Chlorine (Cl) (CAS No.: 022537-15-1)	mg/kg	參考BS EN 14582:2007, 以離子層析儀 分析. / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
鹵素 (溴) / Halogen-Bromine (Br) (CAS No.: 010097-32-2)	mg/kg	參考BS EN 14582:2007, 以離子層析儀 分析. / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.
鹵素 (碘) / Halogen-Iodine (I) (CAS No.: 014362-44-8)	mg/kg	參考BS EN 14582:2007, 以離子層析儀 分析. / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.

備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n.d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)

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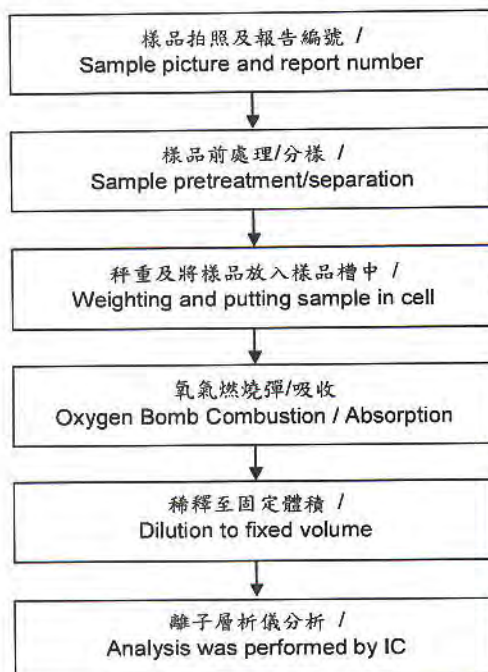
昭榮化學工業株式會社
SHOEI CHEMICAL INC.

東京都新宿區 西新宿 2-1-1新宿三井BUILDING, 163-0443

SHINJUKU MITSUI BUILDING, 1-1, NISHI-SHINJUKU 2-CHOME SHINJUKU-KU, TOKYO 163-0443, JAPAN

鹵素分析流程圖 / Analytical flow chart of halogen content

- 1) 測試人員：洪秀真 / Name of the person who made measurement: Jean Hung
- 2) 測試負責人：張伯睿 / Name of the person in charge of measurement: Ray Chang



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測試報告 Test Report

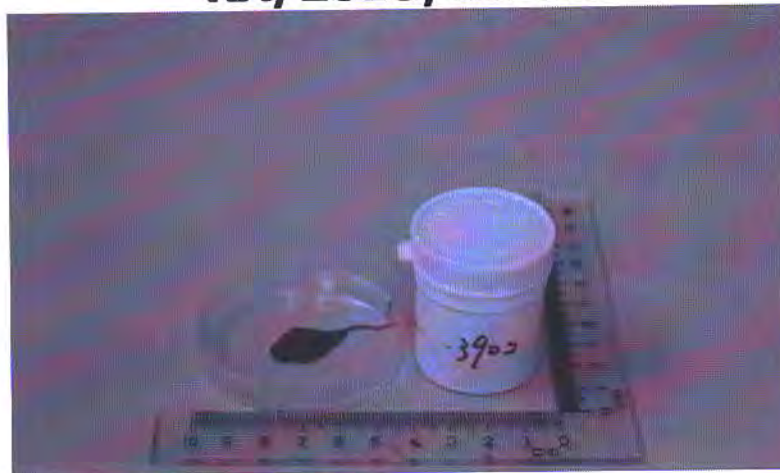
號碼(No.) : KA/2013/80214 日期(Date) : 2013/08/09 頁數(Page) : 4 of 4

昭榮化學工業株式會社
SHOEI CHEMICAL INC.

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SHINJUKU MITSUI BUILDING, 1-1, NISHI-SHINJUKU 2-CHOME SHINJUKU-KU, TOKYO 163-0443, JAPAN

* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。*
(The tested sample / part is marked by an arrow if it's shown on the photo.)

KA/2013/80214



** 報告結尾(End of Report) **

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測試報告 Test Report

號碼(No.) : CE/2012/C2272V 日期(Date) : 2012/12/24 頁數(Page) : 1 of 18

永勝泰科技股份有限公司
ONSTATIC TECHNOLOGY CO., LTD.

新北市鶯歌區仁愛路1號7樓

7F, NO. 1, REN-AI RD., YING KO DIST., NEW TAIPEI CITY 239, TAIWAN (R. O. C.)



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) : SOLDER RESIST INK (防焊油墨)
樣品型號(Style/Item No.) : S-300 MK
收件日期(Sample Receiving Date) : 2012/12/14
測試期間(Testing Period) : 2012/12/14 TO 2012/12/24

=====
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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測試報告

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號碼(No.) : CE/2012/C2272V 日期(Date) : 2012/12/24 頁數(Page) : 2 of 18

永勝泰科技股份有限公司

ONSTATIC TECHNOLOGY CO., LTD.

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7F, NO. 1, REN-AI RD., YING KO DIST., NEW TAIPEI CITY 239, TAIWAN (R. O. C.)



測試結果(Test Results)

測試部位(PART NAME)No.1 : 黑色膏狀 (乾基) (BLACK PASTE (DRY BASE))

測試部位(PART NAME)No.2 : 黑色膏狀 (BLACK PASTE)

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	No.2
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321: 2008方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	---
鉛 / Lead (Pb)	mg/kg	參考IEC 62321: 2008方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	---
汞 / Mercury (Hg)	mg/kg	參考IEC 62321: 2008方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	---
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考IEC 62321: 2008方法, 以UV-VIS檢測. / With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.	---
砷 / Arsenic (As)	mg/kg	參考US EPA 3052方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA Method 3052. Analysis was performed by ICP-AES.	2	n.d.	---
銻 / Antimony (Sb)	mg/kg	參考US EPA 3052方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA Method 3052. Analysis was performed by ICP-AES.	2	n.d.	---
三氧化二銻 / Antimony trioxide (Sb ₂ O ₃)*** (CAS No.: 1309-64-4)	mg/kg	參考US EPA 3052方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA Method 3052. Analysis was performed by ICP-AES.***	-	n.d.	---

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Test Report

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永勝泰科技股份有限公司

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新北市鶯歌區仁愛路1號7樓

7F, NO. 1, REN-AI RD., YING KO DIST., NEW TAIPEI CITY 239, TAIWAN (R. O. C.)



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	No.2
二氯化鈷 / Cobalt dichloride (CAS No.: 7646-79-9)	mg/kg	參考SGS內部方法RSTS-EE-SVHC-007, 以感應耦合電漿原子發射光譜儀檢測。 / SGS In-House method-RSTS-EE-SVHC-007. Analyzed by ICP-AES.	50	n.d.	---
富馬酸二甲酯 / Dimethyl Fumarate (CAS No.: 624-49-7)	mg/kg	參考US EPA 3550C方法, 以氣相層析/質譜儀檢測。 / With reference to US EPA 3550C method. Analysis was performed by GC/MS.	0.1	n.d.	---
鹵素 (氯) / Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg	參考BS EN 14582:2007, 以離子層析儀分析。 / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	---	280
鹵素 (溴) / Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	參考BS EN 14582:2007, 以離子層析儀分析。 / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	---	n.d.
鄰苯二甲酸甲苯基丁酯 / BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. 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.: 117-81-7)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---
鄰苯二甲酸二異癸酯 / DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	---
鄰苯二甲酸二異壬酯 / DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	---

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7F, NO. 1, REN-AI RD., YING KO DIST., NEW TAIPEI CITY 239, TAIWAN (R. O. C.)



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	No.2
鄰苯二甲酸二正辛酯 / DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---
鄰苯二甲酸二己酯 / DNHP (Di-n-hexyl phthalate) (CAS No.: 84-75-3)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	---
六溴環十二烷 / Hexabromocyclododecane (HBCDD) (CAS No.: 25637-99-4)	mg/kg	參考US EPA 3540C方法, 以氣相層析/質譜儀檢測。 / With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.	---
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3550C: 2007方法, 以液相層析/質譜儀檢測。 / With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.	---
全氟辛酸 (銨) / PFOA (CAS No.: 335-67-1)	mg/kg	參考US EPA 3550C: 2007方法, 以液相層析/質譜儀檢測。 / With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.	---
四溴雙酚-A / Tetrabromobisphenol A (TBBP-A) (CAS No.: 79-94-7)	mg/kg	參考DIN 53313方法, 以氣相層析/質譜儀檢測。 / With reference to DIN 53313 method. Analysis was performed by GC/MS.	10	n.d.	---

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7F, NO. 1, REN-AI RD., YING KO DIST., NEW TAIPEI CITY 239, TAIWAN (R. O. C.)



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	No.2
聚氯乙烯 / PVC	**	以紅外光譜分析及焰色法檢測. / Analysis was performed by FTIR and FLAME Test.	-	Negative	---
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321: 2008方法, 以氣相層析/質譜儀檢測. / With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.	---
一溴聯苯 / Monobromobiphenyl	mg/kg		5	n.d.	---
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n.d.	---
三溴聯苯 / Tribromobiphenyl	mg/kg		5	n.d.	---
四溴聯苯 / Tetrabromobiphenyl	mg/kg		5	n.d.	---
五溴聯苯 / Pentabromobiphenyl	mg/kg		5	n.d.	---
六溴聯苯 / Hexabromobiphenyl	mg/kg		5	n.d.	---
七溴聯苯 / Heptabromobiphenyl	mg/kg		5	n.d.	---
八溴聯苯 / Octabromobiphenyl	mg/kg		5	n.d.	---
九溴聯苯 / Nonabromobiphenyl	mg/kg		5	n.d.	---
十溴聯苯 / Decabromobiphenyl	mg/kg		5	n.d.	---
多溴聯苯醚總和 / Sum of PBDEs	mg/kg		-	n.d.	---
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg		5	n.d.	---
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg		5	n.d.	---
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg		5	n.d.	---
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg		5	n.d.	---
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg		5	n.d.	---
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n.d.	---
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg		5	n.d.	---
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg		5	n.d.	---
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg	5	n.d.	---	
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg	5	n.d.	---	

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永勝泰科技股份有限公司
ONSTATIC TECHNOLOGY CO., LTD.

新北市鶯歌區仁愛路1號7樓

7F, NO. 1, REN-AI RD., YING KO DIST., NEW TAIPEI CITY 239, TAIWAN (R. O. C.)



備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
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. ** = Qualitative analysis (No Unit) 定性分析(無單位)
6. Negative = Undetectable 陰性(未偵測到); Positive = Detectable 陽性(已偵測到)
7. ***: 該物質是由錒之測試結果計算得知。其MDL是針對錒之評估。(The substance was calculated by the test result of Antimony. The MDL was evaluated for Antimony.)

$$AX = A \times F$$

AX	A	F
三氧化二錒 / Antimony trioxide (Sb ₂ O ₃)	錒 / Antimony	1.1971

8. No.1: 樣品在100°C 持溫2小時乾燥後測試。 / The sample(s) was/were tested after drying at 100°C for 2 hours.
9. 此份報告取代2012/12/20所核發的CE/2012/C2272V報告。(This report supersedes the previous document bearing the test report number CE/2012/C2272V which was issued on 2012/12/20.)

PFOS參考資訊(Reference Information) : 持久性有機污染物 POPs - (EU) 757/2010

PFOS濃度在物質或製備中不得超過0.001%(10ppm)，在半成品、成品或零部件中不得超過0.1%(1000ppm)，在紡織品或塗層材料中不得超過1µg/m²。

(Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1µg/m².)

