

測試報告 Test Report

號碼(No.) : CE/2009/42175 日期(Date) : 2009/04/20 頁數(Page) : 1 of 16

捷森電子工業股份有限公司

JACKSON ELECTRONICS IND. CORP.

台南縣永康市中華路1013號

NO. 1013, CHUNG HUA ROAD, YUNG KANG CITY, TAINAN HSIEN, 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) : 開關, 插座, 接頭 (SWITCH, SOCKET, PLUG)

樣品型號(Style/Item No.) : JS-606 SERIES, JS-606P SERIES, JS-608 SERIES, JS-606-2 (RL3-5) SERIES, JS-606-3 (RL3-6) SERIES, JS-628 SERIES, RL3-4 (MR-21) SERIES, RL3-4R SERIES, JS-626 (RL3-4S) SERIES, JS-636 SERIES, JS-606Q SERIES, RL3-5X SERIES, RL1-5 SERIES, RL1-8 SERIES, RL5-1 SERIES, JS-758 SERIES, JS-618 SERIES, RL1-4 SERIES, JR-101 SERIES, JR-121 SERIES, JR-201 SERIES, JR-307 SERIES, JR-101-1F, JR-101-1FS, JR-101-1FR, JR-101-1FRS, JR-101-1FSA, JR-101-1FSA1, JR-101-1SB, JR-101-2F SERIES, JA-1157 SERIES, JA-2231 SERIES, JA-2233 SERIES, JR-141, JR-151, JR-101-1FSC, JF-204, JF-207

收件日期(Sample Receiving Date) : 2009/04/09

測試期間(Testing Period) : 2009/04/09 TO 2009/04/20

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(2002/95/EC)及其修定指令之要求 (Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Hexavalent Chromium Cr(VI), PBBs and PBDEs are **compliant with** the limits of RoHS Directive 2002/95/EC and its subsequent amendments).
- 根據客戶所提供的樣品，其多苯環芳香族化合物的測試結果符合德國ZLS的ZEK 01.2-08及其相關修訂文件中的第1類PAHs要求 (Base on the performed tests on submitted samples, the test results of PAHs are **comply with** the PAHs requirement according to (Category 1) of ZEK 01.2-08 of German ZLS and its amendments.)

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

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SGS Taiwan Ltd.
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測試結果(Test Results)

測試部位(PART NAME) NO.1 : 黑色塑膠 (BLACK PLASTIC)
 測試部位(PART NAME) NO.2 : 銀色金屬鍍層 (PLATING LAYER OF SILVER COLORED METAL)
 測試部位(PART NAME) NO.3 : 銀色金屬底材 (BASE MATERIAL OF SILVER COLORED METAL)
 測試部位(PART NAME) NO.4 : 灰色金屬彈簧 (GRAY METAL SPRING)

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	NO.2	NO.3	
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321: 2008方法, 用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.	n.d.	n.d.	100
鉛 / Lead (Pb)	mg/kg	參考IEC 62321: 2008方法, 用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.	73	6	1000
汞 / Mercury (Hg)	mg/kg	參考IEC 62321: 2008方法, 用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.	n.d.	n.d.	1000
六價鉻 / Hexavalent Chromium Cr(VI) by alkaline extraction	mg/kg	參考IEC 62321: 2008方法, 用UV-VIS檢測. / With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.	---	---	1000
六價鉻 / Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	**	參考IEC 62321: 2008方法, 用Spot test / boiling water extraction方法檢測. / With reference to IEC 62321: 2008 and performed by Spot test / boiling water extraction Method. (See Note 7)	0.02mg/kg with 50 cm ² surface area	---	Negative	Negative	#

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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	NO.2	NO.3	
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS) PFOS — Acid PFOS — Metal Salt PFOS — Amide	mg/kg	參考US EPA 3540C: 1996方法, 以液相層析質譜儀檢測全氟辛烷磺酸含量. / With reference to US EPA 3540C: 1996 method for PFOS Content. Analysis was performed by LC/MS.	10	n.d.	n.d.	n.d.	-
全氟辛酸(銨) / PFOA (CAS No.: 000335-67-1)	mg/kg	參考US EPA 3540C: 1996方法, 以液相層析質譜儀檢測全氟辛酸(銨)含量. / With reference to US EPA 3540C: 1996 method for PFOA Content. Analysis was performed by LC/MS.	10	n.d.	n.d.	n.d.	-
多溴聯苯總和 / Sum of PBBs	mg/kg	參考IEC 62321: 2008方法, 以氣相層析儀/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.	---	---	-

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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	NO.2	NO.3	
多苯環芳香族化合物 / Polynuclear Aromatic Hydrocarbons (PAHs)							
Acenaphthene (CAS No.: 000083-32-9)	mg/kg	參考ZLS standard ZEK 01.2-08方法, 以氣相層析質譜儀 (GC/MS)檢測. / With reference to ZLS standard ZEK 01.2-08 method. Analysis was performed by GC/MS.	0.2	n.d.	---	---	-
Acenaphthylene (CAS No.: 000208-96-8)			0.2	n.d.	---	---	-
Anthracene (CAS No.: 000120-12-7)			0.2	n.d.	---	---	-
Benzo[a]anthracene (CAS No.: 000056-55-3)			0.2	n.d.	---	---	-
Benzo[a]pyrene (CAS No.: 000050-32-8)			0.2	n.d.	---	---	-
Benzo[b]fluoranthene (CAS No.: 000205-99-2)			0.2	n.d.	---	---	-
Benzo[g,h,i]perylene (CAS No.: 000191-24-2)			0.2	n.d.	---	---	-
Benzo[k]fluoranthene (CAS No.: 000207-08-9)			0.2	n.d.	---	---	-
Chrysene (CAS No.: 000218-01-9)			0.2	n.d.	---	---	-
Dibenzo[a,h]anthracene (CAS No.: 000053-70-3)			0.2	n.d.	---	---	-
Fluoranthene (CAS No.: 000206-44-0)			0.2	n.d.	---	---	-
Fluorene (CAS No.: 000086-73-7)			0.2	n.d.	---	---	-
Indeno[1,2,3-c,d] pyrene (CAS No.: 000193-39-5)			0.2	n.d.	---	---	-
Naphthalene (CAS No.: 000091-20-3)			0.2	n.d.	---	---	-
Phenanthrene (CAS No.: 000085-01-8)			0.2	n.d.	---	---	-
Pyrene (CAS No.: 000129-00-0)			0.2	n.d.	---	---	-
多苯環芳香族化合物16項總和 / Sum of 16 PAHs			-	n.d.	---	---	-
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.	---	---	-

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				NO.1	NO.2	NO.3	
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.	---	---	-

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.4	
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321: 2008方法, 用 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, 用 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, 用 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

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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. 4	
六價鉻 / Hexavalent Chromium Cr(VI) by Spot test / boiling water extraction	**	參考IEC 62321: 2008方法, 用 Spot test / boiling water extraction方法檢測. / With reference to IEC 62321: 2008 and performed by Spot test / boiling water extraction Method. (See Note 7)	0.02mg/kg with 50 cm ² surface area	Negative	#
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS) PFOS — Acid PFOS — Metal Salt PFOS — Amide	mg/kg	參考US EPA 3540C: 1996方法, 以液相層析質譜儀檢測全氟辛 烷磺酸含量. / With reference to US EPA 3540C: 1996 method for PFOS Content. Analysis was performed by LC/MS.	10	n.d.	-
全氟辛酸(銨) / PFOA (CAS No.: 000335- 67-1)	mg/kg	參考US EPA 3540C: 1996方法, 以液相層析質譜儀檢測全氟辛 酸(銨)含量. / With reference to US EPA 3540C: 1996 method for PFOA Content. Analysis was performed by LC/MS.	10	n.d.	-

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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. "---" = Not Conducted (未測項目)
6. ** = Qualitative analysis (No Unit) 定性分析(無單位)
7. Spot-test:

Negative = Absence of Cr(VI) coating / surface layer(鍍層中偵測不到六價鉻),

Positive = Presence of Cr(VI) coating / surface layer(鍍層中偵測到六價鉻);

The tested sample should be further verified by boiling-water-extraction method if the spot test result cannot be confirmed.