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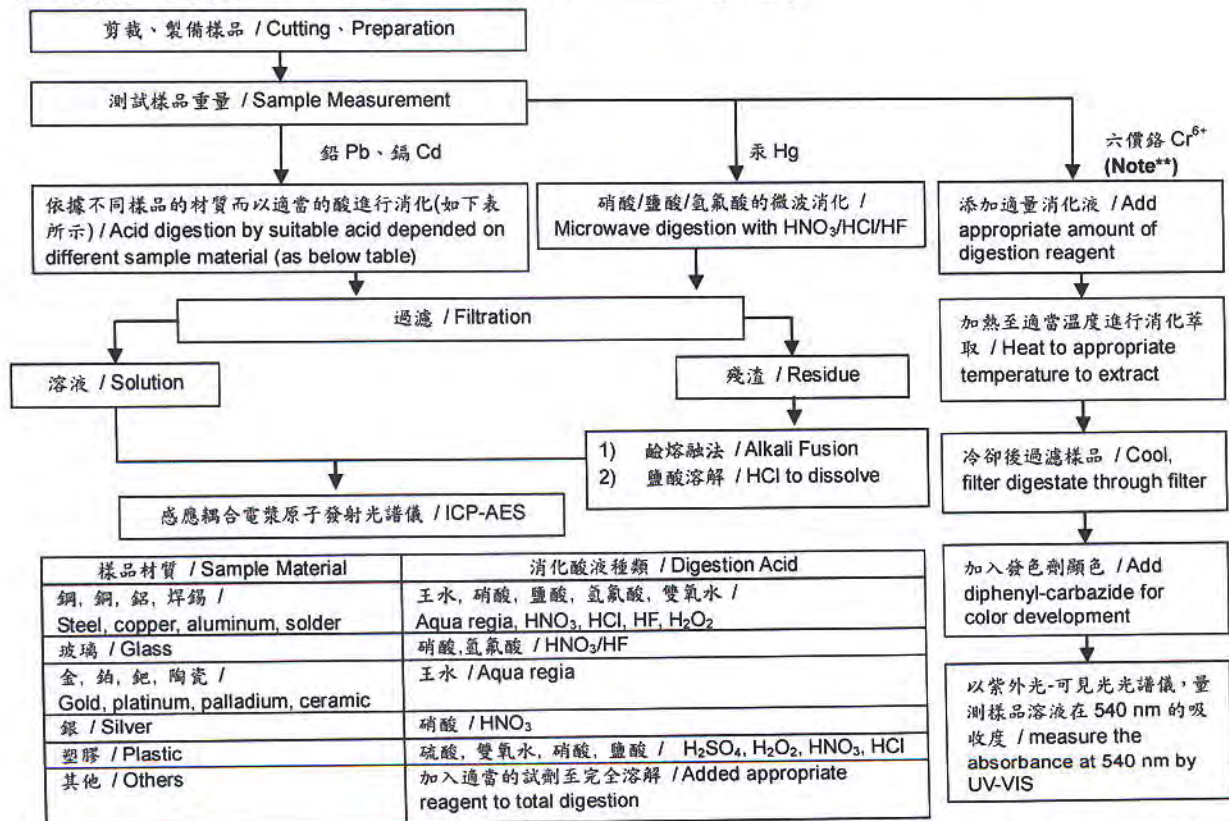
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



Note :** (1) 針對非金屬材料加入鹼性消化液，加熱至 90~95°C 萃取。 / For non-metallic material, add alkaline digestion reagent and heat to 90~95°C.
 (2) 針對金屬材料加入純水，加熱至沸騰萃取。 / For metallic material, add pure water and heat to boiling.

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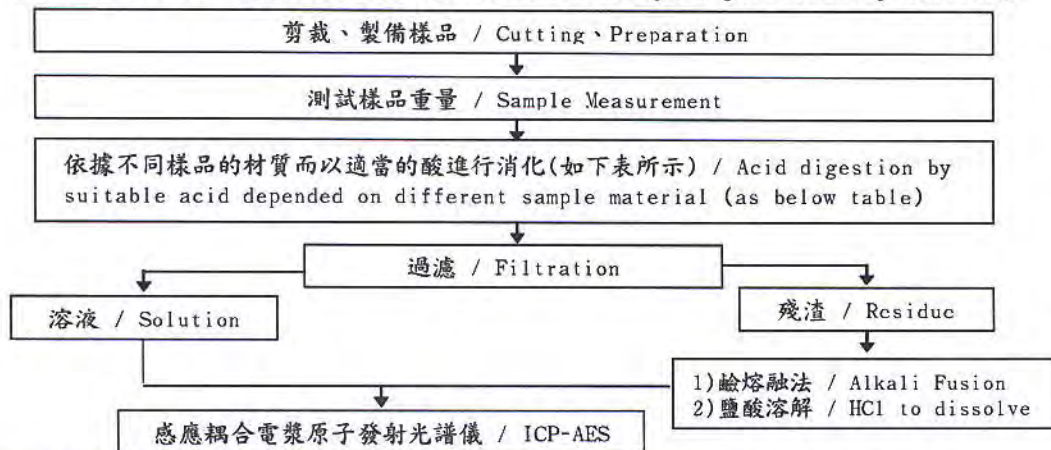
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang

元素以 ICP-AES 分析的消化流程圖

(Flow Chart of digestion for the elements analysis performed by ICP-AES)



鋼, 銅, 鋁, 焊錫 / Steel, copper, aluminum, solder	王水, 硝酸, 鹽酸, 氫氟酸, 雙氧水 / Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
玻璃 / Glass	硝酸, 氫氟酸 / HNO ₃ /HF
金, 鉑, 鈀, 陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO ₃
塑膠 / Plastic	硫酸, 雙氧水, 硝酸, 鹽酸 / H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion

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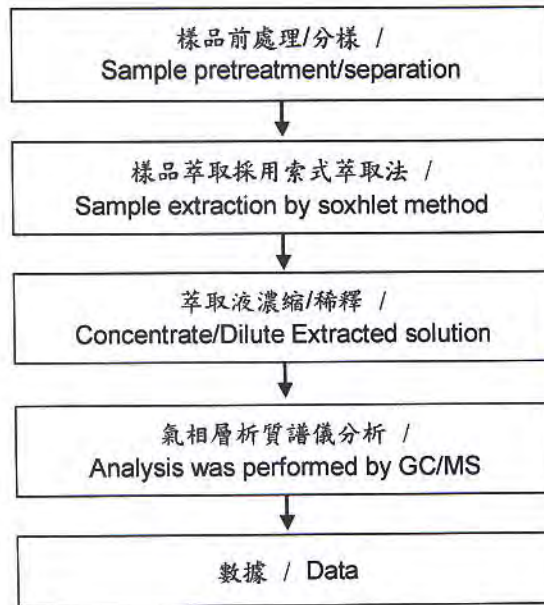
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六溴環十二烷分析流程圖 / HBCDD analytical flow chart

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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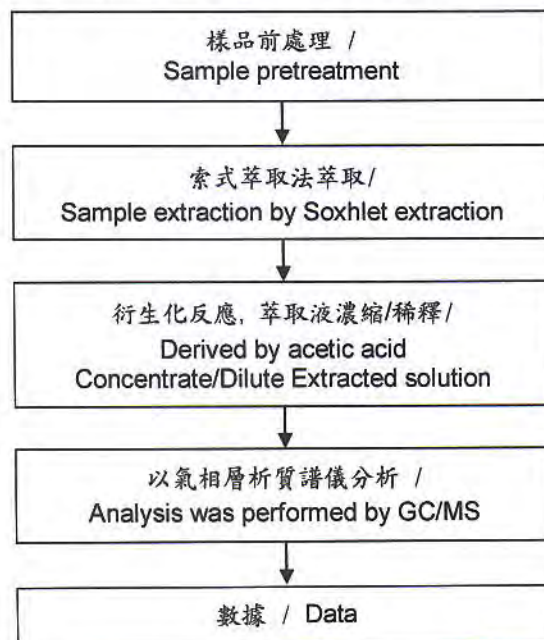
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四溴雙酚 A 分析流程圖 / TBBP-A analytical flow chart

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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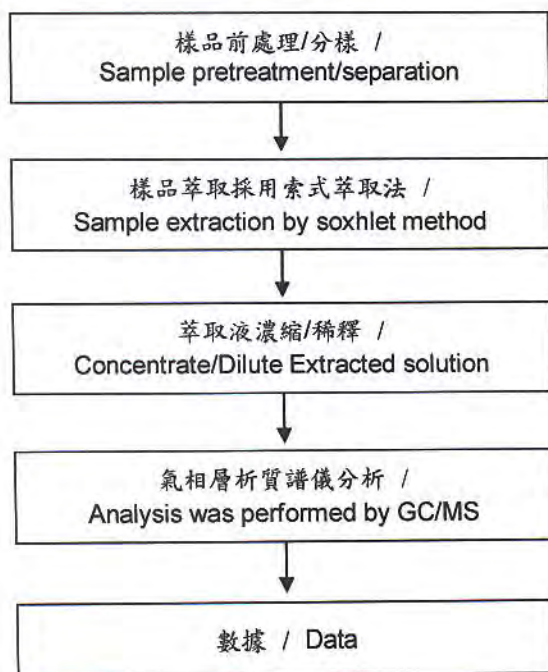
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可塑劑分析流程圖 / Analytical flow chart of phthalate content

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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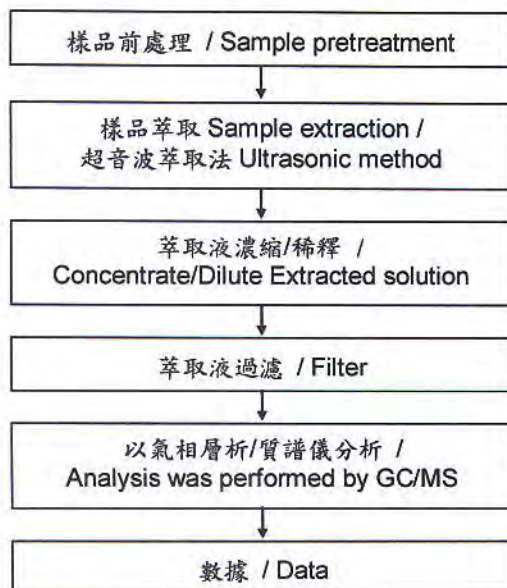
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富馬酸二甲酯分析流程圖 / Dimethyl Fumarate analytical flow chart

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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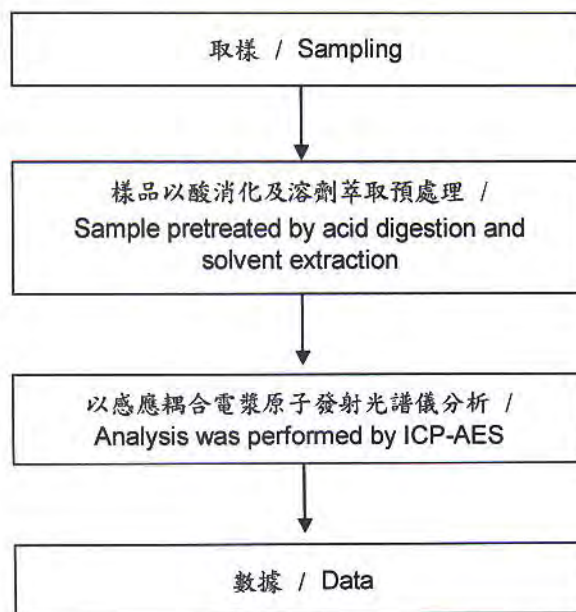
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二氯化鈷分析流程圖 / Analytical flow chart of Cobalt dichloride

- 1) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 2) 測試負責人：龔振裕 / Name of the person in charge of measurement: Chenyu Kung



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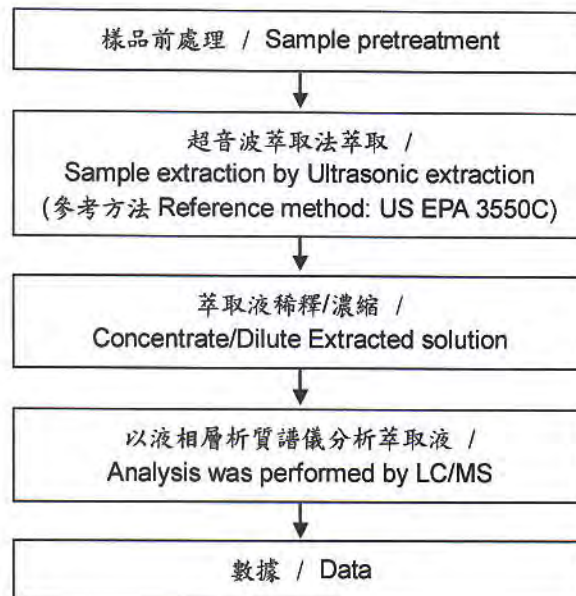
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全氟辛酸(銨)/全氟辛烷磺酸分析流程圖 / PFOA/PFOS analytical flow chart

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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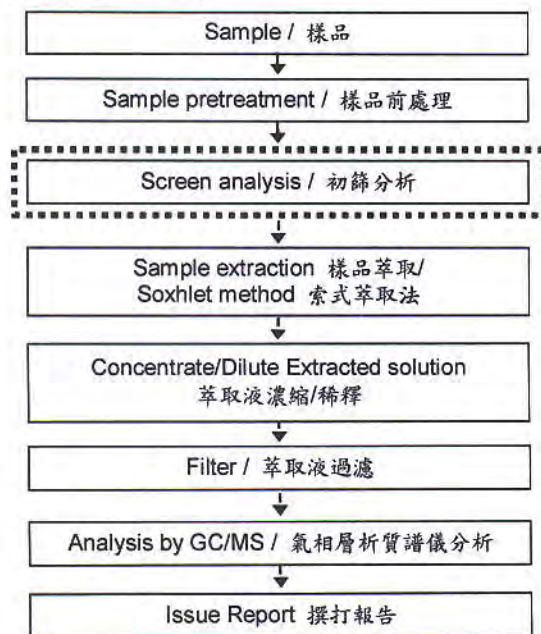
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多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang

初次測試程序 / First testing process →
 選擇性篩檢程序 / Optional screen process
 確認程序 / Confirmation process - - - →



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測試報告 Test Report

號碼(No.) : CE/2012/C2272V 日期(Date) : 2012/12/24 頁數(Page) : 16 of 18

永勝泰科技股份有限公司

ONSTATIC TECHNOLOGY CO., LTD.