(當該測項無法確認時, 測試樣品可藉由boiling-water-extraction測試方法進一步確認)

Boiling-water-extraction:

Negative = Absence of Cr(VI) coating / surface layer(鍍層中偵測不到六價鉻),

Positive = Presence of Cr(VI) coating / surface layer(鍍層中偵測到六價鉻);

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

8. # = Positive indicates the presence of Cr(VI) on the tested areas and result be regarded as not comply with RoHS requirement. (Positive表示測試區域之六價鉻不符合RoHS要求)
Negative indicates the absence of Cr(VI) on the tested areas and result be regarded as comply with RoHS requirement. (Negative表示測試區域之六價鉻符合RoHS要求)

PFOS參考資訊(Reference Information) : 指令 2006/122/EC (Directive 2006/122/EC)

- (1) 該物質不可置於市場上或使用於特殊物質或配置成分重量濃度等於或大於0.005%.

(May not be placed on the market or used as a substance or constituent of preparations in a concentration equal to or higher than 0.005 % by mass.)

- (2) 該物質不可置於市場上的半成品或商品或其物件; 假若零件上明顯地具有PFOS並參照結構上及微細構造上計算PFOS重量濃度等於或大於0.1%, 而紡織品或其他覆蓋物質, 如果PFOS在覆蓋物質中含量等於或大於1 μ g/m².

(May not be placed on the market in semi-finished products or articles, or parts thereof, if the concentration of PFOS is equal to or higher than 0.1 % by mass calculated with reference to the mass of structurally or microstructurally distinct parts that contain PFOS or, for textiles or other coated materials, if the amount of PFOS is equal to or higher than 1 μ g/m² of the coated material.)

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捷森電子工業股份有限公司

JACKSON ELECTRONICS IND. CORP.

台南縣永康市中華路1013號

NO. 1013, CHUNG HUA ROAD, YUNG KANG CITY, TAINAN HSIEN, TAIWAN



參考資料(Reference information) :

依據ZEK 01.2-08之要求: 產品中最大值為

(Requirement of ZEK 01.2-08 : Restraining maximum values for products)

項目 (Parameter)	第1類 (Category 1)	第2類 (Category 2)	第3類 (Category 3)
	與食品接觸或放入嘴內的材料, 以及給三歲以下的幼兒使用的玩具。 (Materials in contact with foodstuff or materials which are meant to put in the mouth as well as toys for children <36 months.)	持續地(長時間)與皮膚接觸逾30秒, 以及不屬第1類的玩具。 (Materials with foreseeable skin contact >30 s (prolonged skin contact) and toys not covered by category 1.)	暫時地(短時間)與皮膚接觸但不逾30秒或不會與皮膚接觸。 (Materials with foreseeable skin contact <30 s (short time skin contact) or without skin contact.)
苯駢(a)芘 Benzo[a]pyrene (mg/kg)	<MDL (<0.2)**	1	20
環保署規範16項PAH 總濃度 (Sum of 16 EPA-PAH) (mg/kg)*	<MDL (<0.2)**	10	200

注意(Remark): * = PAH濃度大於0.2mg/kg時, 則須計算PAH總濃度值

(Only PAH substances >0.2 mg/kg are taken into account while calculating the sum of PAHs)

** = 最大濃度值超出等級一的限制, 但在等級二的濃度限制值內時, 可能需要確認測試材質是否合適於食品容器或是依照DIN EN1186ff/ § 64 LFGB 80.30-1方法, 針對特定PAH的遷移測試進行測試。遷移測試的結論需依照食品法規規範

(In case that the maximum values exceed the limits of category 1, but are within the limits of category 2, one may confirm the suitability of the tested material for contact with foodstuff or oral mucosa by additional specific migration tests of PAH components based on DIN EN 1186ff and § 64 LFGB 80.30-1. The conclusion of the migration test results must be made based on food law criteria.)

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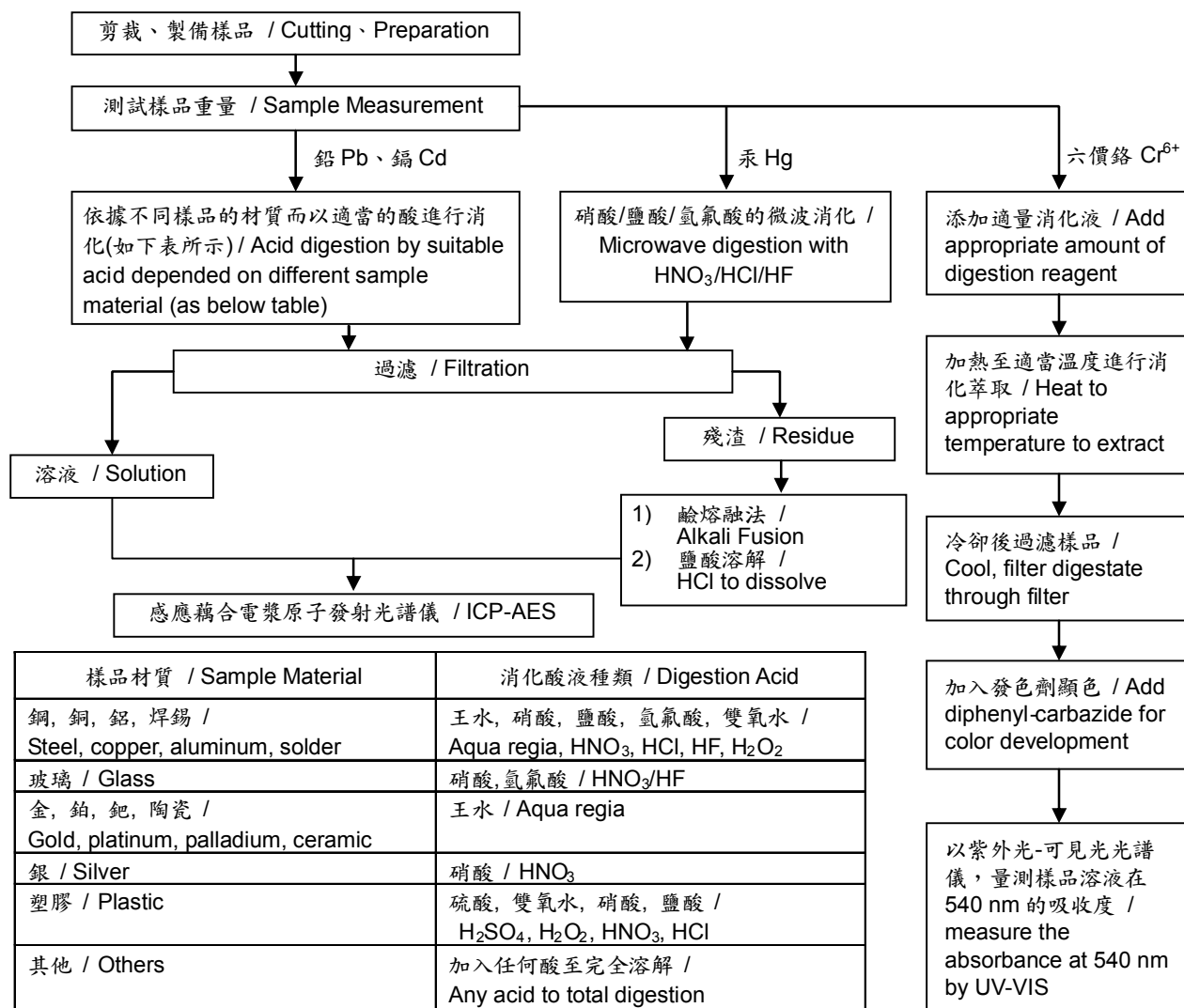
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NO.1, NO.3 AND NO.4