新北市鶯歌區仁愛路1號7樓

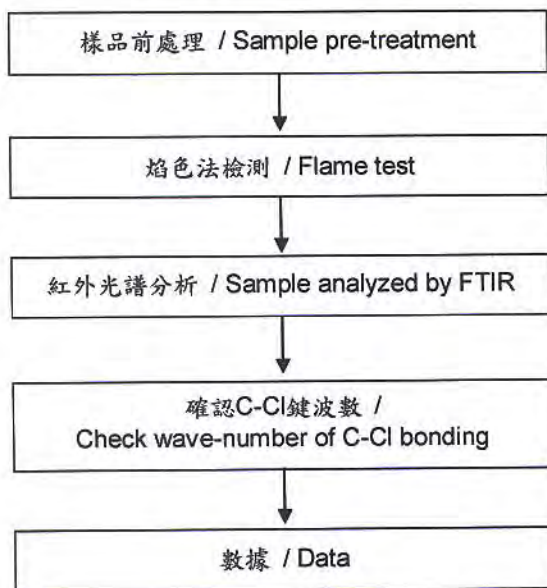
7F, NO. 1, REN-AI RD., YING KO DIST., NEW TAIPEI CITY 239, TAIWAN (R. O. C.)



聚氯乙烯物質判定分析流程圖 /

Analysis flow chart for determination of PVC in material

- 測試人員：陳君涵 / Name of the person who made measurement: Ginny Chen
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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測試報告 Test Report

號碼(No.) : CE/2012/C2272V 日期(Date) : 2012/12/24 頁數(Page) : 17 of 18

永勝泰科技股份有限公司
ONSTATIC TECHNOLOGY CO., LTD.

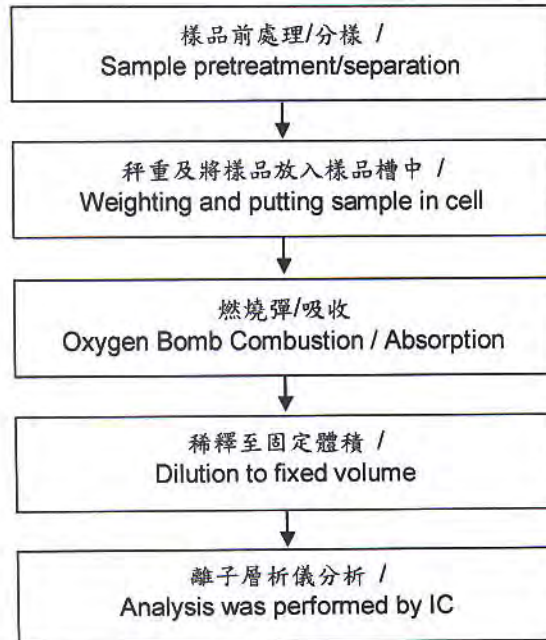
新北市鶯歌區仁愛路1號7樓

7F, NO. 1, REN-AI RD., YING KO DIST., NEW TAIPEI CITY 239, TAIWAN (R. O. C.)



鹵素分析流程圖 / Analytical flow chart of halogen content

- 1) 測試人員：陳恩臻 / Name of the person who made measurement: Rita Chen
- 2) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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測試報告 Test Report

號碼(No.) : CE/2012/C2272V 日期(Date) : 2012/12/24 頁數(Page) : 18 of 18

永勝泰科技股份有限公司

ONSTATIC TECHNOLOGY CO., LTD.

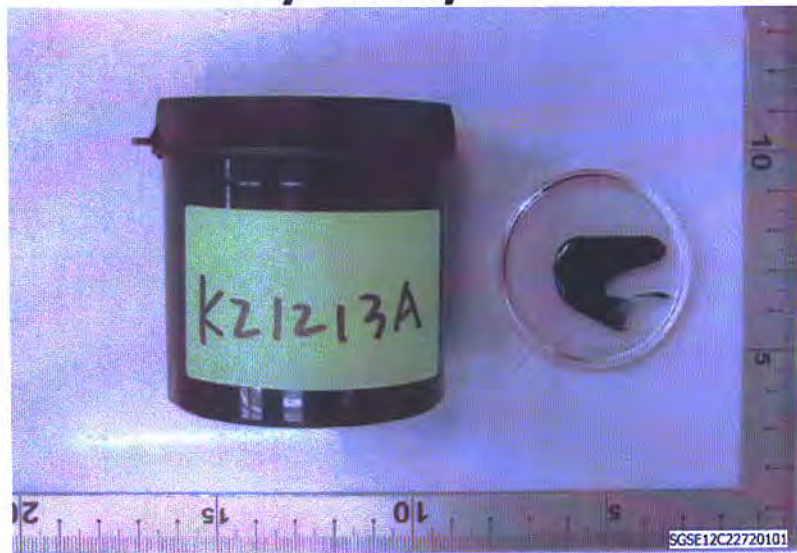
新北市鶯歌區仁愛路1號7樓

7F, NO. 1, REN-AI RD., YING KO DIST., NEW TAIPEI CITY 239, TAIWAN (R. O. C.)



* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。 *
(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2012/C2272



** 報告結尾 (End of Report) **

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Test Report 測試報告

Number : TWNC00321455
報告號碼

Date 日期 : Jul 10, 2013

Applicant 申請廠商: Inpaq Technology Co.,Ltd.
No. 11, Ke-Yi St.,
Chunan, Miaoli, Taiwan, R.O.C.

Sample Description 樣品敘述:

One (1) group of submitted samples said to be :

以下測試樣品乃供應商所提供及確認 :

Sample Description : A846

樣品名稱

Date Sample Received : Jul 03, 2013

收件日期

Date Test Started : Jul 03, 2013

開始測試日期

Test Conducted 測試執行 :

As requested by the applicant, for details please refer to attached pages.

依申請商之要求, 細節請參考附頁 .

Authorized by:
On Behalf of Intertek Testing Services
Taiwan Limited



K. Y. Liang
Director



Page 1 of 9

Intertek Testing Services Taiwan Ltd.

8F., No. 423, Ruiguang Rd., Neihu District, Taipei 11492, Taiwan, R.O.C.

全國公證檢驗股份有限公司

11492 台北市內湖區瑞光路 423 號 8 樓

Tel: (+886-2) 6602-2888 · 2797-8885 Fax: (+886-2) 6602-2410

Test Report 測試報告

Number : TWNC00321455
報告號碼

Test Conducted 測試執行
Test Result Summary 測試結果 :

Test Item 測試項目	Unit 單位	Test Method 測試方法	Result 結果	RL
			Grey powder	
Heavy Metal 重金屬				
Cadmium (Cd) content 鎘含量	ppm	With reference to IEC 62321:2008, by microwave digestion and determined by ICP-OES. 參考 IEC 62321:2008, 以微波消化法消化樣品並用感應耦合電漿原子發射光譜儀分析。	ND	2
Lead (Pb) content 鉛含量	ppm	With reference to IEC 62321:2008, by microwave digestion and determined by ICP-OES. 參考 IEC 62321:2008, 以微波消化法消化樣品並用感應耦合電漿原子發射光譜儀分析。	ND	2
Mercury (Hg) content 汞含量	ppm	With reference to IEC 62321:2008, by microwave digestion and determined by ICP-OES. 參考 IEC 62321:2008, 以微波消化法消化樣品並用感應耦合電漿原子發射光譜儀分析。	ND	2
Chromium VI (Cr ⁶⁺) content 六價鉻含量	ppm	With reference to IEC 62321:2008, by alkaline digestion and determined by UV-Vis Spectrophotometer. 參考 IEC 62321:2008, 以鹼液消化並用紫外光-可見光分光光度計分析。	ND	1
Polybrominated Biphenyls (PBBs) 多溴聯苯				
Monobrominated Biphenyls (MonoBB) 單溴聯苯	ppm	With reference to IEC 62321:2008, by solvent extraction and determined by GC-MS and further HPLC-DAD. 參考 IEC 62321:2008, 以溶劑萃取並用氣相層析質譜儀分析, 必要時會以高效能液相層析-二極體陣列偵檢器進行確認。	ND	5
Dibrominated Biphenyls (DiBB) 二溴聯苯	ppm		ND	5
Tribrominated Biphenyls (TriBB) 三溴聯苯	ppm		ND	5
Tetrabrominated Biphenyls (TetraBB) 四溴聯苯	ppm		ND	5
Pentabrominated Biphenyls (PentaBB) 五溴聯苯	ppm		ND	5
Hexabrominated Biphenyls (HexaBB) 六溴聯苯	ppm		ND	5
Heptabrominated Biphenyls (HeptaBB) 七溴聯苯	ppm		ND	5
Octabrominated Biphenyls (OctaBB) 八溴聯苯	ppm		ND	5
Nonabrominated Biphenyls (NonaBB) 九溴聯苯	ppm		ND	5
Decabrominated Biphenyl (DecaBB) 十溴聯苯	ppm		ND	5



Test Report 測試報告

Number : TWNC00321455
報告號碼

Test Conducted 測試執行

Test Item 測試項目	Unit 單位	Test Method 測試方法	Result 結果	RL
			Grey powder	
Polybrominated Diphenyl Ethers (PBDEs) 多溴聯苯醚				
Monobrominated Diphenyl Ethers (MonoBDE) 單溴聯苯醚	ppm	With reference to IEC 62321: 2008, by solvent extraction and determined by GC-MS and further HPLC-DAD. 參考 IEC 62321: 2008, 以溶劑萃取並用氣相層析質譜儀分析, 必要時會以高效能液相層析-二極體陣列偵檢器進行確認。	ND	5
Dibrominated Diphenyl Ethers (DiBDE) 二溴聯苯醚	ppm		ND	5
Tribrominated Diphenyl Ethers (TriBDE) 三溴聯苯醚	ppm		ND	5
Tetrabrominated Diphenyl Ethers (TetraBDE) 四溴聯苯醚	ppm		ND	5
Pentabrominated Diphenyl Ethers (PentaBDE) 五溴聯苯醚	ppm		ND	5
Hexabrominated Diphenyl Ethers (HexaBDE) 六溴聯苯醚	ppm		ND	5
Heptabrominated Diphenyl Ethers (HeptaBDE) 七溴聯苯醚	ppm		ND	5
Octabrominated Diphenyl Ethers (OctaBDE) 八溴聯苯醚	ppm		ND	5
Nonabrominated Diphenyl Ethers (NonaBDE) 九溴聯苯醚	ppm		ND	5
Decabrominated Diphenyl Ether (DecaBDE) 十溴聯苯醚	ppm		ND	5
Halogen Content 鹵素含量				
Fluorine (F) 氟	ppm	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by ion chromatography. 參考 EN 14582:2007, 以氧彈燃燒集氣法並用離子層析儀分析。	ND	50
Chlorine (Cl) 氯	ppm		ND	50
Bromine (Br) 溴	ppm		ND	50
Iodine (I) 碘	ppm		ND	50

Remarks: ppm = parts per million based on weight of tested sample = mg/kg
 備註 百萬分之一, 依據測試樣品重量計算 = 毫克/公斤
 ND = Not detected 未檢測出
 RL = Reporting Limit, quantitation limit of analyte in sample
 報告極限, 測試樣品之定量偵測極限

Responsibility of Chemist 分析人員 : Kevin Liu/ Irene Chiou/ Vico Lin

Date Sample Received 樣品收件日期 : Jul 03, 2013

Test Period 樣品測試期間 : Jul 03, 2013 To Jul 09, 2013



Test Report 測試報告

Number : TWNC00321455
報告號碼

Test Conducted 測試執行
RoHS Limit RoHS 限值

Restricted Substances 限用物質	Limits 限值
Cadmium (Cd) content 鎘含量	0.01% (100ppm)
Lead (Pb) content 鉛含量	0.1% (1000ppm)
Mercury (Hg) content 汞含量	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) content 六價鉻含量	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs) 多溴聯苯	0.1% (1000ppm)
Polybrominated Diphenyl Ethers (PBDEs) 多溴聯苯醚	0.1% (1000ppm)

The limits were quoted from Annex II of 2011/65/EU for homogeneous material.
本限值是依據歐盟指令 2011/65/EU 附錄二針對均質材質所訂定。

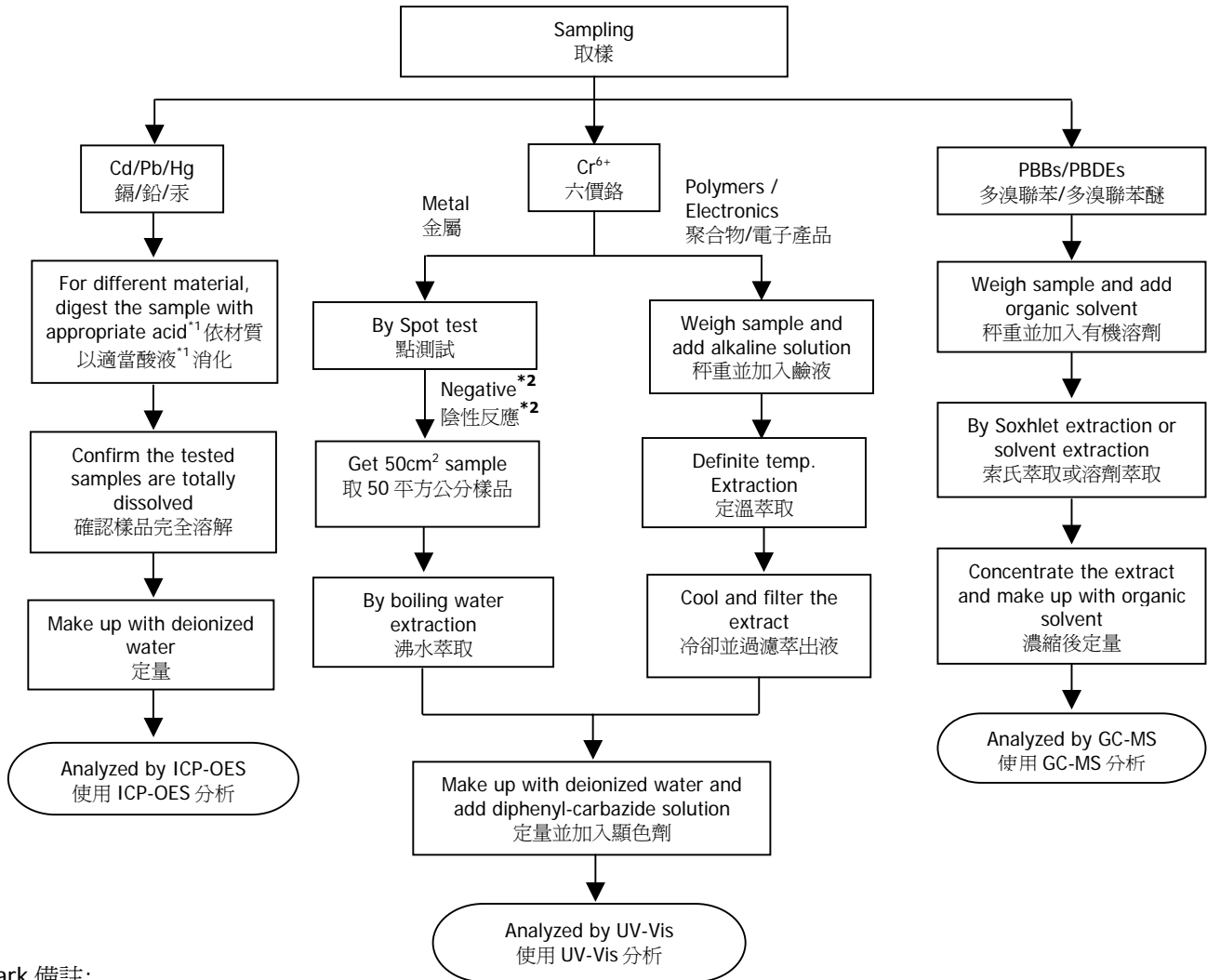


Test Report 測試報告

Number : TWNC00321455
報告號碼

Test Conducted 測試執行
Measurement Flowchart 測試流程圖:

Test for Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents RoHS 六項測試
Reference Method 參考方法: IEC 62321 edition 1.0:2008



Remark 備註:

*1: List of Appropriate Acid 各材質添加酸液如下表:

Material 材質	Acid Added for Digestion 添加酸液種類
Polymers 聚合物	HNO ₃ , HCl, HF, H ₂ O ₂ , H ₃ BO ₃ 硝酸、鹽酸、氫氟酸、雙氧水、硼酸
Metals 金屬	HNO ₃ , HCl, HF 硝酸、鹽酸、氫氟酸
Electronics 電子產品	HNO ₃ , HCl, H ₂ O ₂ , HBF ₄ 硝酸、鹽酸、雙氧水、氟硼酸

*2: If the result of spot test is positive, Chromium VI would be determined as detected.
若點測試的結果為陽性反應，則直接判定為測試樣品含有六價鉻。

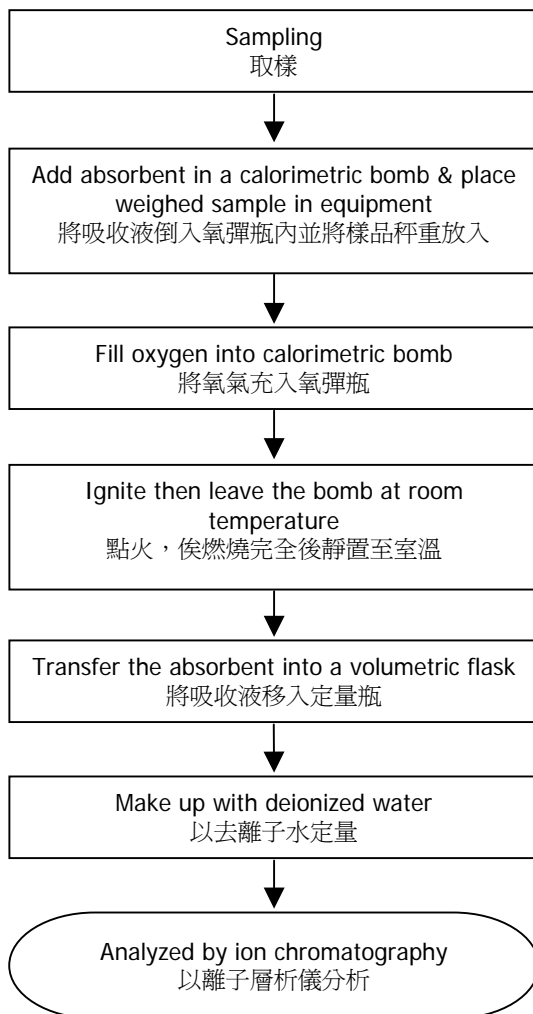


Test Report 測試報告

Number : TWNC00321455
報告號碼

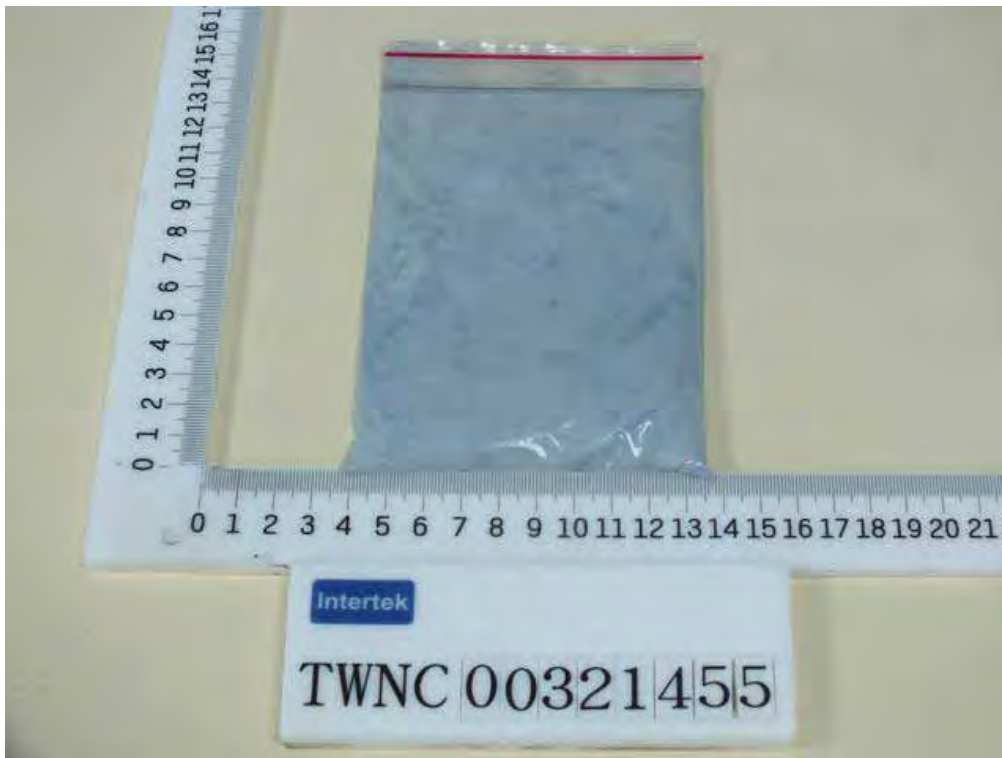
Test Conducted 測試執行
Measurement Flowchart 測試流程圖:

Test for Halogen Content 鹵素測試
Reference Method 參考方法 : EN 14582



Test Report 測試報告

Number : TWNC00321455
報告號碼



End of Report

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Test Report

Number: SZHH00781369

Applicant: LITTELFUSE, INC
8755 WEST HIGGINS ROAD SUITE
500CHICAGO IL 60631 USA

Date: May 10, 2013

Attn: KRISTEEN BACILA/ARSENIO CESISTA JR.

Sample Description:

One (1) submitted sample said to be **grey paste (terminations)**.
Part No. : 5450T.



Tests conducted:

As requested by the applicant, refer to attached page(s) for details.

To be continued

Authorized by:
For Intertek Testing Services
Shenzhen Ltd.



Ben N.L. Lin
General Manager





Test Report

Number: SZHH00781369

Conclusion:

Tested Samples
Tested component of submitted sample

Standard
Restriction of the use of certain hazardous substance in electrical and electronic equipment (RoHS Directive 2011/65/EU)

Result
See test conducted

Submitted sample

Phthalates content requirement in Annex XVII Items 51 & 52 of the REACH Regulation (EC) No. 1907/2006 & Amendment No. 552/2009 (formerly known as Directive 2005/84/EC) (DEHP, DBP & BBP)

Pass

Test Item
Di-isobutyl phthalate(DIBP) Content

See test conducted

Halogen (F, Cl, Br, I) Content

See test conducted

Hexabromocyclododecane Content

See test conducted

Authorized by:
For Intertek Testing Services
Shenzhen Ltd.



Ben N.L. Lin
General Manager





Test Report

Number: SZHH00781369

Tests Conducted

1 RoHS Chemical Test

(A) Test Result Summary:

Testing Item	Result
Cadmium (Cd) Content (mg/kg)	ND(<2)
Lead (Pb) Content (mg/kg)	ND(<2)
Mercury (Hg) Content (mg/kg)	ND(<2)
Chromium (VI)(Cr ⁶⁺) Content (mg/kg)	ND(<1)
Polybrominated Biphenyls (PBBs)(mg/kg)	
Monobromobiphenyl (MonoBB)	ND(<5)
Dibromobiphenyl (DiBB)	ND(<5)
Tribromobiphenyl (TriBB)	ND(<5)
Tetrabromobiphenyl (TetraBB)	ND(<5)
Pentabromobiphenyl (PentaBB)	ND(<5)
Hexabromobiphenyl (HexaBB)	ND(<5)
Heptabromobiphenyl (HeptaBB)	ND(<5)
Octabromobiphenyl (OctaBB)	ND(<5)
Nonabromobiphenyl (NonaBB)	ND(<5)
Decabromobiphenyl (DecaBB)	ND(<5)
Polybrominated Diphenyl Ethers (PBDEs)(mg/kg)	
Monobromodiphenyl Ether (MonoBDE)	ND(<5)
Dibromodiphenyl Ether (DiBDE)	ND(<5)
Tribromodiphenyl Ether (TriBDE)	ND(<5)
Tetrabromodiphenyl Ether (TetraBDE)	ND(<5)
Pentabromodiphenyl Ether (PentaBDE)	ND(<5)
Hexabromodiphenyl Ether (HexaBDE)	ND(<5)
Heptabromodiphenyl Ether (HeptaBDE)	ND(<5)
Octabromodiphenyl Ether (OctaBDE)	ND(<5)
Nonabromodiphenyl Ether (NonaBDE)	ND(<5)
Decabromodiphenyl Ether (DecaBDE)	ND(<5)

ND = Not detected





Test Report

Number: SZHH00781369

Tests Conducted

(B) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr ⁶⁺)	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)

The above limits were quoted from 2011/65/EU for homogeneous material.