- 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



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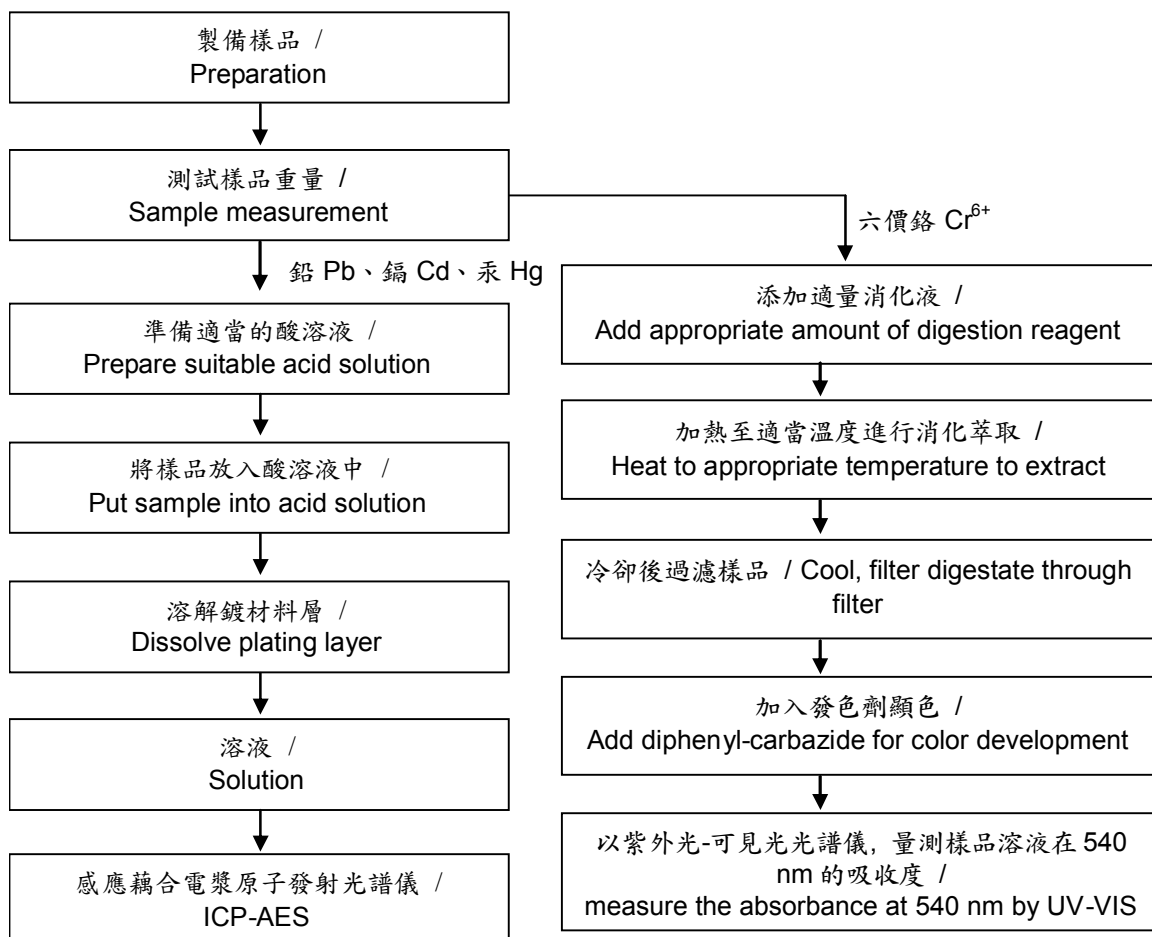
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NO. 2