(C) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Lead (Pb) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Mercury (Hg) Content	With reference to IEC 62321 Edition 1.0:2008, by acid digestion and determined by ICP - OES	2 mg/kg
Chromium (VI)(Cr ⁶⁺) Content	With reference to IEC 62321 Edition 1.0:2008, by alkaline digestion and determined by UV-VIS Spectrophotometer	1 mg/kg
Polybrominated Biphenyls (PBBs)& Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 Edition 1.0:2008, by solvent extraction and determined by GC/MS and further HPLC confirmation when necessary	5 mg/kg

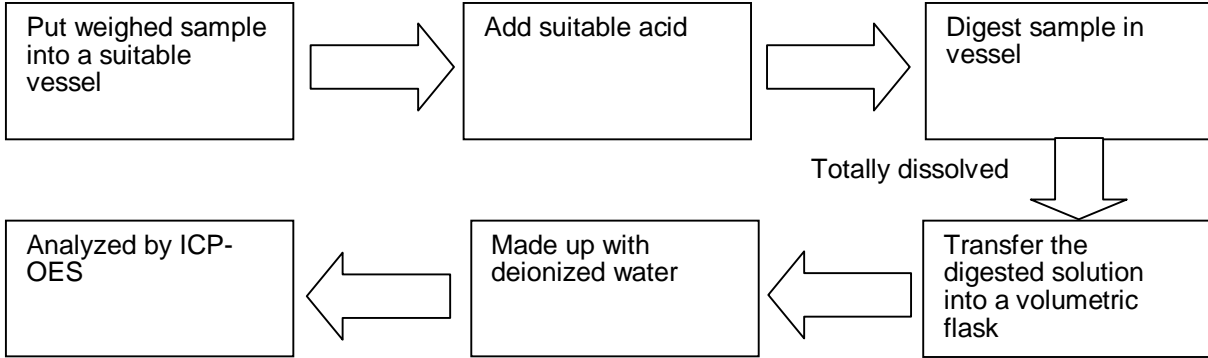
Date sample received: May 03, 2013
Testing period: May 03, 2013 to May 09, 2013



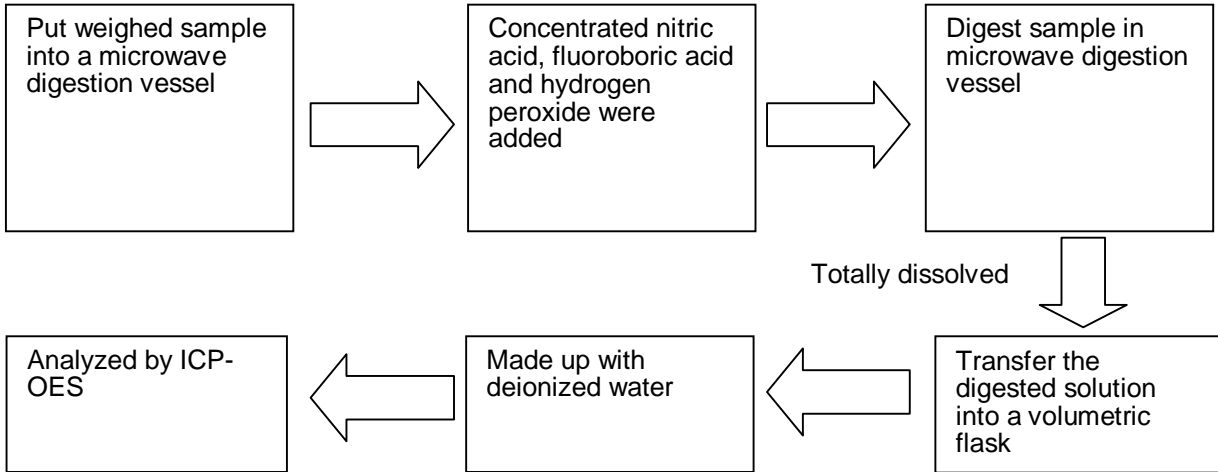
Tests Conducted

(D) Measurement Flowchart:

1. Test for Cd/Pb Contents

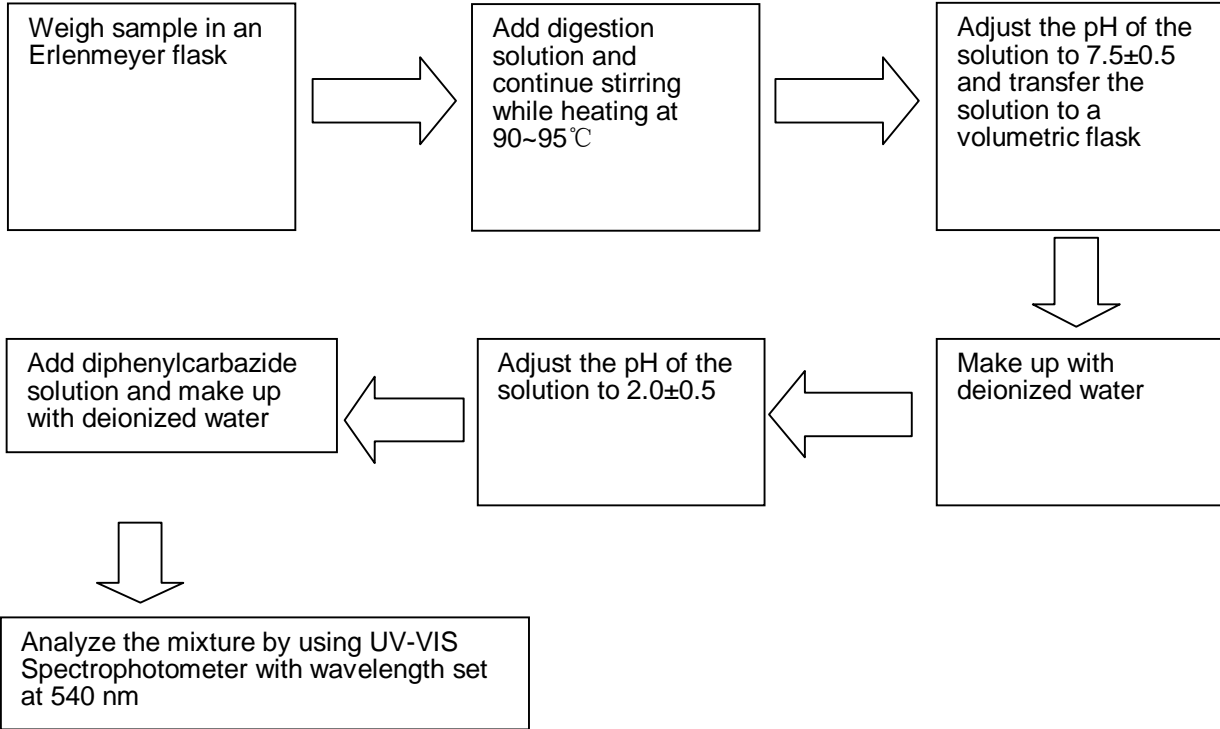


2. Test for Hg Content

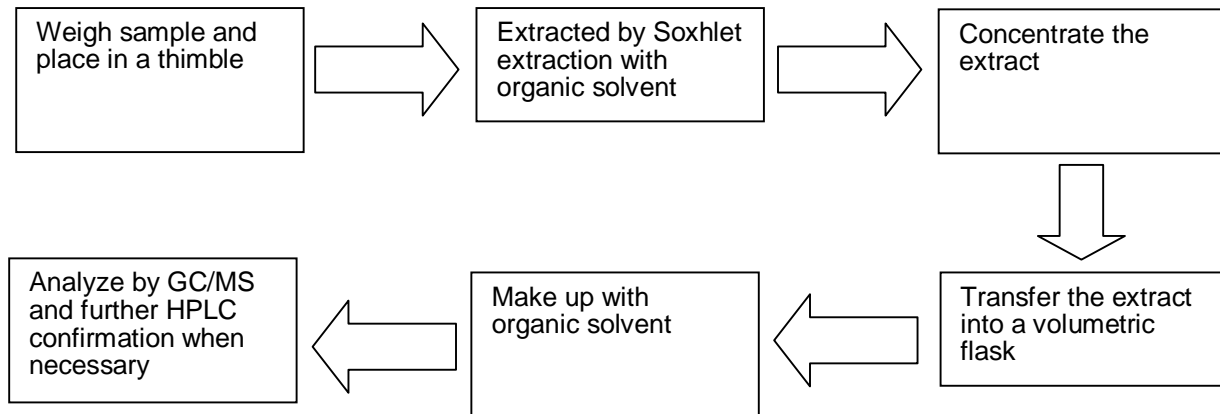


Tests Conducted

3. Test for Chromium (VI) (Cr⁶⁺) Content (Alkaline Digestion)



4. Test for PBBs/PBDEs Contents





Test Report

Number: SZHH00781369

Tests Conducted

2 Phthalate Content

With reference to EN14372, by Gas chromatographic-Mass Spectrometric (GC-MS) analysis.

	<u>Result (%)</u>
Dibutyl phthalate (DBP)	<0.01
Di-(2-ethyl hexyl) phthalate (DEHP)	<0.01
Benzyl butyl phthalate (BBP)	<0.01
Sum of three phthalates	<0.01
Limit	0.1 %

The above limit was quoted according to Annex XVII Items 51 & 52 of the REACH Regulation (EC) No. 1907/2006 & Amendment No. 552/2009(formerly known as Directive 2005/84/EC) for phthalate content in toys and children articles.

As per client's request, only DBP, DEHP and BBP were tested for the submitted sample.

Date sample received: May 03, 2013
Testing period: May 03, 2013 to May 08, 2013

3 Di-isobutyl phthalate (DIBP)Content

By solvent extraction and Gas Chromatographic-Mass Spectrometric (GC-MS) analysis.

Result: Less than 0.01%

Date sample received: May 03, 2013
Testing period: May 03, 2013 to May 08, 2013





Test Report

Number: SZHH00781369

Tests Conducted

4 Halogen Content

(I) Test Result Summary:

<u>Testing Item</u>	<u>Result (mg/kg)</u>
Fluorine (F) Content	ND
Chlorine (Cl) Content	ND
Bromine (Br) Content	ND
Iodine (I) Content	ND

mg/kg= milligram per kilogram = ppm
ND= Not detected

(II) Test Method:

<u>Testing Item</u>	<u>Testing Method</u>	<u>Reporting Limit</u>
Halogen (F, Cl, Br, I) Content	With reference to BS EN 14582:2007, by calorimetric bomb and determined by Ion Chromatography	50 mg/kg

Reporting limit = Quantitation limit of analyte in sample

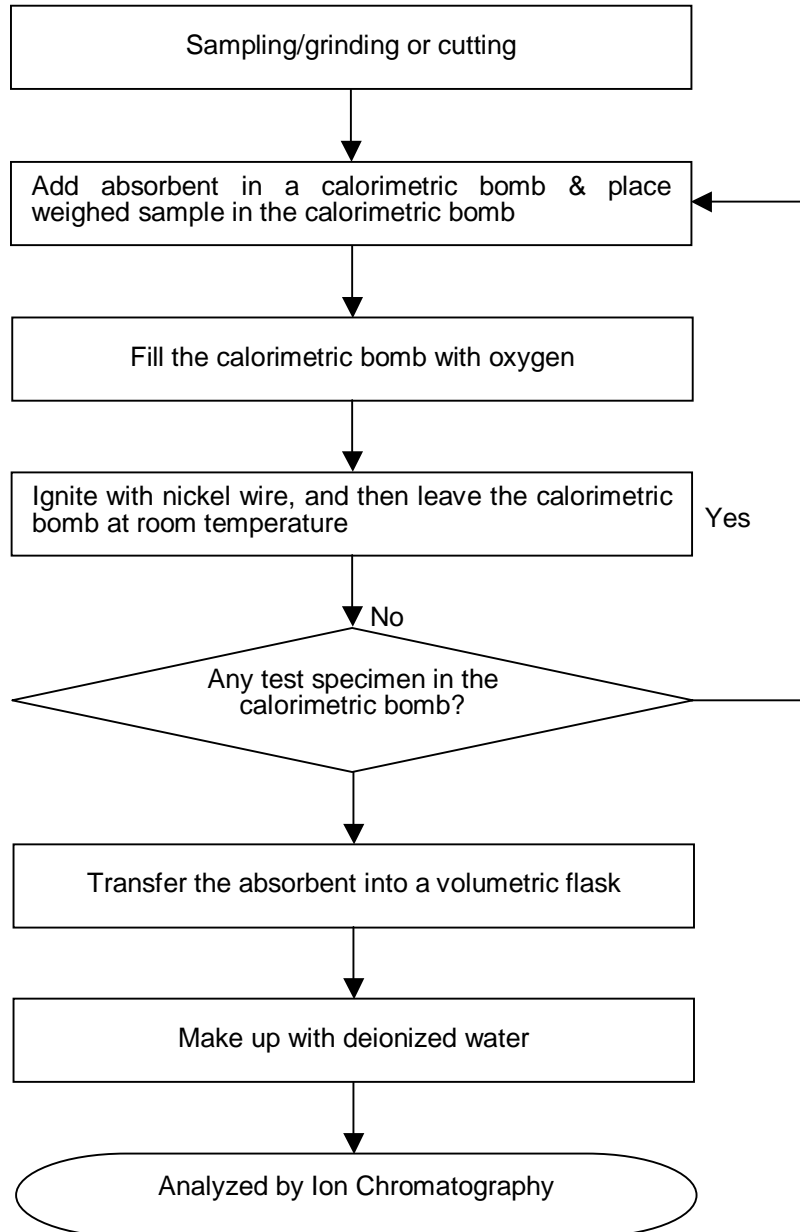
Date sample received: May 03, 2013
Testing period: May 03, 2013 to May 10, 2013



Tests Conducted

(III) Measurement Flowchart:

Test for Halogen Content (Reference Method: BS EN 14582:2007)





Test Report

Number: SZHH00781369

Tests Conducted

5 Hexabromocyclododecane (HBCDD) Content:

By solvent extraction followed by Gas Chromatographic - Mass Spectrometric (GC-MS) analysis.

Result: Less than 10mg/kg

mg/kg =milligram per kilogram

Date sample received: May 03, 2013

Testing period: May 03, 2013 to May 09, 2013

End of report

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Test Report

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The following sample(s) was/were submitted and identified by/on behalf of the client as:

Sample Description : VALE Electrolytic Nickel R Rounds
Sample Receiving Date : 2013/01/02
Testing Period : 2013/01/02 TO 2013/01/09

Test Result(s) : Please refer to next page(s).

Conclusion : Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Hexavalent Chromium Cr(VI), PBBs and PBDEs comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.



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

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Test Result(s)

PART NAME No.1 : SILVER COLORED METAL

Test Item(s)	Unit	Method	MDL	Result	Limit
				No.1	
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	100
Lead (Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	1000
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	1000
Hexavalent Chromium Cr(VI)	**	With reference to IEC 62321: 2008 and performed by Boiling water extraction (UV-VIS) Method.#	#	Negative	#
Antimony (Sb)	mg/kg	With reference to US EPA Method 3050B. Analysis was performed by ICP-AES.	2	n.d.	-
Hexabromocyclododecane (HBCDD) (CAS No.: 25637-99-4)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.	-
BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	-
DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	-
DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	-
DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	-
DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	-
DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	-
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.	-

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Test Item(s)	Unit	Method	MDL	Result	Limit
				No.1	
PFOA (CAS No.: 335-67-1)	mg/kg	With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.	-
PVC	**	Analysis was performed by FTIR and FLAME Test.	-	Negative	-
Sum of PBBs	mg/kg	With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.	1000
Monobromobiphenyl			5	n.d.	-
Dibromobiphenyl			5	n.d.	-
Tribromobiphenyl			5	n.d.	-
Tetrabromobiphenyl			5	n.d.	-
Pentabromobiphenyl			5	n.d.	-
Hexabromobiphenyl			5	n.d.	-
Heptabromobiphenyl			5	n.d.	-
Octabromobiphenyl			5	n.d.	-
Nonabromobiphenyl			5	n.d.	-
Decabromobiphenyl			5	n.d.	-
Sum of PBDEs			-	n.d.	1000
Monobromodiphenyl ether			5	n.d.	-
Dibromodiphenyl ether			5	n.d.	-
Tribromodiphenyl ether			5	n.d.	-
Tetrabromodiphenyl ether			5	n.d.	-
Pentabromodiphenyl ether			5	n.d.	-
Hexabromodiphenyl ether			5	n.d.	-
Heptabromodiphenyl ether			5	n.d.	-
Octabromodiphenyl ether			5	n.d.	-
Nonabromodiphenyl ether	5	n.d.	-		
Decabromodiphenyl ether	5	n.d.	-		
Halogen					
Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.	-
Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)			50	n.d.	-
Halogen-Bromine (Br) (CAS No.: 10097-32-2)			50	n.d.	-
Halogen-Iodine (I) (CAS No.: 14362-44-8)			50	n.d.	-

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Note :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
 2. n.d. = Not Detected
 3. MDL = Method Detection Limit
 4. " - " = Not Regulated
 5. ** = Qualitative analysis (No Unit)
 6. Negative = Undetectable / Positive = Detectable
 7. # = a. Positive means the presence of CrVI on the tested areas
b. Negative means the absence of CrVI on the tested areas
- The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² tested areas.

PFOS Reference Information : POPs - (EU) 757/2010

Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1µg/m².

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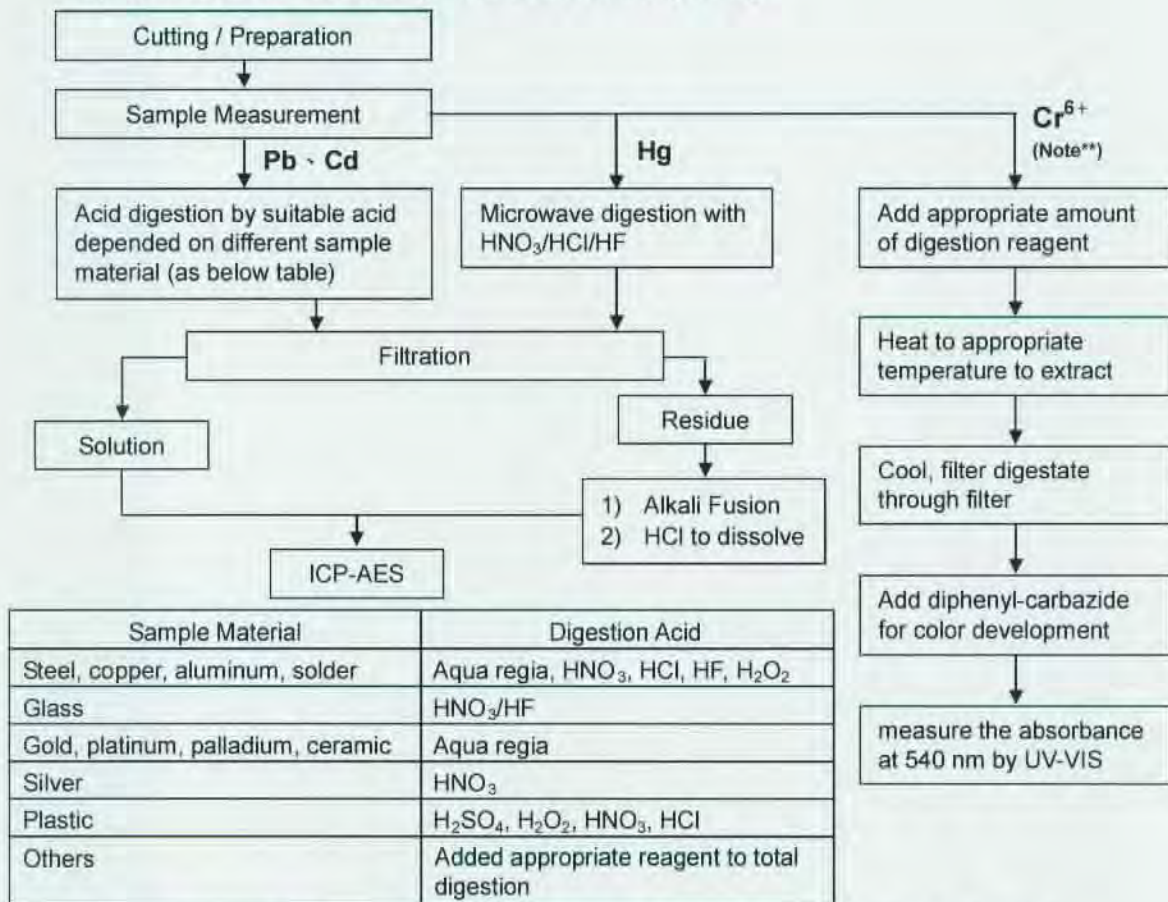
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- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



Note :** (1) For non-metallic material, add alkaline digestion reagent and heat to 90~95 °C.
 (2) For metallic material, add pure water and heat to boiling.

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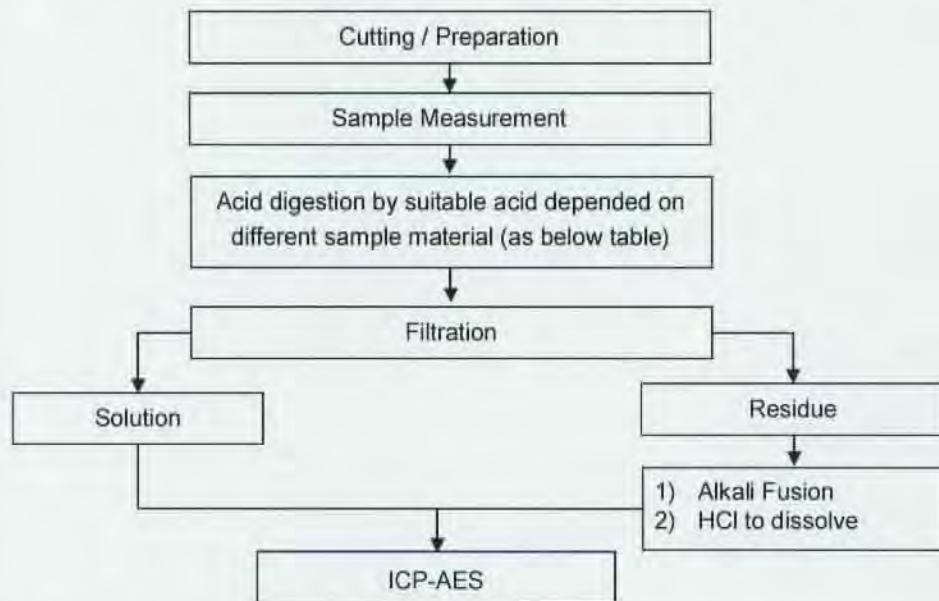
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- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart.
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang

Flow Chart of digestion for the elements analysis performed by ICP-AES



Steel, copper, aluminum, solder	Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
Glass	HNO ₃ /HF
Gold, platinum, palladium, ceramic	Aqua regia
Silver	HNO ₃
Plastic	H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
Others	Added appropriate reagent to total digestion

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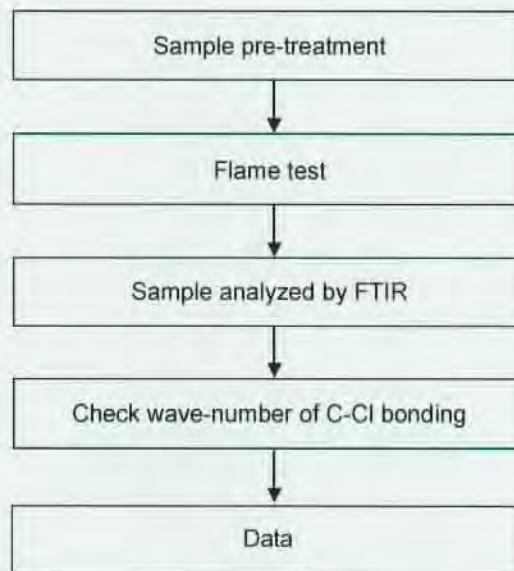
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Analysis flow chart for determination of PVC in material

- Name of the person who made measurement: Ginny Chen
- Name of the person in charge of measurement: Troy Chang



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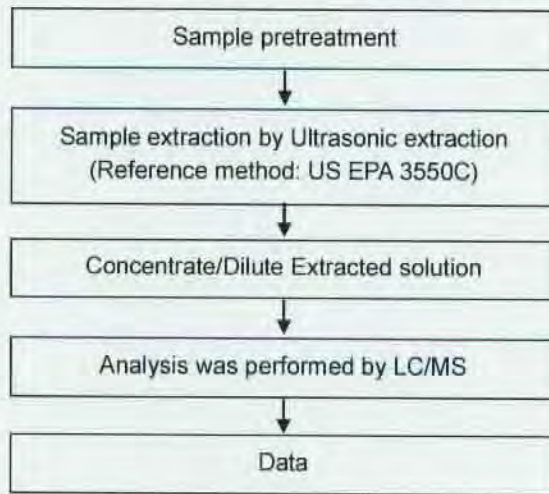
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PFOA/PFOS analytical flow chart of Ultrasonic extraction (LC/MS) procedure

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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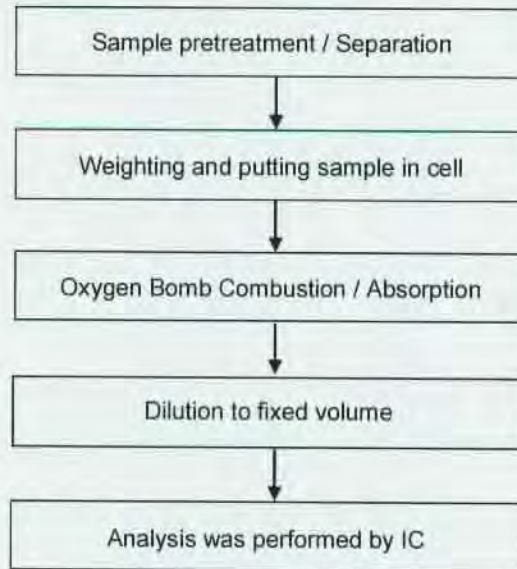
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Analytical flow chart of halogen content

- 1) Name of the person who made measurement: Rita Chen
- 2) Name of the person in charge of measurement: Troy Chang



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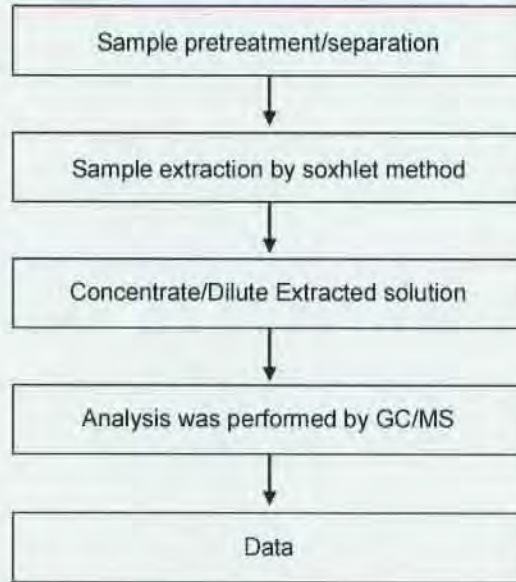
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Analytical flow chart of phthalate content

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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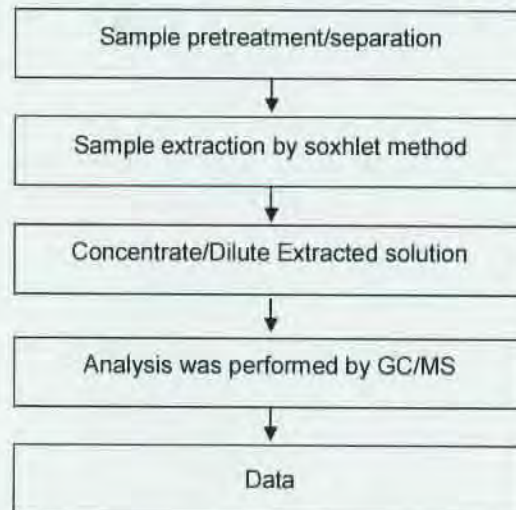
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HBCDD analytical flow chart