- 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

鍍層重金屬測試流程圖 / Flow Chart of Stripping method for metal analysis



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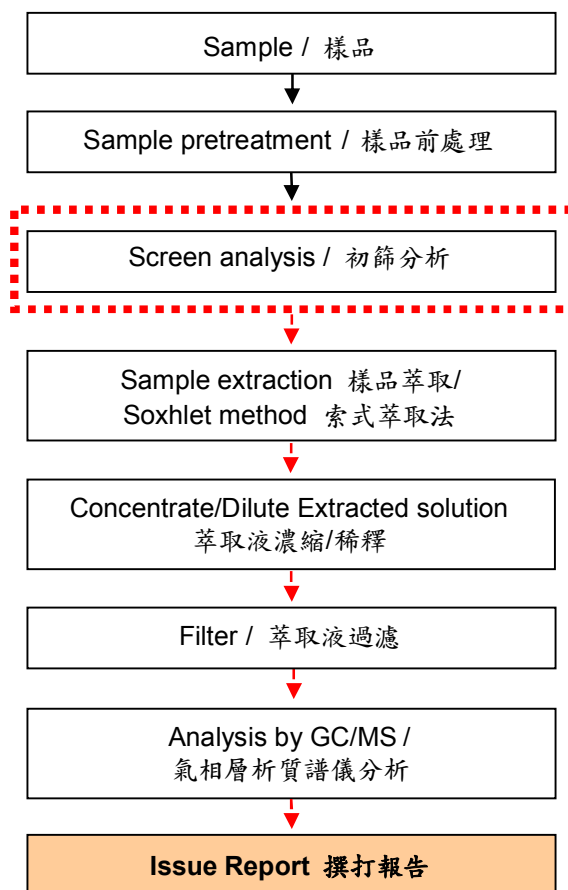
多溴聯苯/多溴聯苯醚分析流程圖 / PBB/PBDE analytical FLOW CHART

- 1) 測試人員：翁賜彬 / Name of the person who made measurement: Roman Wong
2) 測試負責人：陳新智 / Name of the person in charge of measurement: Shinjyh Chen

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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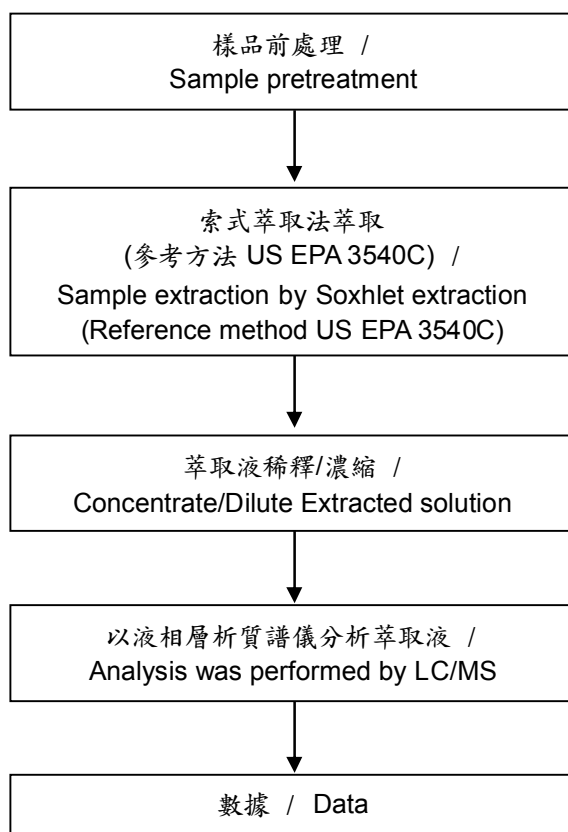
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全氟辛酸(銨)/全氟辛烷磺酸分析流程圖 /

Analytical flow chart of PFOA/PFOS content

- 1) 測試人員：劉家瑗 / Name of the person who made measurement: Carrie Liu
- 2) 測試負責人：陳新智 / Name of the person in charge of measurement: Shinjyh Chen