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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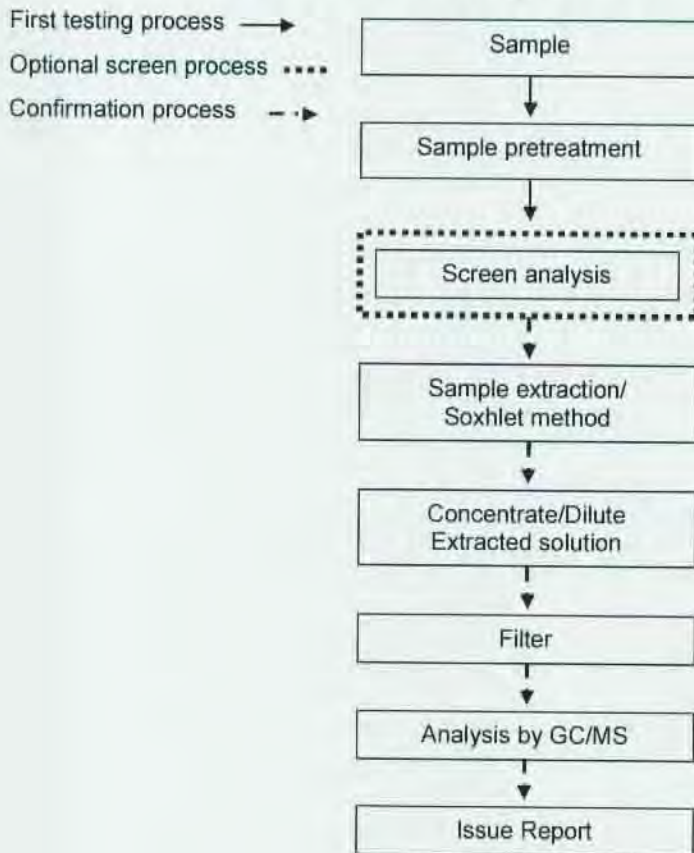
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PBB/PBDE analytical FLOW CHART

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang



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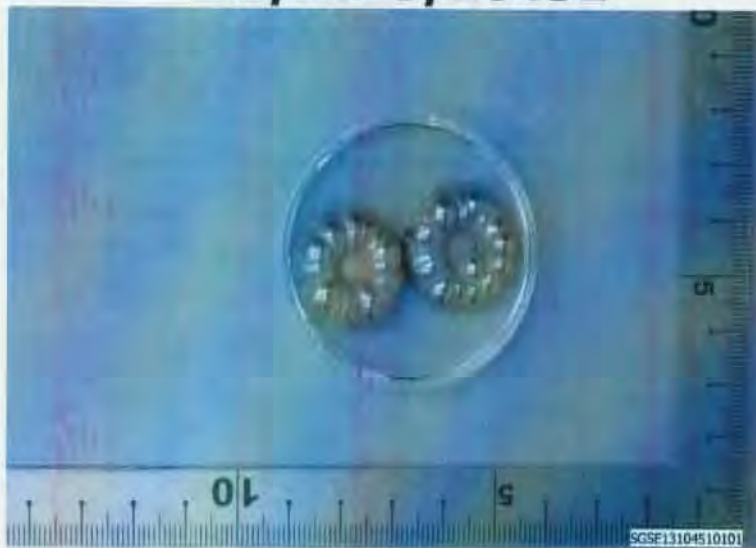
Vale Canada Limited

200 Bay Street, Royal Bank Plaza, Suite 1600, South Tower, P.O. Box 70, Toronto, Ontario, M5J 2K2, Canada



* The tested sample / part is marked by an arrow if it's shown on the photo. *

CE/2013/10451



** End of Report **

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測試報告

Test Report

號碼(No.) : CE/2013/11346 日期(Date) : 2013/01/14 頁數(Page) : 1 of 21

瑞昇金屬工業股份有限公司 / REDSUN METAL IND. CO., LTD.



(南通鈞元電子材料工業有限公司 / NANTONG CHUN-YUAN ELECTRONICS IN. CO., LTD.)

台北市內湖區新湖一路133號 / 133, XINHU 1ST RD., NEIHU DISTRICT, TAIPEI

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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) : TIN PRODUCTS (錫製品)
 應用於(Used For) : Sn100E-B20、Sn100E-H2.8x1.5、Sn100E-H2.0x1.0、Sn100E-H2.2x1.5、Sn100E-H2.5x1.5、Sn100E-S2.5、Sn100E-P08...等Sn100E系列
 收件日期(Sample Receiving Date) : 2013/01/07
 測試期間(Testing Period) : 2013/01/07 TO 2013/01/14

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

結論(Conclusion) : 根據客戶所提供的樣品，其鎘、鉛、汞、六價鉻、多溴聯苯及多溴聯苯醚的測試結果符合RoHS指令2002/95/EC的更新指令2011/65/EU之要求 (Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Hexavalent Chromium Cr(VI), PBBs and PBDEs comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.)



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

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測試報告

Test Report

號碼(No.) : CE/2013/11346 日期(Date) : 2013/01/14 頁數(Page) : 2 of 21

瑞昇金屬工業股份有限公司 / REDSUN METAL IND. CO., LTD.



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測試結果(Test Results)

測試部位(PART NAME)No.1 : 銀色金屬 (SILVER COLORED METAL)

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)	法規 限值 (Limit)
				No.1	
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321: 2008方法, 以感應耦合電漿原子發射光譜儀檢測。 / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	100
鉛 / Lead (Pb)	mg/kg	參考IEC 62321: 2008方法, 以感應耦合電漿原子發射光譜儀檢測。 / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	10	1000
汞 / Mercury (Hg)	mg/kg	參考IEC 62321: 2008方法, 以感應耦合電漿原子發射光譜儀檢測。 / With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	1000
六價鉻 / Hexavalent Chromium Cr(VI)	**	參考IEC 62321: 2008方法, 以沸水萃取法檢測。 / With reference to IEC 62321: 2008 and performed by Boiling water extraction Method.#	#	Negative	#
鈹 / Beryllium (Be)	mg/kg	參考US EPA 3050B方法, 以感應耦合電漿原子發射光譜儀檢測。 / With reference to US EPA 3050B. Analysis was performed by ICP-AES.	2	n.d.	-
聚氯乙烯 / PVC	**	以紅外光譜分析及焰色法檢測。 / Analysis was performed by FTIR and FLAME Test.	-	Negative	-

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測試報告

Test Report

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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)	法規 限值 (Limit)
				No.1	
銻 / Antimony (Sb)	mg/kg	參考US EPA 3050B方法, 以感應耦合電漿原子發射光譜儀檢測。 / With reference to US EPA 3050B. Analysis was performed by ICP-AES.	2	10	-
三氧化二銻 / Antimony trioxide (Sb ₂ O ₃)* (CAS No.: 1309-64-4)	mg/kg	參考US EPA 3050B方法, 以感應耦合電漿原子發射光譜儀檢測。 / With reference to US EPA Method 3050B. Analysis was performed by ICP-AES.*	-	12	-
多氯聯苯 / Polychlorinated Biphenyls (PCBs) (CAS No.: 1336-36-3)	mg/kg	參考US EPA 3540C方法, 以氣相層析/質譜儀檢測。 / With reference to US EPA 3540C method. Analysis was performed by GC/MS.	0.5	n.d.	-
多氯三聯苯 / Polychlorinated Terphenyls (PCTs)	mg/kg	參考US EPA 3540C方法, 以氣相層析/質譜儀檢測。 / With reference to US EPA 3540C method. Analysis was performed by GC/MS.	0.5	n.d.	-
多氯萘 / Polychlorinated Naphthalene (PCNs)	mg/kg	參考US EPA 3540C方法, 以氣相層析/質譜儀檢測。 / With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.	-
短鏈氯化石蠟 / Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) (CAS No.: 85535-84-8)	mg/kg	參考US EPA 3540C方法, 以氣相層析/質譜儀檢測。 / With reference to US EPA 3540C method. Analysis was performed by GC/MS.	100	n.d.	-
鄰苯二甲酸甲苯基丁酯 / BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. 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.: 117-81-7)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	-

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測試報告

Test Report

號碼(No.): CE/2013/11346 日期(Date): 2013/01/14 頁數(Page): 4 of 21

瑞昇金屬工業股份有限公司 / REDSUN METAL IND. CO., LTD.

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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)	法規 限值 (Limit)
				No.1	
鄰苯二甲酸二異癸酯 / DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	-
鄰苯二甲酸二異壬酯 / DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	-
鄰苯二甲酸二正辛酯 / DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	-
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	-
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No.: 84-69-5)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	-
鄰苯二甲酸二己酯 / DNHP (Di-n-hexyl phthalate) (CAS No.: 84-75-3)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	-
鄰苯二甲酸二(C6-8支鏈與直鏈)烷基酯, 富C7 / DIHP (1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich) (CAS No.: 71888-89-6)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	-
鄰苯二甲酸二(C7-11支鏈與直鏈)烷基酯 / DHNUP (1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters) (CAS No.: 68515-42-4)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	-

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測試報告

Test Report

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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)	法規 限值 (Limit)
				No.1	
六溴環十二烷 / Hexabromocyclododecane (HBCDD) (CAS No.: 25637-99-4)	mg/kg	參考US EPA 3540C方法, 以氣相層析/質譜 儀檢測。 / With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.	-
鄰苯二甲酸二(2-甲氧基乙基)酯 / DMEP (Bis (2-methoxyethyl) phthalate) (CAS No.: 117-82-8)	%	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	-
鹵素 (氯) / Halogen-Chlorine (Cl) (CAS No.: 22537-15-1)	mg/kg	參考BS EN 14582:2007, 以離子層析儀分 析。 / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.	-
鹵素 (溴) / Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	參考BS EN 14582:2007, 以離子層析儀分 析。 / With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.	-
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3550C: 2007方法, 以液相層析 /質譜儀檢測。 / With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.	-
全氟辛酸 (銨) / PFOA (CAS No.: 335- 67-1)	mg/kg	參考US EPA 3550C: 2007方法, 以液相層析 /質譜儀檢測。 / With reference to US EPA 3550C: 2007. Analysis was performed by LC/MS.	10	n.d.	-
有機錫 / Organic-tin compounds					
三丁基錫 / Tributyl Tin (TBT)	mg/kg	參考DIN 38407-13方法, 以氣相層析儀/火 焰光度偵測器檢測。 / With reference to DIN 38407-13. Analysis was performed by GC/FPD.	0.03	n.d.	-
三苯基錫 / Triphenyl Tin (TphT)	mg/kg		0.03	n.d.	-
三丁基錫氧化物 / Tributyl Tin Oxide (TBTO)** (CAS No.: 56-35-9)	mg/kg		-	n.d.	-
二丁基錫 / Dibutyl Tin (DBT)	mg/kg		0.03	n.d.	-
二辛基錫 / Dioctyl Tin (DOT)	mg/kg		0.03	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)	法規 限值 (Limit)
				No.1	
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321: 2008方法, 以氣相層析/質譜儀檢測。 / With reference to IEC 62321: 2008 and performed by GC/MS.	-	n.d.	1000
一溴聯苯 / Monobromobiphenyl	mg/kg		5	n.d.	-
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n.d.	-
三溴聯苯 / Tribromobiphenyl	mg/kg		5	n.d.	-
四溴聯苯 / Tetrabromobiphenyl	mg/kg		5	n.d.	-
五溴聯苯 / Pentabromobiphenyl	mg/kg		5	n.d.	-
六溴聯苯 / Hexabromobiphenyl	mg/kg		5	n.d.	-
七溴聯苯 / Heptabromobiphenyl	mg/kg		5	n.d.	-
八溴聯苯 / Octabromobiphenyl	mg/kg		5	n.d.	-
九溴聯苯 / Nonabromobiphenyl	mg/kg		5	n.d.	-
十溴聯苯 / Decabromobiphenyl	mg/kg		5	n.d.	-
多溴聯苯醚總和 / Sum of PBDEs	mg/kg		-	n.d.	1000
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg		5	n.d.	-
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg		5	n.d.	-
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg		5	n.d.	-
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg		5	n.d.	-
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg		5	n.d.	-
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n.d.	-
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg		5	n.d.	-
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg		5	n.d.	-
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg	5	n.d.	-	
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg	5	n.d.	-	

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測試報告

Test Report

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瑞昇金屬工業股份有限公司 / REDSUN METAL IND. CO., LTD.