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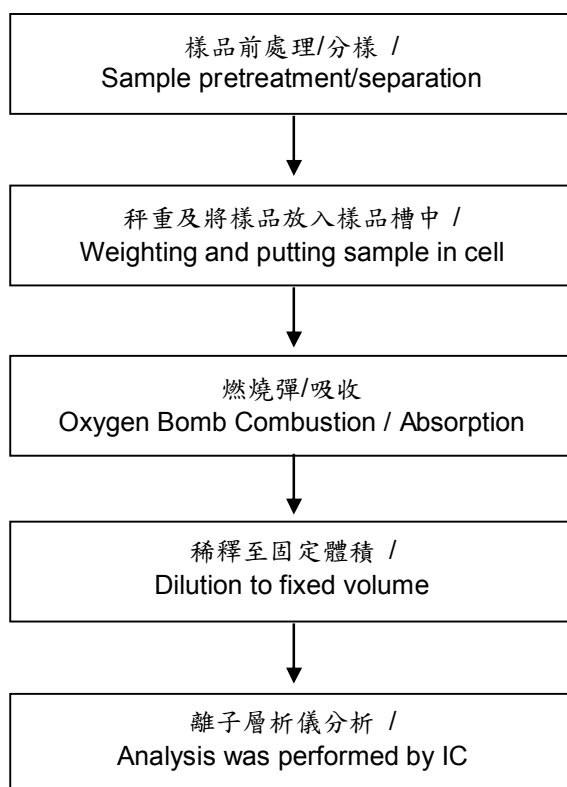
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鹵素分析流程圖 / Analytical flow chart of halogen content

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



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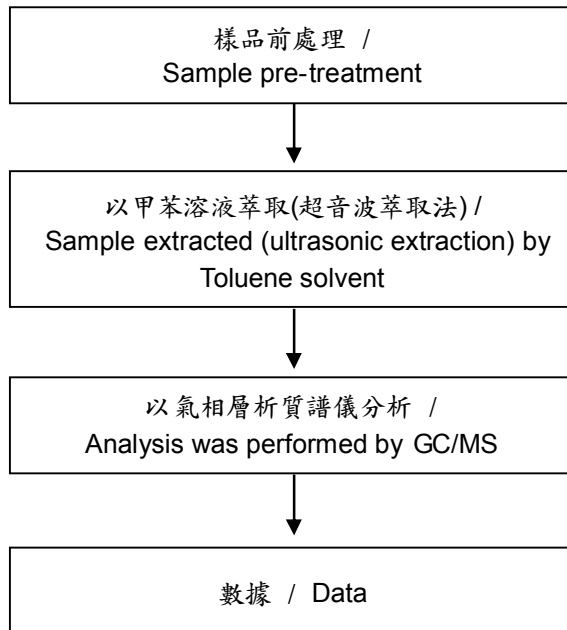
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多苯環芳香族化合物分析流程圖 /

PAHs (Polynuclear Aromatic Hydrocarbons) analytical flow chart

- 1) 測試人員：徐毓明 / Name of the person who made measurement: Andy Shu
- 2) 測試負責人：陳新智 / Name of the person in charge of measurement: Shinjyh Chen



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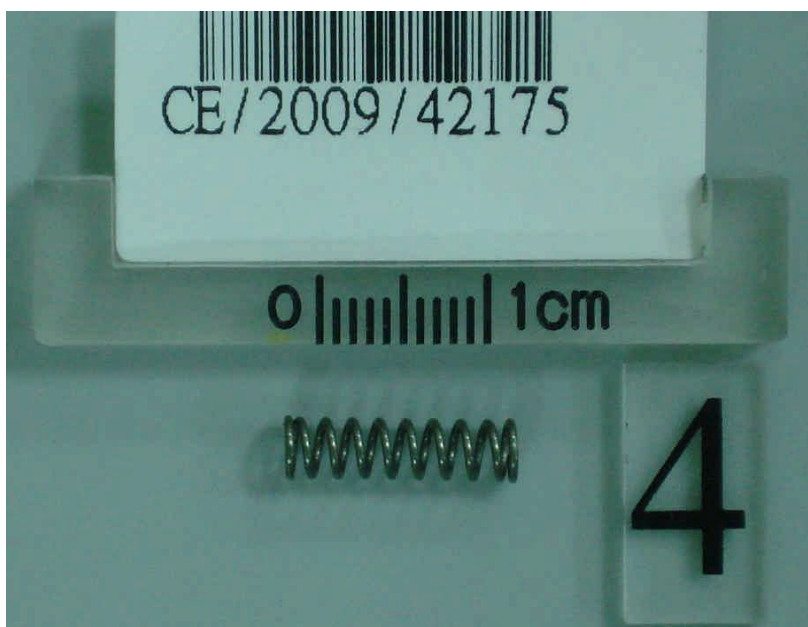
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