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備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
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. ** = Qualitative analysis (No Unit) 定性分析(無單位)
6. Negative = Undetectable 陰性(未偵測到); Positive = Detectable 陽性(已偵測到)
7. # = a. Positive means the presence of CrVI on the tested areas
(Positive表示測試區域偵測到六價鉻)
b. Negative means the absence of CrVI on the tested areas
(Negative表示測試區域未偵測到六價鉻)

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² tested areas. / 該溶液濃度 \geq 0.02 mg/kg with 50 cm² (tested areas)

8. ***: 該物質是由三丁基錫或銻之測試結果計算得知。其MDL是針對三丁基錫或銻之評估。(The substance was calculated by the test results of Tributyl Tin or Antimony. The MDL was evaluated for Tributyl Tin or Antimony.)

$$AX = A \times F$$

AX	A	F
三氧化二銻 / Antimony trioxide (Sb ₂ O ₃)	銻 / Antimony	1.1971
三丁基錫氧化物 / Bis(tributyltin)oxide	三丁基錫 / Tributyl Tin (TBT)	1.0276

PFOS參考資訊(Reference Information) : 持久性有機污染物 POPs - (EU) 757/2010

PFOS濃度在物質或製備中不得超過0.001%(10ppm)，在半成品、成品或零部件中不得超過0.1%(1000ppm)，在紡織品或塗層材料中不得超過1 μ g/m²。

(Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1 μ g/m².)

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- 1) 根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



Note**: (1) 針對非金屬材料加入鹼性消化液，加熱至 90-95°C 萃取。 / For non-metallic material, add alkaline digestion reagent and heat to 90-95°C.
 (2) 針對金屬材料加入純水，加熱至沸騰萃取。 / For metallic material, add pure water and heat to boiling.

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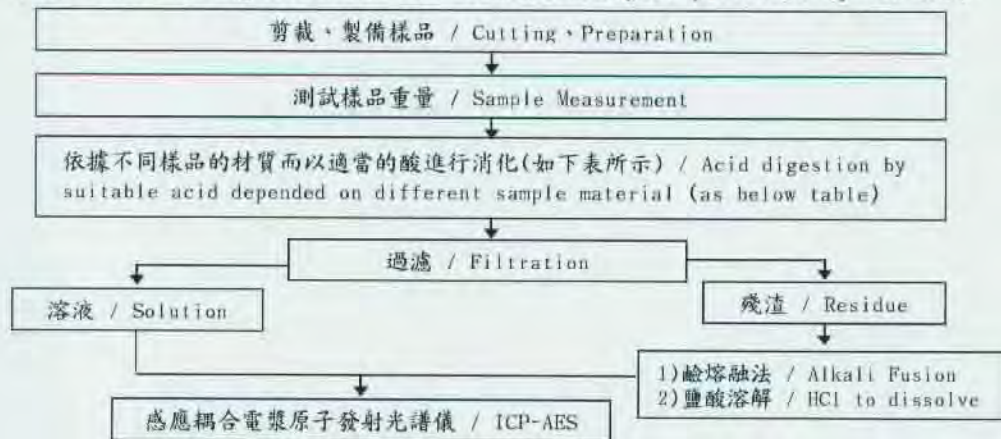
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- 1) 根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.
- 2) 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 3) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang

元素以 ICP-AES 分析的消化流程圖

(Flow Chart of digestion for the elements analysis performed by ICP-AES)



鋼, 銅, 鋁, 焊錫 / Steel, copper, aluminum, solder	王水, 硝酸, 鹽酸, 氫氟酸, 雙氧水 / Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
玻璃 / Glass	硝酸, 氫氟酸 / HNO ₃ /HF
金, 鉑, 鈀, 陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO ₃
塑膠 / Plastic	硫酸, 雙氧水, 硝酸, 鹽酸 / H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion

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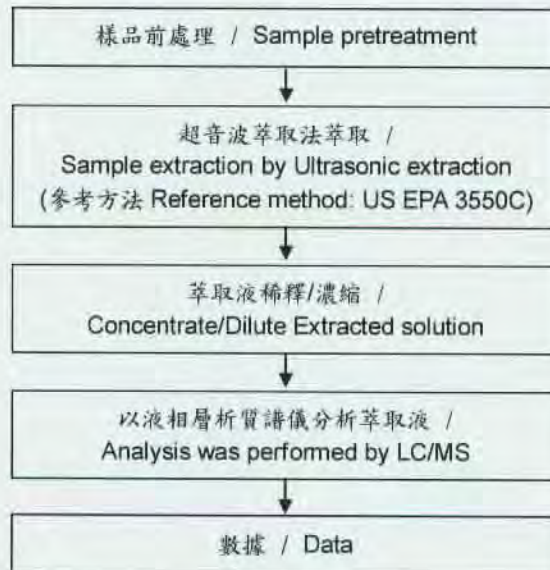
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全氟辛酸(銨)/全氟辛烷磺酸分析流程圖 / PFOA/PFOS analytical flow chart

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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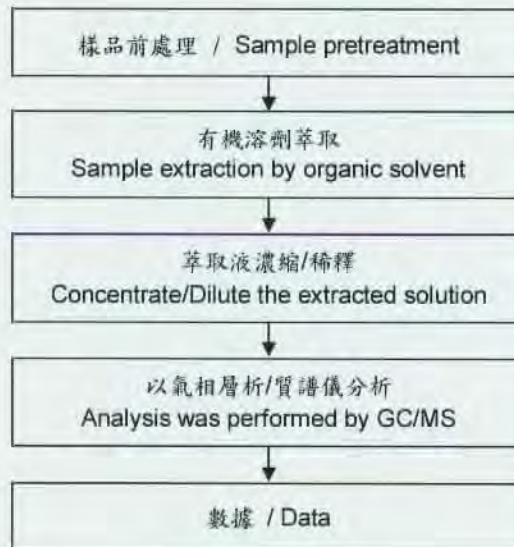
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多氯三聯苯分析流程圖 / PCTs analytical flow chart

- 測試人員：曾勃鈞 / Name of the person who made measurement: Barry Tseng
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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多氯奈分析流程圖 / PCNs analytical flow chart

- 測試人員：曾勃鈞 / Name of the person who made measurement: Barry Tseng
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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氯化石蠟分析流程圖 / Chlorinated Paraffins analytical flow chart

- 測試人員：曾勃鈞 / Name of the person who made measurement: Barry Tseng
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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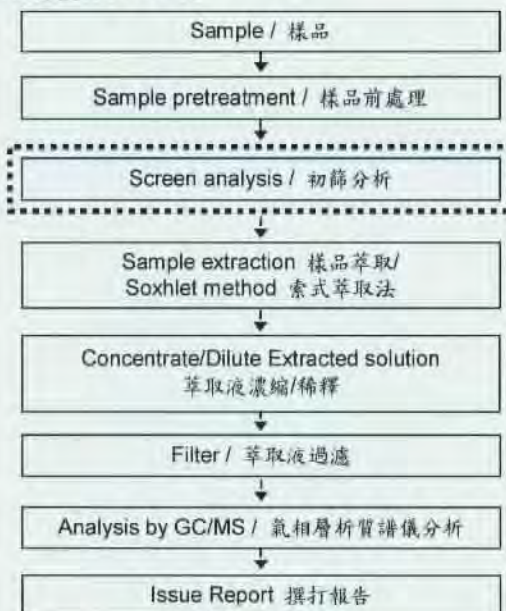
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多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
 - 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang
- 初次測試程序 / First testing process →
- 選擇性篩檢程序 / Optional screen process→
- 確認程序 / Confirmation process - - - →



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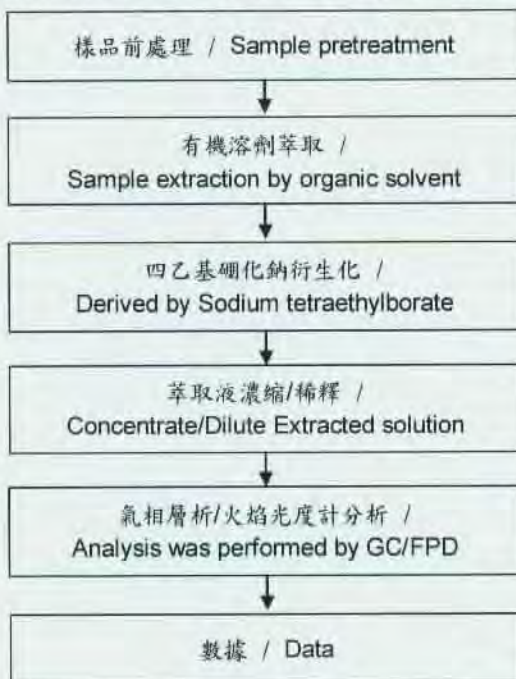
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有機錫分析流程圖 / Analytical flow chart of Organic-Tin content

- 測試人員：陳君涵 / Name of the person who made measurement: Ginny Chen
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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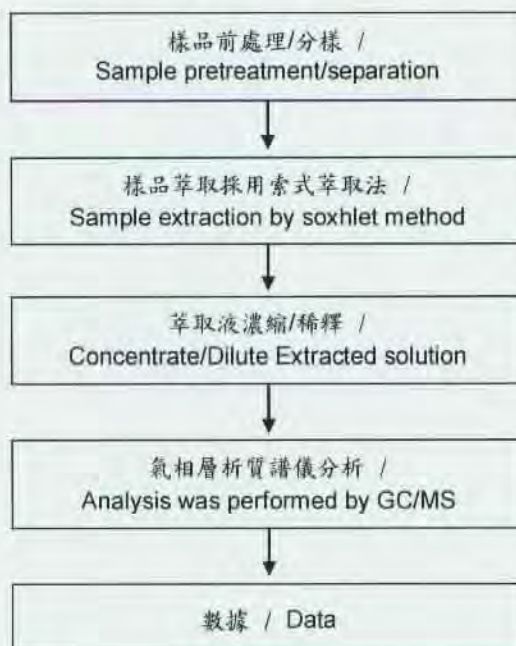
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可塑劑分析流程圖 / Analytical flow chart of phthalate content

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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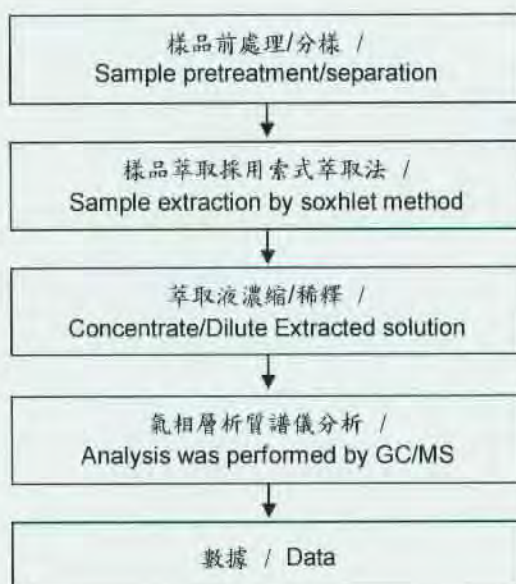
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六溴環十二烷分析流程圖 / HBCDD analytical flow chart

- 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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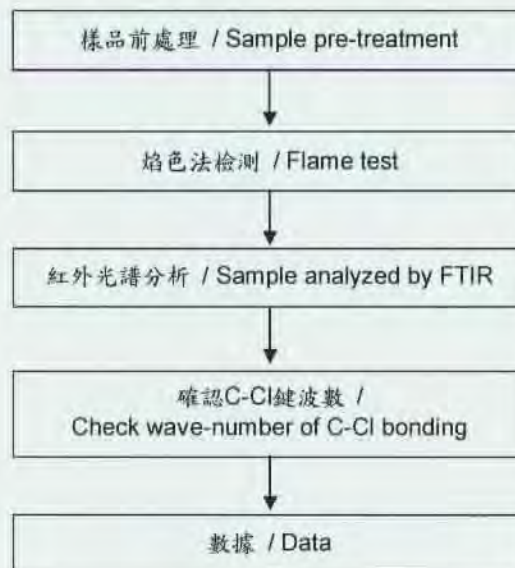
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聚氯乙烯物質判定分析流程圖 /

Analysis flow chart for determination of PVC in material

- 測試人員：陳君涵 / Name of the person who made measurement: Ginny Chen
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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多氯聯苯分析流程圖 / PCBs analytical flow chart

- 測試人員：曾勃鈞 / Name of the person who made measurement: Barry Tseng
- 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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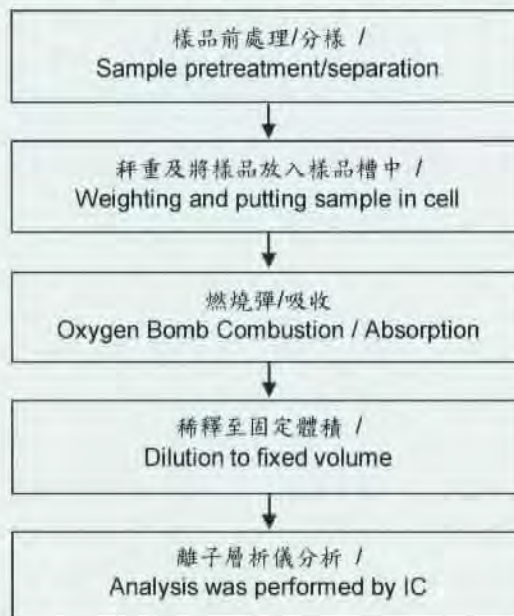
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鹵素分析流程圖 / Analytical flow chart of halogen content

- 1) 測試人員：陳恩臻 / Name of the person who made measurement: Rita Chen
- 2) 測試負責人：張啓興 / Name of the person in charge of measurement: Troy Chang



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* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。*

(The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2013/11346



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